Taiwan Innotech Expo
台灣創新技術博覽會

Technical Handbook

AI Cross-Domain Innovation ///
Driving the Smart Future

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About TIE

The Taiwan Innotech Expo (TIE) is organized by 11 government agencies, including the Ministry of Economic Affairs, the National Science and Technology Council, and the Ministry of Agriculture.

TIE promotes international collaboration and technology commercialization, showcasing innovations from industry, academia, and research institutes through three themed pavilions—the Innovation Economy Pavilion, the Future Tech Pavilion, and the Sustainability Pavilion—as well as the Invention Competition Zone.

創新經濟館

INNOVATION ECONOMY PAVILION

Integrating the internal departments of the Ministry of Economic Affairs, focusing on artificial intelligence and semiconductors, it showcases applications in semiconductors, next-generation communications, precision health, smart machinery, and energy transformation, bringing together technological innovation and leading industrial development.

Affiliated Ministry List
DOIT : Department of Industrial Technology
DSEA : Department of State-owned Enterprise Affairs
EA : Environmental Administration
IDA : Industrial Development Administration
SMESA : Small and Medium Enterprise and Startup Administration



T-Skin

Technology Introduction

T-Skin is an advanced head sensing safety solution designed to improve safety in human-robot collaboration (HRC) environments. It covers the key parts of the robot arm or robot like a layered skin solution. The sensing units on T-Skin can detect rapid changes. When a person or object comes into contact with the robot surface, the sensor will immediately trigger a safety stop signal.

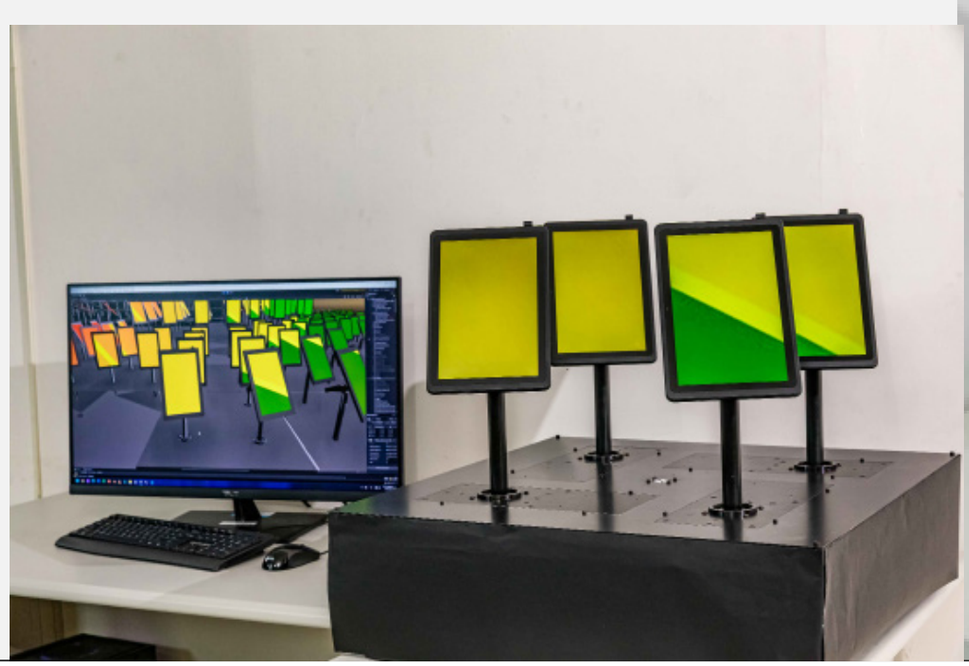


- Affiliated Ministry: IDA
- Exhibitor: Mechavision Inc.
- Contact: Tony Hwang sa02@touche.solutions

Industry Applicability

The technology is actually applied to Taiwan's semiconductor production lines, improving the process efficiency by more than 80%, increasing the performance per square meter by 52%, and reducing the basic production line manpower by 61%. It can be widely used in various industrial fields that require human-robot collaboration.

Booth: IA01



EXPO 2025(Life Theater)-Digital Twin Interactive Performing Techonology

Technology Introduction

Massive devices digital twin performing platform solves the pain point where creators are unable to visualize the performance content during planning stages. The technology creates virtual massive devices, and adopt algorithm to control massive devices simultaneously. The AI-based best view splicing technique helps the producers to simulated, distribute images, control angles, and rotate degrees of the devices in presenting the best viewing result. Patent application was raised to create entry barriers which helps the industry to expend worldwide.

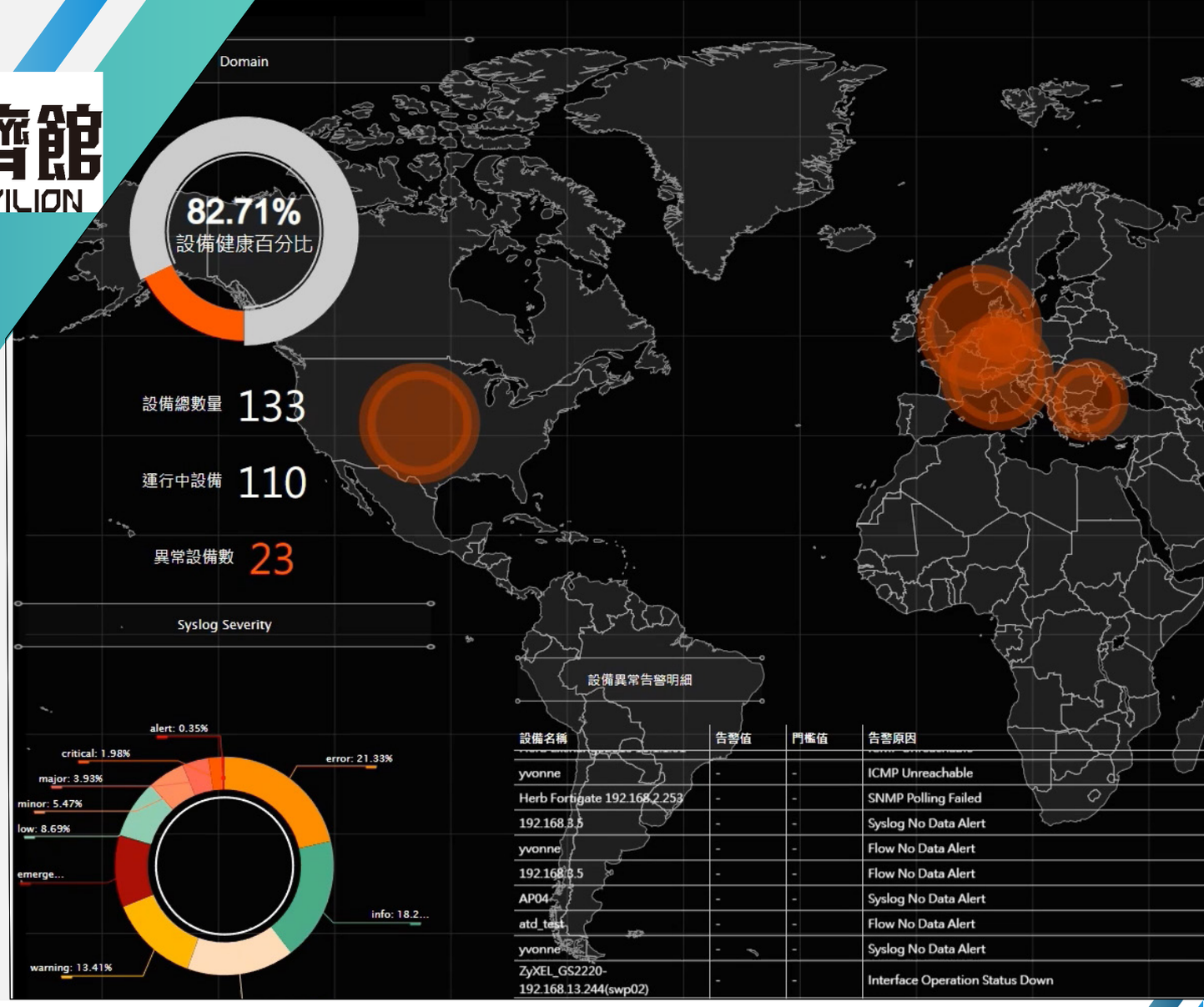


- Affiliated Ministry: DOIT
- Exhibitor: Industrial Technology Research Institute
- Contact: Jenny Lin jmlin@itri.org.tw

Industry Applicability

Massive devices digital twin performing platform solves the pain point where creators are unable to visualize the performance content during planning stages. The AI-based best view splicing technique helps the producers to simulated, distribute images, control angles, and rotate degrees of the devices in presenting the best viewing result. Patent application was raised to create entry barriers which helps the industry to expend worldwide.

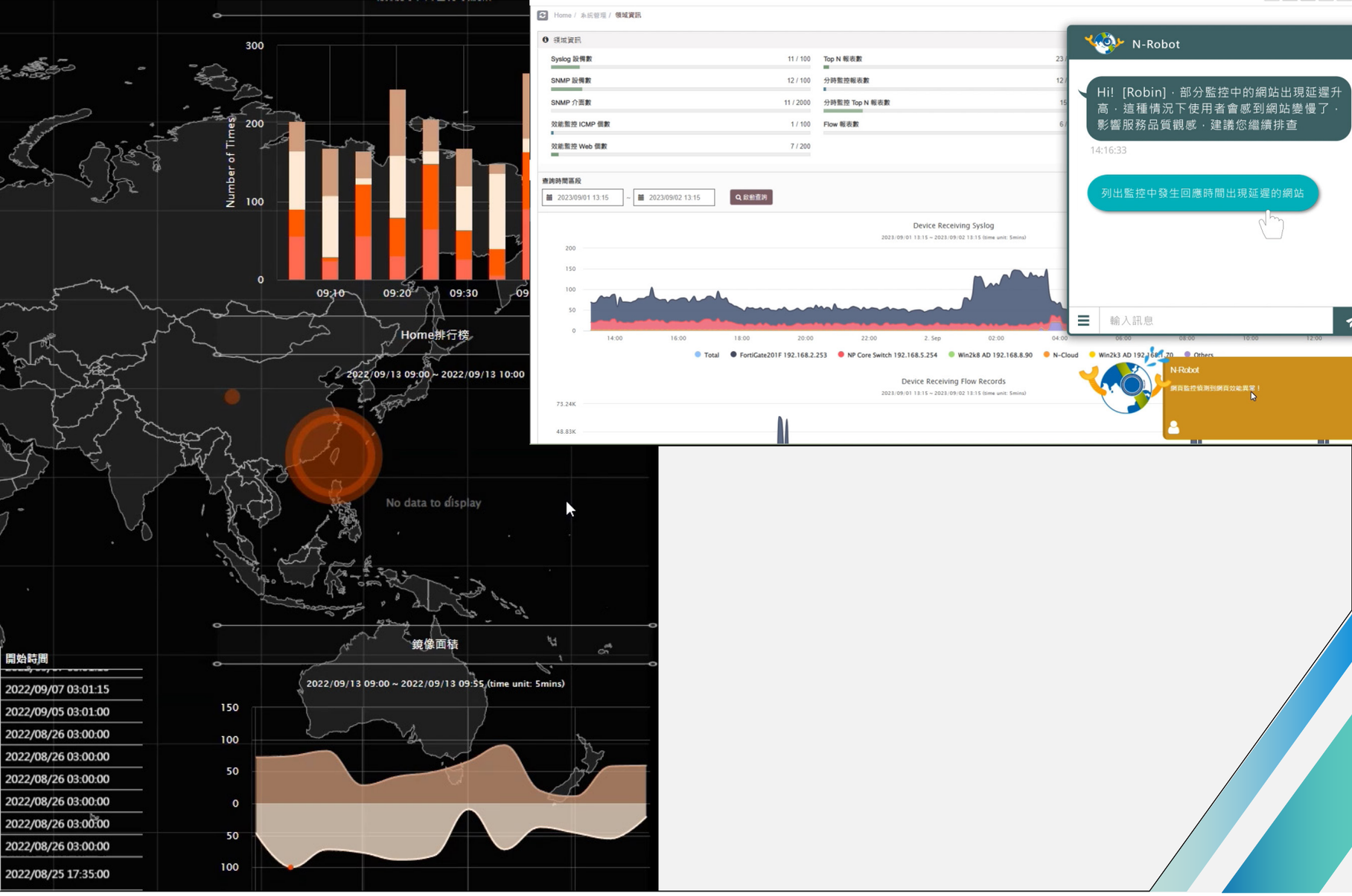
Booth: IA08



AI-Driven Network and Security Operations Platform

Technology Introduction

N-Cloud, developed by N-Partner, features innovative data collection and integration analysis technology that combines various types of data. Our system consolidates and correlates multi-dimensional network and log analysis data, including network traffic, device health status, user digital footprints, and audit logs. This allows IT managers to monitor network status in real-time, alerting and collaborating on cybersecurity threats, eliminating the need for multiple management tools, reducing manual analysis errors and time. This minimizes network downtime and prevents major business losses.



- Affiliated Ministry: EA
- Exhibitor: N-Partner Technology Ltd. Co.
- Contact: Mars mars@npartner.com

Industry Applicability

N-Cloud is an all-in-one platform that integrates network monitoring, flow analysis, and log management to simplify complex IT and cybersecurity operations. With a built-in AI assistant, it delivers 24/7 visibility, detects anomalies, sends real-time alerts, and helps trace root causes in minutes. It reduces manual workload, minimizes errors, prevents downtime, and improves overall IT efficiency across industries.



Adaptive Cold Energr Management System；ACEMS

Technology Introduction

• Technological Innovation – This technology combines AI algorithms and IoT architecture to intelligently regulate freezing, refrigeration and air conditioning equipment in commercial spaces, achieving instant energy saving and automatic demand response. It is also the first to use refrigeration equipment as an energy storage medium to support grid load scheduling, taking into account both food safety and customer comfort.
• Competitive or Intellectual Property Advantages – A non-intrusive refrigerant leakage detection method, and Smart defrost control method.
• Important Achievements / Awards – 2024 R&D100 Awards、2025 Edison Awards.





- Affiliated Ministry: EA
- Exhibitor: Industrial Technology Research Institute
- Contact: David Sung DavidSung@itri.org.tw

Industry Applicability

This system is applied in the food retail industry. Through IoT sensor networks and AI algorithms, it connects the freezing, refrigeration, lighting and air-conditioning equipment in the store, automatically adjusts the operation strategy, and achieves energy saving while maintaining food safety and customer comfort. Recently, we have developed a demand response function and have demonstrated it in specific stores, using equipment pre-cooling/ cooling as energy storage to help the power grid stabilize loads during peak hours.



Solar Panel Defect Image Identification System

Technology Introduction

The image identification of PV system using AI technique for CPC Corporation is developed. Plenty of PV panel images collected utilizing a drone are prepared for machine learning. We combine the PV patterns with IR images to obtain locations with relatively high temperature by threshold setting. The defects may be thus clarified. A user interface is created to assist us with the identification.



- Affiliated Ministry: DSEA
- Exhibitor: CPC Corporation, Taiwan
- Contact: Kuan-Chieh Huang 295973@cpc.com.tw

Industry Applicability

This technique is developed for the maintenance of solar PV systems. It mainly utilizes drones to capture images of PV panels and further employs AI models to identify potential defects for these panels. The problems may be solved as soon as possible in order to make sure the functions of the PV system.

Contact: Chih-Wen Wang 155594@cpc.com.tw

Exhibited Technology

Path to Net Zero: Carbon Capture and Storage (CCS)

Technology Introduction

To introduces CCS technology through AI Interactive Voice System, informative posters or promotional videos, helping the public understand the fundamentals of carbon capture and storage. Visitors can also engage with an interactive Carbon Capture Shooting Game, which playfully illustrates the key steps of flue gas CO_2 capture in large industrial plants - making learning about carbon capture both fun and educational.

Industry Applicability

An AI interactive voice system can be used to virtualize the exhibition and interaction within a carbon capture and storage (CCS) museum. It can incorporate a Carbon Capture Shooting Game to present the main processes of flue gas carbon capture in large factories in an engaging and interactive way. This includes understanding the main components of flue gas, key chemical capture solvents, and CO_2 liquefaction.



Contact: Rosaline rosaline@applasma.com.tw

Exhibited Technology

Air Aurora AI Surface Treatment System

Technology Introduction

AP PLASMA's Air Aurora AI Surface Treatment System is an in-house, commercialized, eco-advanced B2B solution.
AI delivers 3D real-time material/curvature detection and auto-tunes plasma for consistent, flexible results.
It strengthens adhesion, stabilizes downstream steps, and lifts yield.
Modular, CE-certified, and lower-VOC, it integrates fast; supports rubber, TPU, EVA, plastics, and composites.

Industry Applicability

Footwear: surface prep (roughening & pre-bonding) for reliable bonding.
Biomedical: improves contact-lens hydrophilicity.
Lighting: stronger adhesion for antimicrobial coatings on lamp covers.
Sporting goods: durable dissimilar-material bonding (e.g., bicycle saddles, pedals).
Agriculture: works with plasma-activated water (PAW) to reduce nitrogen fertilizer use.





Contact: TSUNG YU CHOU tychou.1544@ttri.org.tw

Exhibited Technology

AI Multispectral Imaging Solution for Blended Fiber Detection

Technology Introduction

This technology combines multispectral imaging and AI to identify blended textile fibers such as polyester, cotton, nylon, and spandex. Using data from visible, NIR, and SWIR bands, the system captures spectral differences among fibers. AI models classify materials with high accuracy, even in complex blends. It enables real-time fiber recognition for textile recycling, automated sorting, and quality control, improving material recovery efficiency and supporting circular economy efforts.

Industry Applicability

This technology is highly applicable to textile recycling, smart sorting, and automated inspection. Traditional manual methods can't handle complex blended fibers. AI multispectral imaging enables accurate, large-scale classification, improving reuse and purity. It suits recyclers, manufacturers, and brands, and supports ESG and zero-waste goals.





Contact: Beck, Hsieh T.Y.Hsieh@itri.org.tw

Exhibited Technology

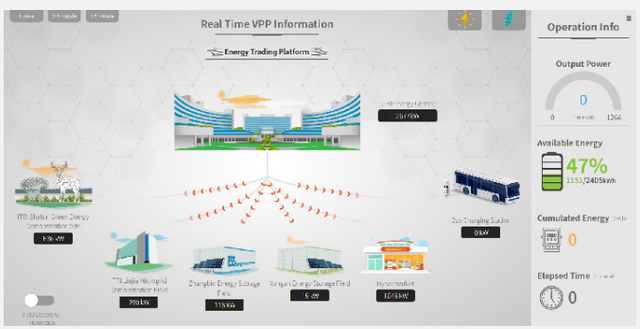
VPP Technology Verification Platform

Technology Introduction

Developing Virtual Power Plant (VPP) technology will enable the effective integration and management of diverse distributed resources, including renewable energy, small generators, loads, charging station, and energy storage. This integration can achieve the functionality of a bi-directionally dispatchable power plant. Key technologies include the VPP decision-making system and the resource management U-Box.
The U-Box, developed by the Industrial Technology Research Institute (ITRI), facilitates the rapid and secure integration of distributed resources into the VPP pool. Coupled with ITRI's VPP decision-making system, it enables the preemptive understanding of resource status and dynamic resource allocation to meet market technical demands.

Industry Applicability

The U-Box developed by ITRI (Industrial Technology Research Institute) enables rapid and secure integration of distributed energy resources to form a virtual power plant. It also functions as a simplified energy management system. Additionally, the virtual power plant decision-making system leverages AI-based forecasting technology to monitor resource margin fluctuations. Combined with dynamic resource management techniques, it enables optimal resource dispatch to meet market demands. This approach helps expand opportunities for private sector participation in Taipower's ancillary services market, thereby enhancing grid operational flexibility.





Contact: Kuo-Ting Lu kuoting_lu@phison.com

Exhibited Technology

aiDAPTIV+ on-premise GenAI training and inference one-stop solution

Technology Introduction

aiDAPTIV+ is a one-stop solution designed for GenAI applications, offering high-efficient, secure and cost-effective GenAI training platform. This product breaks through the limitations of traditional AI computing architectures by our proprietary aiDAPTIVCache and aiDAPTIVLink technologies, enhancing GPU utilization and model training capabilities. It makes LLM training and inference more flexible.

Industry Applicability

aiDAPTIV+ is an all-in-one solution designed for on-premise generative AI training, ideal for critical fields such as medical imaging, academic research, enterprise, and military. It addresses data privacy, cost, and efficiency challenges, enabling organizations to fine-tune and run models securely without relying on the cloud, while reducing long-term operational costs.





Contact: Yuen Lai ikuo@barkingdog.ai

Exhibited Technology

AI AMAZE, a Cross-Platform AI Agent

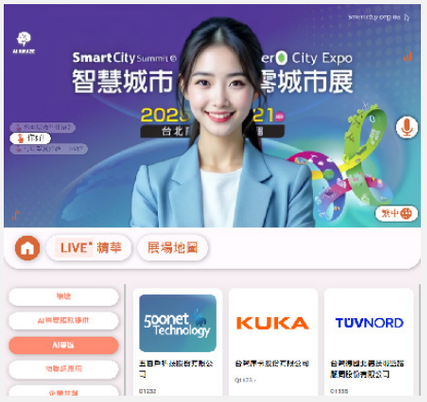
Technology Introduction

AI AMAZE, a cross-platform AI agent, provides enterprises with an excellent one-stop AI solution, helping them improve efficiency and reduce costs internally.
AI AMAZE supports cross-platform carriers (website, phone, social media, kiosk etc.), and the best AI experience through the 1.5 sec instant response natural language communication, and easy-to-use. By collecting uesr experience data, it builds a digital experience platform service for enterprises, creating data-generated marketing, management and purchasing to help generate revenue.

Industry Applicability

The no-code platform AI AMAZE builds 'AI colleagues' fluent in industry's language. Deploy custom, voice-driven agents powered by unique knowledge base. Evolve from standalone tools to a cohesive 'organizational neural network,' driving scalable AI adoption to fuel growth and intelligent transformation.





Contact: Jenny jenny.lu@aira.com.tw

Exhibited Technology

airaTrack Person Tracking Solution

Technology Introduction

Replace manual video review with AI to enhance efficiency and accuracy—track target movement and auto-generate investigation reports.
Unlike typical facial recognition systems, airaTrack requires no face registration, ensuring privacy. It supports cross-camera search, using existing surveillance infrastructure.
Outperforms other AI vendors: no GPU server room required—runs on handheld CPU devices. Matches 10,000 faces per second, enabling rapid, large-scale deployment. Widely adopted across industries and countries, successfully bringing Taiwan's technology to the global stage.

Industry Applicability

In public venues like stadiums, airports, or train stations, manually searching for a missing person or suspect across countless cameras is time-consuming and inaccurate. airaTrack uses proprietary AI to match the target by generating unique ID and instantly locating targets without identity data, cutting 3 hours of work to 10 minutes and boosting search efficiency by 93%.





Contact: Sharon sharon.futurenest@gmail.com

Exhibited Technology

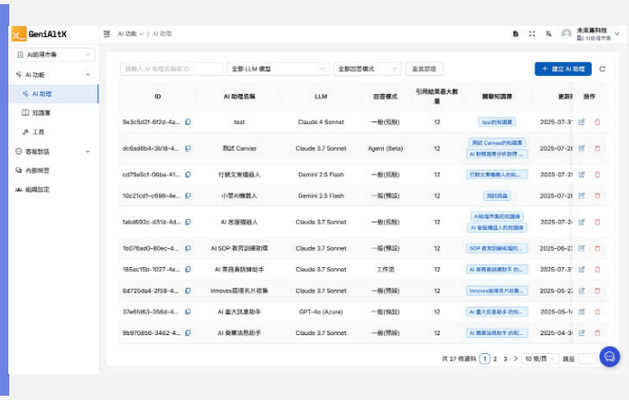
GeniAltX

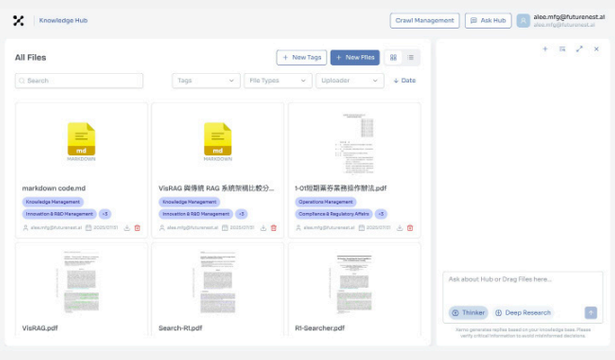
Technology Introduction

Facing challenges like data fragmentation, complex workflows, and delayed responses, Futurenest introduces the GeniAltX Enterprise AI Platform—a complete solution from data retrieval to AI application, featuring:
Xerno: Builds verifiable knowledge graphs from internal and external data with audit and security features.
Xtan: A no-code tool to create custom AI assistants for tasks like customer service, legal review, and auditing.

Industry Applicability

This AI assistant system has been successfully implemented in both the financial and manufacturing sectors. It allows each department to build dedicated assistants for tasks like compliance, finance, and risk control, using only authorized internal data. In manufacturing, assistants help with equipment maintenance, procurement, and knowledge transfer on the production line. Patented technology ensures each assistant accesses only its own department's data, preventing data leakage or misuse. Companies can centrally manage and scale multiple assistants to automate workflows and enhance knowledge access across teams.





Contact: Ava avalynn0902@gmail.com

Exhibited Technology

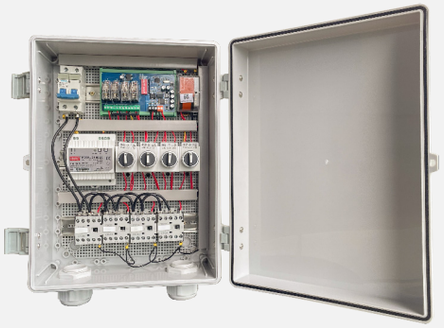
Smart farming IoT modular devices and system

Technology Introduction

KIAO Farming specializes in smart agriculture technologies, aiming to make automation more accessible and scalable. Our product features a decentralized design that can be flexibly installed based on farm size and layout, significantly reducing installation and maintenance efforts. The system includes a no-code programming platform and a range of ready-to-use modules for irrigation, environmental monitoring, and automation. With optional 4G connectivity, farmers can manage and adjust systems remotely in real time. KIAO helps farms of all sizes take practical steps toward smart agriculture.

Industry Applicability

KIAO Farming's sensing and control systems are widely used in both crop production and livestock farming. All hardware adopts a modular design, allowing flexible deployment based on farm size and needs. Key products include weather stations and nutrient solution integration units. The system features a no-code platform with customizable controls and pre-set modules for fast implementation.





Contact: Wei-Yu Li liwy@itri.org.tw

Exhibited Technology

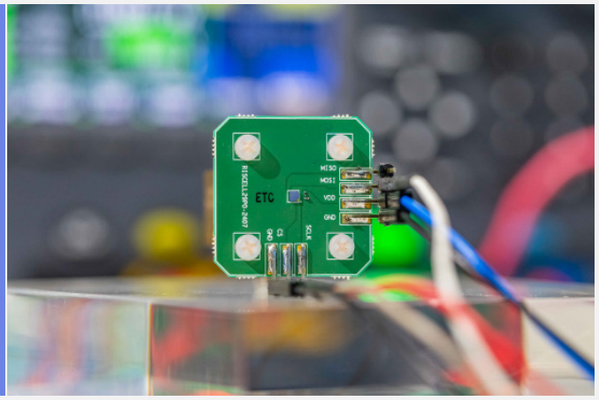
mmWave CMOS IC Integrated RIS Array Technology

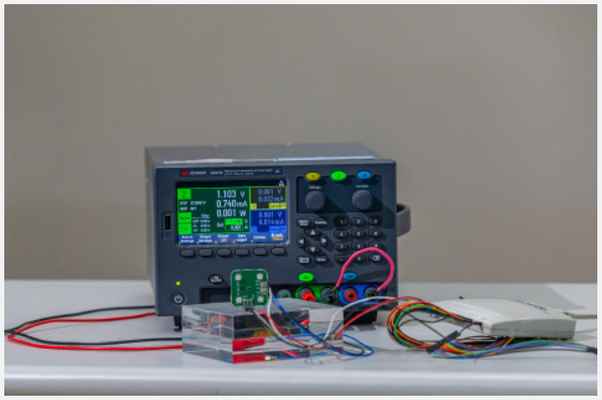
Technology Introduction

ITRI has developed a novel CMOS IC integrated Reconfigurable Intelligent Surface (RIS) technology. It integrates ITRI-designed CMOS chips to control the signal reflecting phase. Each chip achieves low power consumption less than 1 mW, microsecond-scale switching speeds and 3D directional control of dual-polarized reflecting beams. It can dynamically steer signal propagation successfully, eliminate communication blind spots, and improve the signal coverage of mmWave base stations.

Industry Applicability

The RIS array is considered to be one of the important solutions to optimize the performance of mmWave communications. ITRI has developed a novel CMOS IC integrated RIS technology with advantages of low power consumption (≦ 1 mW per chip), microsecond-scale switching speeds and 3D directional control of dual-polarized reflecting beams. Therefore, it can dynamically steer signal propagation successfully, eliminate communication blind spots, and improve the signal coverage of mmWave base stations.





Contact: Hsing-Hao Huang itriA60065@itri.org.tw

Exhibited Technology

Intent-based Network Management Solution

Technology Introduction

In 5G—and especially in future 6G networks—traditional GUI-based operations will struggle to keep up with increasingly complex and dynamic management needs. To address this, Athena Orchestrator introduces the Taiwan's first intent-based networking solution. By leveraging natural language understanding and generative AI, users can simply say what they want, and the system executes it instantly—saving up to 70% of operation time on average.

Industry Applicability

ITRI's intentional interference mitigation intelligent network management solution currently provides a set of technologies that can greatly reduce the operation threshold of network management personnel according to the needs of telecom operators, and proposes intentional solutions for common interference problems in the network, helping domestic manufacturers to develop more diversified end-to-end private network system solutions.





Contact: Yu-Hsiang Liu ysliu@itri.org.tw

Exhibited Technology

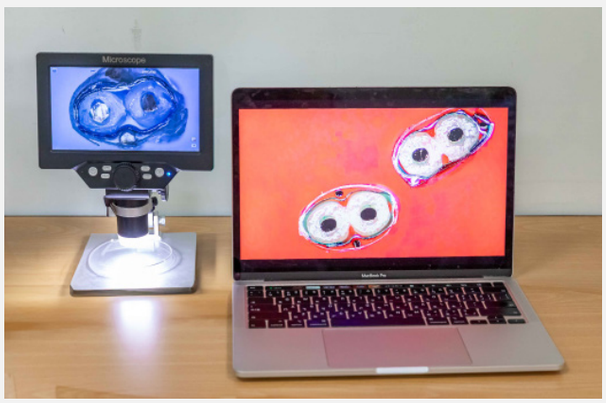
Ultra-high-speed Transmission Line Precision Molding Technology

Technology Introduction

This technology uses supercritical fluid-assisted extrusion to control foaming porosity (10–30%), reducing signal loss. A dual-core co-extrusion ensures stability and consistency. HDPE replaces PTFE to cut costs while maintaining performance. The unique shielding and grounding design reduces Suckout and enhances signal stability, supporting PCIe 4.0/5.0, USB4, and HDMI 2.1 for localized, high-speed cable production.

Industry Applicability

Our innovative technology enables the easy manufacture of high-frequency electrical cables, ideal for enterprise servers, data centers, and network switches. We partnered with an electrical component manufacturer, providing expertise in mechanical design, electromagnetic simulations, and manufacturing verification. By integrating our cable and connector development with manufacturing technologies, we swiftly transform innovative concepts into commercial realities.





Contact: Shin-Yi Wu sywu@itri.org.tw

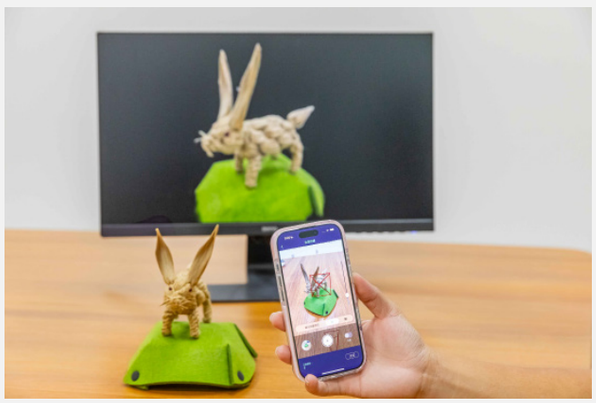
Exhibited Technology
Photorealistic 3D Model Reconstruction and Rendering technology

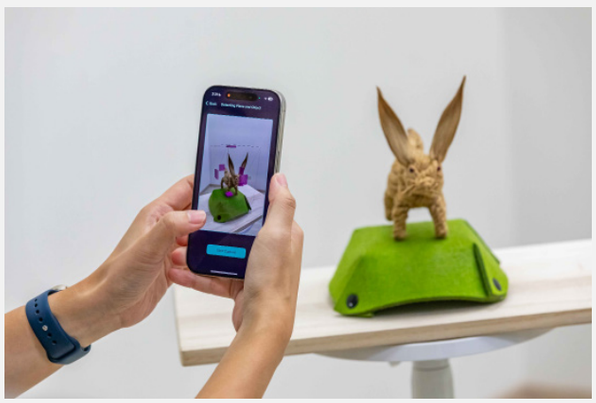
Technology Introduction

This technology leverages advanced 3DGS (Gaussian Splatting) to overcome traditional 3D modeling bottlenecks—long processing time, high labor cost, and lack of realism. By capturing around an object with iPhone about 3–5 runs, it generates a detailed, background-free 3D model in just 30–60 minutes—1/8 the time of conventional methods. The model is web-viewable, accurately presenting textures and materials. Ideal for exhibitions, marketing, and e-commerce, it cuts setup costs, removes spatial limits, and enhances user interaction.

Industry Applicability

Realistic 3D modeling is emerging as a powerful communication tool for product manufacturers. By collaborating with system integrators and promoting through e-commerce and exhibition channels, the technology can expand across industries and metaverse applications. Backed by 3DGS and adopted by Yingyue Co., Ltd., it enhances virtual showrooms—boosting exhibition attendance by 50%—and shows strong market potential as 3D displays and AI continue to advance.





Contact: An ch.an@swart.com.tw

Exhibited Technology

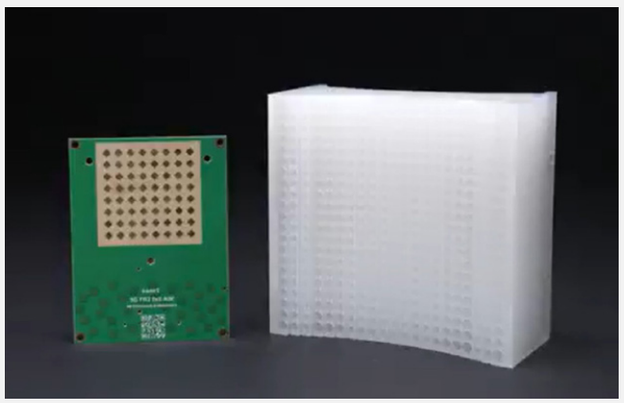
Lens antennas cut costs and boost next Gen. communication development

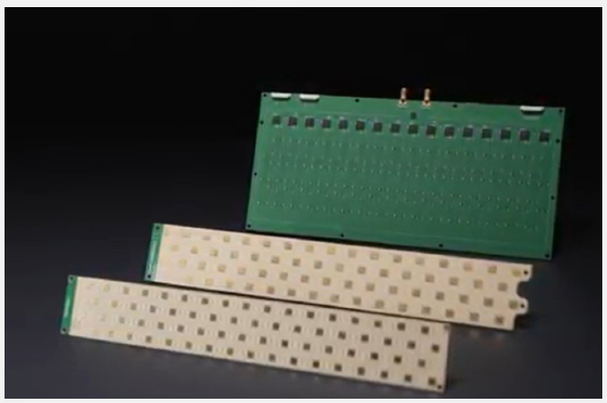
Technology Introduction

Swart develops millimeter-wave solutions using geometric optics and RF circuits. Our design reduces antenna components and BFICs by over 40% costs down while high performance.
We offer AESA, hybrid and passive modules with advanced lens antennas for 5G FR2, FWA, AIoT and satellite applications. Features include high EIRP, ±60° coverage and fine beam resolution—ideal for drones, radar, satellites and smart cities.
Our team provides custom solutions to help clients launch faster and stay ahead.

Industry Applicability

Swart Team – Experts in mmWave RF and Lens Antenna Technologies
Applications:
5G FR2: Private networks, mobile, FWA
Satellite: LEO/GEO terminals, mobile use, emergency comms
AIoT & Smart Cities: Smart streets, multi-device networks
Drones: Stable data links
Defense Radar: High resolution, Signal protection, beam tracking
Core Values:
Compact, low-power, modular solutions for cost-effective deployment — from ground to space.
Enabling fast, reliable, low-latency communication.





Contact: Jen-Feng Huang JenFengHuang@itri.org.tw

Exhibited Technology
Transport Solutions of 3GPP Non-Terrestrial Network (NTN)

Technology Introduction

We offer a 3GPP NTN-compliant base station solution based on Open RAN architecture, allowing mobile operators to enable satellite communication via software upgrades. Using transparent satellite mode, traditional operators (e.g., TV broadcasters) can reuse existing satellites for mobile services. Users can connect directly with standard smartphones, avoiding proprietary hardware. This lowers entry barriers, supports consumer-grade products, and brings satellite connectivity into everyday mobile networks.

Industry Applicability

Lost signals in mountains, seas, or flying will soon be history. 3GPP NTN technology lets phones connect directly to satellites without extra equipment, breaking base station limits and achieving true global coverage. Telecoms can expand services via software upgrades, while satellite operators revitalize resources and enter new markets. This lowers barriers, encourages affordable devices, and expands applications in healthcare, agriculture, disaster relief, and aviation—driving industry growth.





Contact: Cheng-Chung Chen m400ccchen@itri.org.tw

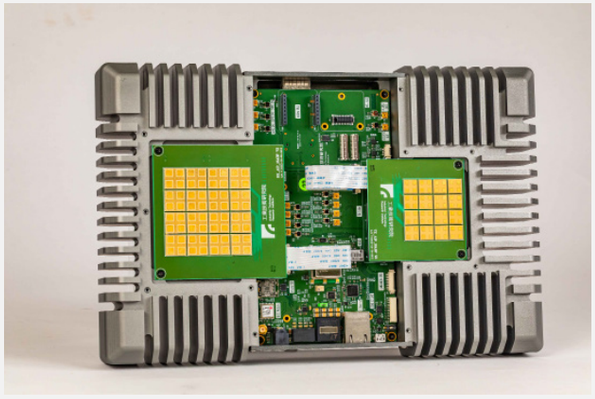
Exhibited Technology
RF Front-End Technology for LEO Satellite Ground Equipment

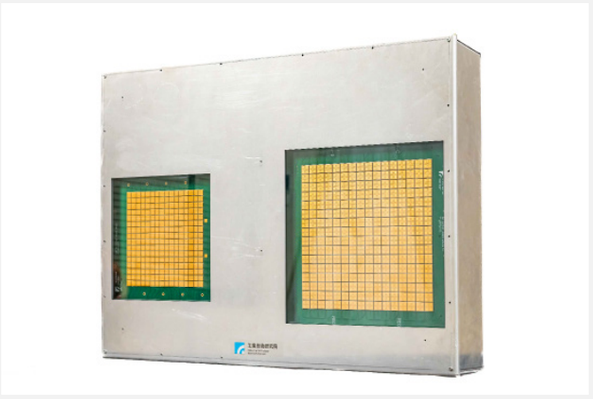
Technology Introduction

LEO satellite communications grow, but Taiwan faces reliance on imported RF chips, high costs, and tech barriers limiting industry growth.
We offer Taiwan's first Ka-band LEO ground RF front-end solution, fully in-house from chips to antennas. Using CMOS and GaN tech, we deliver efficient, low-power, customizable RF products matching global performance at lower cost.
With scalable tile-based architecture and high-speed digital control, the system supports wide temperatures and versatile land, sea, and air use—advancing Taiwan's communication tech toward autonomy.

Industry Applicability

With rapid LEO satellite deployment, communication overcomes terrain limits. This tech offers a full RF front-end solution for ground stations, drones, ships, and vehicles. It's energy-efficient, low-latency, and low-power, ideal for long-term, space-limited use, boosting performance and flexibility. Custom designs accelerate adoption, advancing IoT and transport. It's a communication breakthrough driving industrial upgrade and independence.





Contact: Celia Lin pr@rapidtek.net

Exhibited Technology

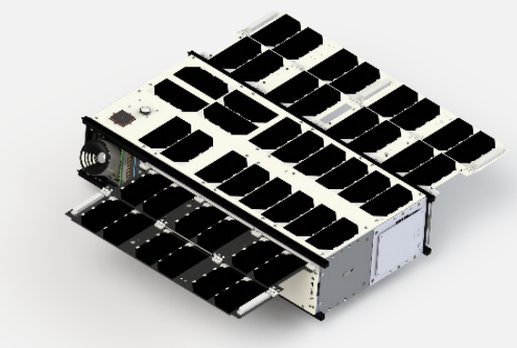
8U Cubesat,Ka User Terminal

Technology Introduction

Rapidtek has developed a Ka-band Tx/Rx hybrid phased array module designed specifically for satellite applications. The module integrates phased array antennas, up-conversion functions, antenna control units, and fast beam pointing algorithms, significantly improving the performance of satellite communications.

Industry Applicability

The Ka-band receiving station module developed by Rapidtek integrates advanced phased array antennas, up-conversion circuits and beam control units. It has fast beam pointing capabilities, which can greatly improve the reception stability and flexibility of satellite signals, and support forward-looking applications such as 5G NTN architecture and intersatellite communications.





Contact: Krissy Pai tech@ubestream.com

Exhibited Technology

AIspeakin

Technology Introduction

AIspeakin is the real-time/non-real-time multi-lingual speech recognition transcription, translation and transliteration engine.. It currently supports speech recognition, translation and speech generation in multiple languages such as Chinese/English/Japanese/Korean, Southeast Asian languages, Indian/Arabic and European languages, covering more than 80% of the global market population.

Industry Applicability

The engine is independently developed by Ubestream, and the AI server is located in Taiwan. AIspeakin supports multi-lingual real-time translation and transliteration at the same time. It is Taiwan's sovereign AI. Users will not have to worry about their data being transmitted overseas, and their personal privacy may be captured and collected by public AI service engines for training.





Contact: Sean Lee sean.lee@rapidtek.net

Exhibited Technology

Azimech, COTM User Terminal

Technology Introduction

Azimech is a portable two-way communication terminal device that can quickly complete beam switching and target tracking in different mobile environments. The modular design can quickly replace or support different modulators to improve the flexibility of use.
Supports OneWeb LEO and OpenAMIP GEO satellite communication modules, built-in GPS and sensors, can stably grasp the location and direction of the device.

Industry Applicability

Azimech is suitable for high-mobility scenarios that require stable connectivity, especially in ocean shipping, disaster response, and enterprise remote networking. For ships at sea, vehicle-mounted equipment, or temporary response centers, its omnidirectional tracking function and fast switching capabilities ensure that communications are maintained even when moving or in changing environments.





Contact: Hui-Ching KO koching@itri.org.tw

Exhibited Technology

5G Empathetic Wearable Device – Inclusive Music Perception Program for the Hearing-Impaired

Technology Introduction

The 5G Empathetic Wearable Device is a sound-to-body conversion technology designed for wearable applications. By integrating sound analysis, signal classification, and tactile mapping, it transforms audio signals into multi-point vibration feedback, enabling deaf or hearing-impaired users to feelmusic through the skin.The device is equipped with nine independently controlled actuators, Paired with 5G or near-5G high-speed transmission modules, the system supports real-time synchronized sensing and output across large venues.

Industry Applicability

Cultural Performance and Exhibition Industry:Applicable to concerts, stage performances, museums, and art installations to provide accessible cultural experiences for all. Education and Special Education:Functions as an assistive tool for arts education, supporting music classes and creative learning in schools for the hearing-impaired.
Long-term Care and Health Promotion:Integrated into senior wellness programs (e.g., for dementia or Parkinson's patients) to support nostalgic therapy and sensory stimulation.





Contact: Teresa Huang teresa.huang@flowviewtek.com

Exhibited Technology

FlowTrack

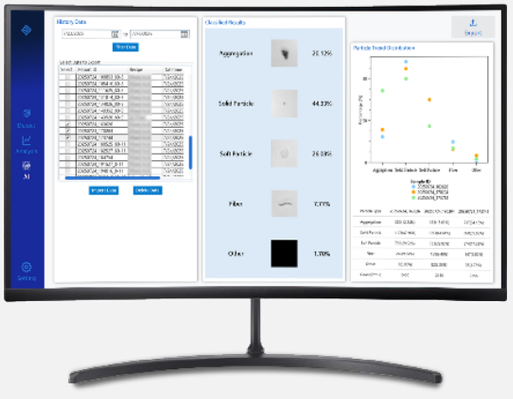
Abstract

This AI-powered imaging system detects micro-contaminants in liquids efficiently, overcoming limits in identifying translucent and mixed particles. It uses deep learning to classify soft particles, crystals, hard granules, agglomerates, and bubbles, enabling real-time analysis and improved data consistency.

Applications

Combining deep learning with liquid flow features, FlowTrack detects contaminants in static and dynamic states. It fits various industries, especially wet-process steps, as a key tool for quality control. It offers fast classification, tracks trends, traces sources, cuts downtime, and boosts yield and product quality.





Contact: Gary Wang garywang@generalplus.com

Exhibited Technology

Highly-integrated edge AI computing SoC with Embedded DRAM

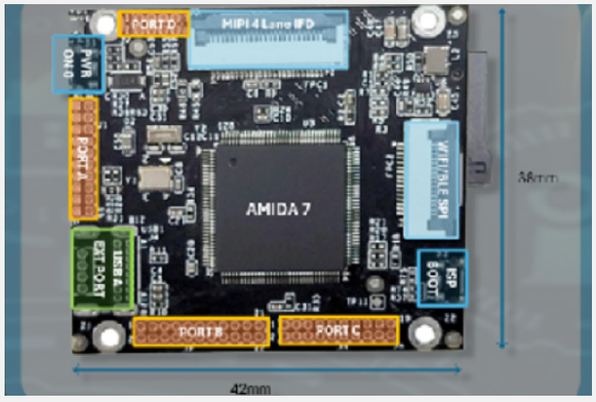
Abstract

This next-generation multimedia streaming platform combines edge AI computing with a high-performance Cortex A7 processor, built-in GPDLA (Generalplus Deep Learning Accelerator) and system-level DDR2 or LPDDR2. Developers can easily deploy their completed AI models to GPDLA using a conversion tool, executing tasks at a power efficiency of less than 1W.

Applications

Developers can easily deploy their completed AI models to GPDLA through a conversion tool, executing tasks at a low power consumption of less than 1W and outputting results via wireless, HDMI, LCD/MIPI, etc. Alternatively, customers with different application scenarios can choose existing AI algorithms developed by Generalplus in collaboration with AI algorithm 3rd parties and quickly deploy them into application products, accelerating AI implementation.





Contact: Justine tsai justine.tsai@etron.com.tw

Exhibited Technology

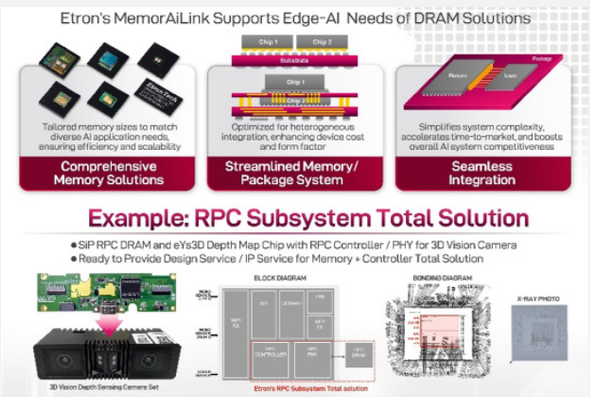
AI Memory Platform–MemorAiLink /AI+Subsystem Solutions- XINK NANO Edge AI

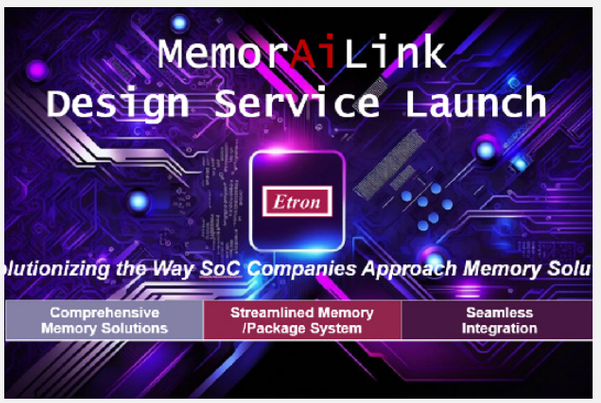
Technology Introduction

MemorAiLink is an AI memory platform that integrates software and hardware architecture to provide solutions for the integration of memory and packaging technologies between different systems, meet capacity and bandwidth requirements, improve overall SoC performance and reduce costs, and help customers gain a competitive advantage in the AI field.

Industry Applicability

In addition to providing a variety of memory options to meet the capacity and bandwidth requirements of SoC design, it also combines Etron's expertise in heterogeneous integration to effectively reduce complexity, shorten time to market, and provide customers with more competitive solutions. Especially in the field of AI applications, it will provide customers with an excellent development experience.





Booth: IC03

Contact: Standly Lee standly.lee@superc-touch.com

Exhibited Technology

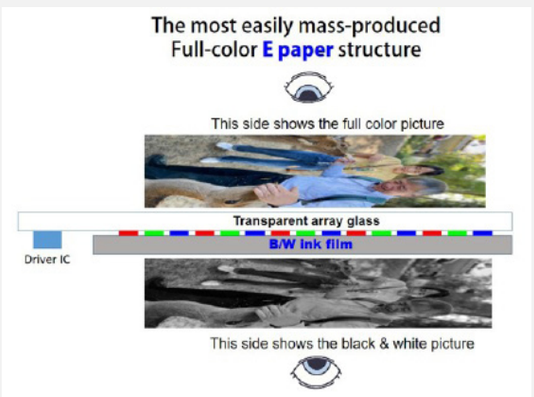
New generation full color e-paper

Technology Introduction

SuperC-Touch first innovates front viewing theory: it can greatly simplify the production process, improve yield and reduce costs. New color filter technology: improve color saturation to solve the existing problem of poor color. New driving principle: increase the grayscale from the existing 16 levels to 64 levels, and increase the fineness of the picture quality. Innovative micro-compartment structure: replace the existing microcapsule and microcup structure, which can greatly increase the brightness of the display.

Industry Applicability

SuperC-Touch evolved the DES technology into micro-compartment technology to solve the fatal problem of ink leakage caused by ink filling. It allows LCD panel manufacturers to painlessly switch to mass production of e-paper without changing equipment. STC completely solved the key pain points of e-paper: screen flickering, residual images, inaccurate colors, insufficient brightness and many other shortcomings.





Contact: Corrine Wang corrinewang@steady-beat.com

Exhibited Technology

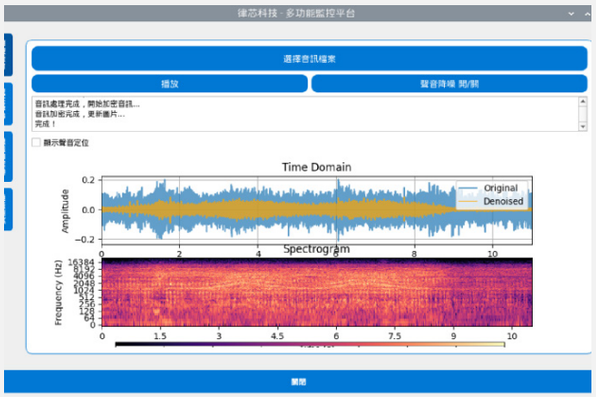
Multimodal AI sensing and analysis model

Technology Introduction

Multimodal AI sensing models integrate data from various sources—such as vision, waves, and physiological signals—for comprehensive analysis and smarter decisions. Each modality offers complementary insights: visual data shows scenes, audio aids speech and sound recognition, and physiological signals support health and emotion monitoring.

Industry Applicability

This model enhances passenger safety and comfort via audio-visual detection of fatigue, emotions, and emergencies. Noise reduction ensures clear interaction and sound recognition. In unmanned vehicles, multimodal sensing enables smarter control and monitoring, with applications in agriculture and defense.





Contact: Corrine Wang corrinewang@steady-beat.com

Exhibited Technology

Capacitive Deionization (CDI)

Technology Introduction

Factories face hidden costs in water treatment—high carbon emissions and scaling. Our Capacitive Deionization (CDI) system uses electric double-layer technology to remove divalent ions without chemicals, replacing ion exchange resins. With hydrophilic carbon electrodes, we deliver high recovery, low energy use, and reduced RO scaling. Ideal for industry and homes alike, CDI is a smart, sustainable step toward net-zero and cleaner water.

Industry Applicability

A semiconductor plant processes approximately 10,000 tons of tap water daily, and 10 resin systems emit ~10,483 tons of CO_2e annually. Our team has developed industrial-grade capacitive deionization technology that reduces resin regeneration and chemical use, saving NT$78.2M and cutting 5,106 tons of CO_2e per year. In partnership with drinking water system manufacturers, we've modularized the system and optimized carbon pore structure and ion selectivity for faster adoption in ultrapure water.





Contact: Chan-Wei Hsu ChanWei-Hsu@itri.org.tw

Exhibited Technology

NaPoGlass : Metal Ion Capture Material

Technology Introduction

Electroplating in Taiwan's water hardware industry produces heavy metal wastewater, typically treated with chemical coagulation, which generates sludge and limits reuse. NaPoGlass—a stable, nanoporous material made from inorganic oxides and waste glass—offers high metal ion adsorption and reusability . Used by 10 companies, it enables metal recovery, water reuse, and CO_2 reduction (100 tons), recycling 10,000 tons of water.

Industry Applicability

The NaPoGlass heavy metal wastewater recycling system has helped surface treatment companies tackle metal-laden wastewater issues. Compared to chemical coagulation, it saves 5,000 tons of water and reduces 20 tons of sludge annually per facility, while driving nearly NT$10 million in tech investments. Now expanding into the semiconductor and electronics sectors, it supports a green transformation in industrial water treatment.





Contact: Chen-Hua Kao DianeKao@itri.org.tw

Exhibited Technology

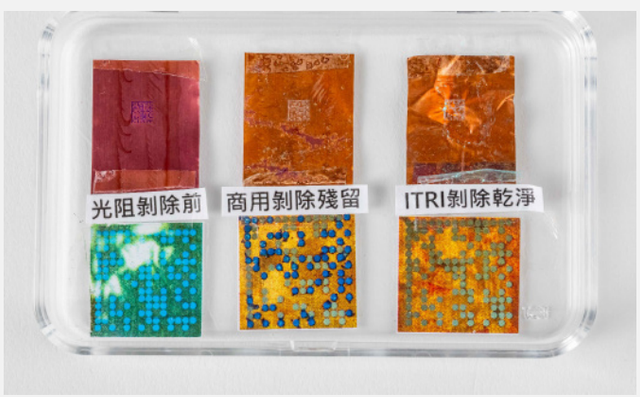
ECO-friendly Non-toxic Photoresist Remover

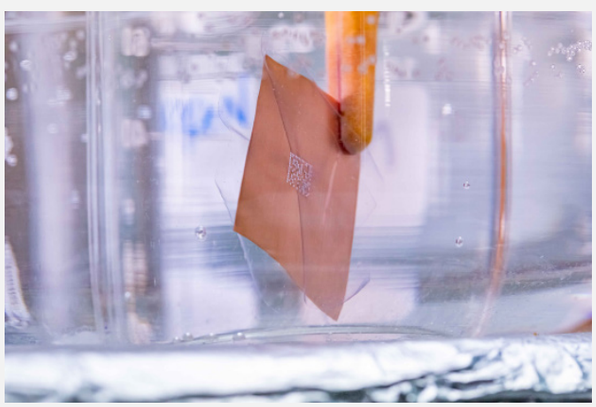
Technology Introduction

With ongoing miniaturization in electronics, traditional alkaline photoresist strippers face issues like residue and blocked vias. This technology leverages interface modifiers to improve photoresist permeability, enabling a non-toxic, ammonia-free, green stripper. Proven in industry trials, it cuts stripper use by 40%, eliminates rework, and achieves over 97% yield—enhancing efficiency and sustainability.

Industry Applicability

This green photoresist remover is tailored for high-performance computing, smart electronics, and automotive PCBs. Co-developed with top domestic PCB and chemical firms, it has been successfully commercialized. It solves residue and via clogging issues, cuts remover use by 30%, eliminates rework, and achieves over 97% yield. Through licensing, it helps firms gain early market advantages, save energy, cut carbon, and boost competitiveness.





Contact: Wei-Che Chuang twjack@itri.org.tw

Exhibited Technology

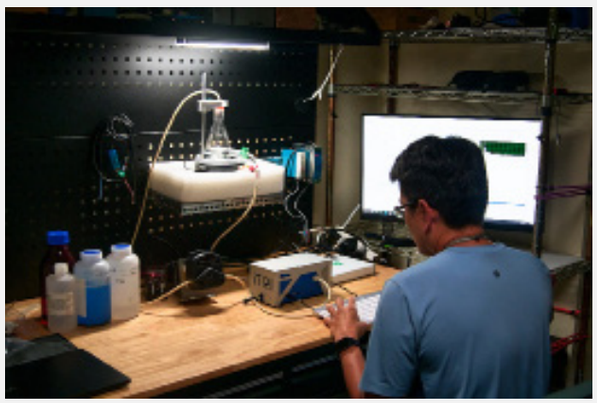
Smart Sensing Technology for the Cleanliness of Chemical Plating Solutions

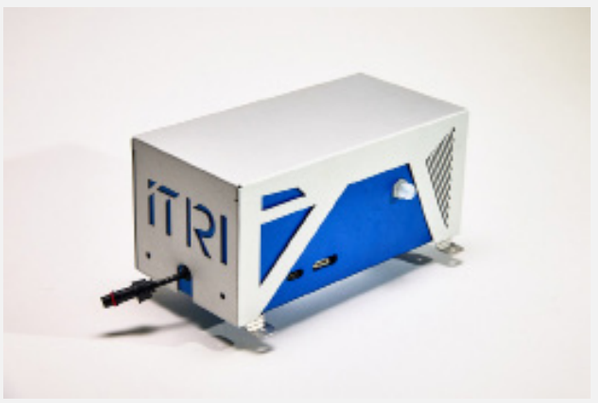
Technology Introduction

The main carbon emission in ABF substrate process comes from electroplating. Poor bath cleanliness causes nodules and scrap. Most particle counters are imported, lacking sensitivity and resistance to interference. This technology provides high-sensitivity, continuous monitoring to detect bath anomalies early. Algorithms with optical absorption and size compensation reduce interference and improve accuracy. Deployed in leading ABF lines, reducing 2,040 tons carbon yearly and 76,500 tons by 2030.

Industry Applicability

Industry Impact:
Solves 20% defect rate and related carbon emissions in domestic high-end wet processes from poor cleanliness control.
Key Partnership:
Real-time bath cleanliness monitoring in leading ABF substrate lines cuts optical repairs and reduces carbon by 2,040 tons yearly, with 76,500 tons projected by 2030.
Scalable Application:
Adopted by leading manufacturers, expanding to semiconductor, electronic, PCB, packaging, and display industries—enhancing energy savings and carbon reduction.





Contact: Chih-Chiang Weng PeterWeng@itri.org.tw

Exhibited Technology

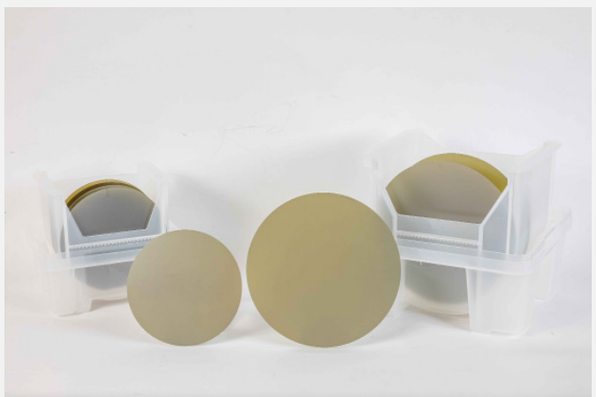
High-Efficiency Processing via Material Modification

Technology Introduction

The first large-area plasma material modification equipment under atmosphere, which induces wafer stress homogenization before processing and reduces subsequent processing damage; the process under atmosphere is easy to integrate into the current wafer cutting, grinding and polishing processes

Industry Applicability

Making silicon carbide wafers is tough—cutting often causes warping. Traditionally, fixing this meant five days of high-temperature baking, wasting energy and time. Our new plasma technology offers a smarter way. Like a stress-relief spa for wafers, it gently releases stress using energy-rich particles, with no need for extreme heat. The result: improved wafer quality, greater energy efficiency, and a more sustainable, high-performance manufacturing process.





Contact: Yi-Hsiang Huang physictim@itri.org.tw

Exhibited Technology

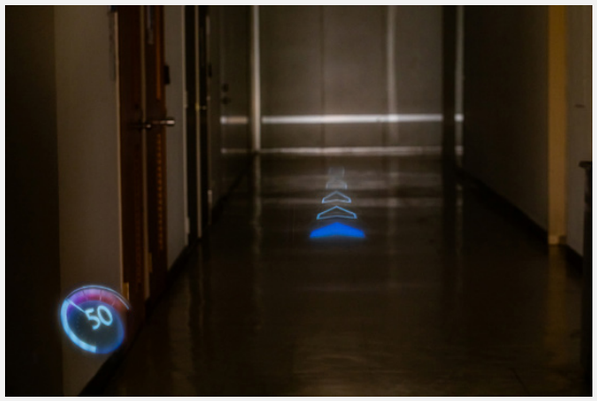
3D Augmented Reality Head-Up Display System (3D AR-HUD)

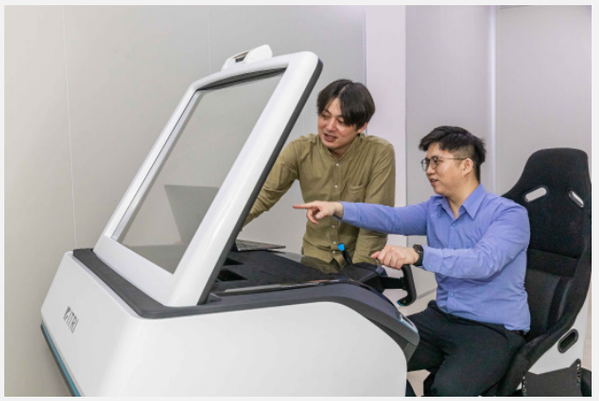
Technology Introduction

The rapid evolution of display tech has surged demand for immersive, high-fidelity imagery, propelling 3D AR displays. Unlike 2D HUDs, light field AR-HUDs offer a continuous depth of field (5-15m), wide field of view (13° x6°), and high brightness (1,000 nits), seamlessly blending virtual and real visuals. Integrating a transparent projection module with eye-tracking technology allows instant image adjustment, reducing eye fatigue and enhancing safety/immersion.

Industry Applicability

This technology brings together display panel, system, equipment, and module manufacturers from Taiwan and abroad to create 3D AR-HUDs. This boosts Taiwan's competitive advantage in the premium automotive display sector. We've used innovative tech to secure 15 patents across 5 cases, ensuring our tech lead and market protection. Growing demand for smart vehicles will draw more investment, speeding up 3D AR-HUD commercialization and advancing Taiwan's smart display industry.





Contact: Yi-Hsiang Huang physictim@itri.org.tw

Exhibited Technology

Panoramic Head-Up Display (P-HUD)

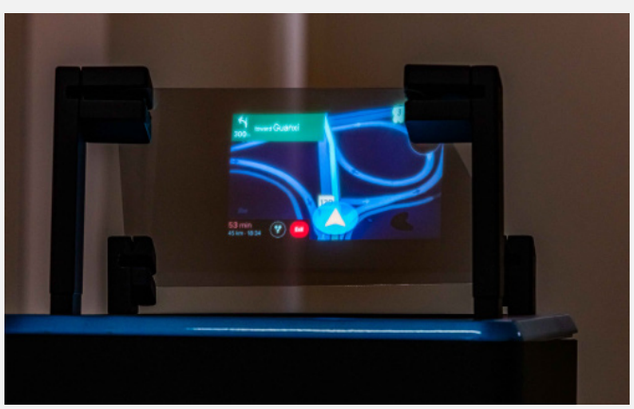
Technology Introduction

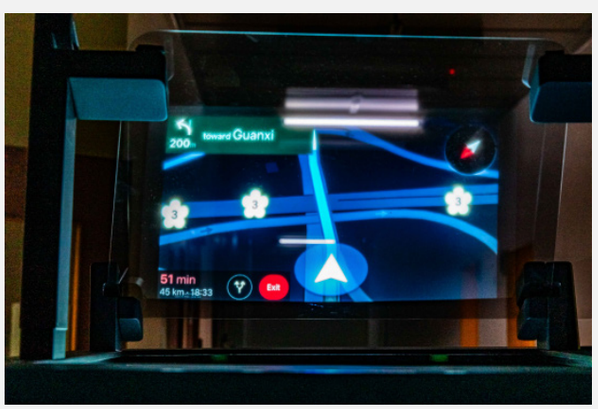
This innovative system uses anti-diffraction optical patterns and multilayer microstructures to project clear, bright images directly onto a car's windshield. Images stay sharp from any viewing angle, and reflections are minimized for an unobtrusive display.

Crucially, our technology is compatible with existing panel manufacturing processes, enabling mass production. It's ideal for windshield displays, smart navigation, and AR interactive systems, poised to drive the next generation of automotive display technology.

Industry Applicability

In the future, this technology can be directly integrated into current panel manufacturing processes for mass production. It will be a key factor in advancing next-generation in-car display technology, with applications in automotive windshield displays, smart navigation, and even AR interactive displays.





Contact: Yiu-Hsiang Chang yhchang@itri.org.tw

Exhibited Technology

Advanced Packaging for High Aspect Ratio Glass Substrates Development

Technology Introduction

As Moore's Law slows, heterogeneous integration has become essential for boosting system performance and functional density. Advanced packaging now plays a central role in enabling such integration. This study develops Through-Glass Via (TGV) technology, highlighting innovative wet metallization and high-aspect-ratio electroplating processes pioneered by ITRI. These methods effectively address the adhesion and filling challenges of PVD in deep vias, offering a practical, scalable solution for next-generation heterogeneous packaging.

Industry Applicability

1. Providing a Comprehensive Domestic Solution for Panel-Level Packaging Materials and Equipment.
2. Collaborative Field Validation with End Customers
3. Over Five Years of Collaboration with Corning Inc.





Contact: Chien-Jung Huang ChienJungHuang@itri.org.tw

Exhibited Technology

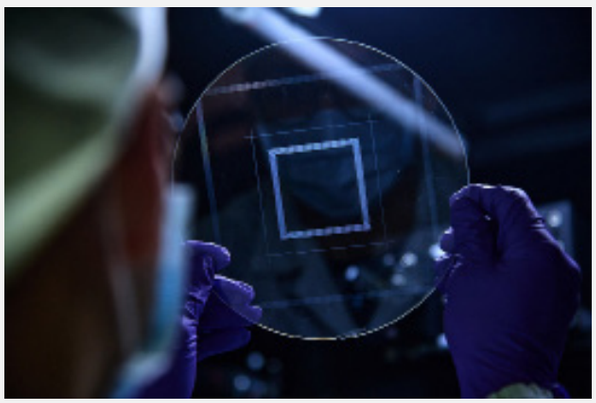
TGV Laser Drilling and Metallization Technology with High Aspect Ratio

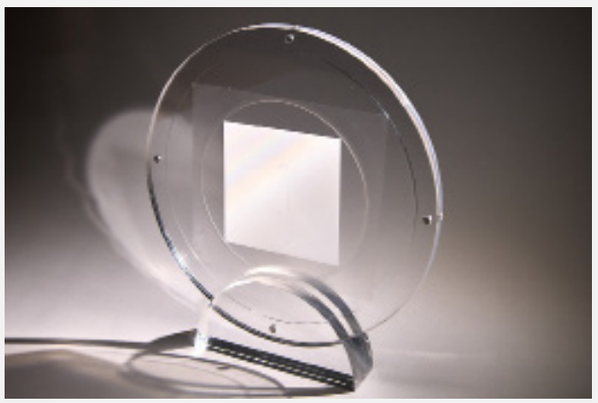
Technology Introduction

ITRI has developed advanced laser drilling technology for TGV interposers, integrating an ultrafast laser, a self-developed adjustable optics module, and a fluorine-free etching process. This enables substrate processing with aspect ratios up to 25, meeting high-density and high-I/O demands for 3D IC packaging. Compared to mechanical drilling, it boosts speed, reduces tool wear, and cuts carbon emissions by over 40%.

Industry Applicability

This technology is applied to 2.5D and 3D IC advanced packaging equipment, supporting the transformation of the domestic panel industry toward the advanced semiconductor packaging sector.





Contact: Eddie Chang changjengjr@itri.org.tw

Exhibited Technology

AI PIM

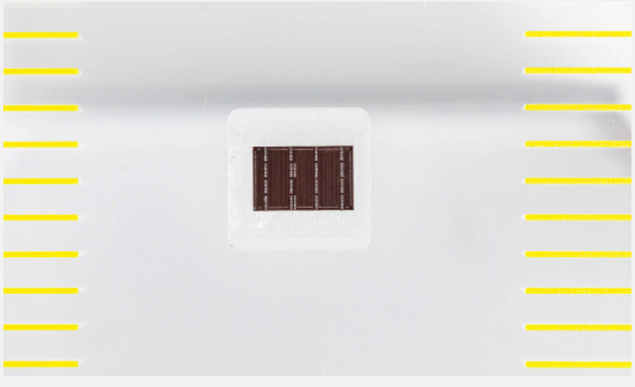
Technology Introduction

Generative AI is a pivotal trend, set to fuel economic growth and societal change, spreading from cloud computing to the edge (consumer electronics, smart homes, IoT).
Existing AI designs face a memory wall. GEMV (General Matrix-Vector multiplication) operations—high data transfer, low computation—are responsible for 60-80% of generative task latency. AI PIM (Processing-In-Memory) executes GEMV in memory, delivering 8x bandwidth and 90% less power. Its JEDEC standard interfaces ensure seamless integration for rapid large language model deployment at the edge.

Industry Applicability

We develop high-performance, low-power computing solutions built around the MOSAIC 3D AI chip. Through the integration of Best-Fit AI and advanced high-bandwidth memory management IP, we address key technological gaps in the AI chip sector. This empowers Taiwanese companies with a heterogeneous integration advantage, perfectly suiting the future of smart and edge computing, and solidifies Taiwan's role as a top global AI chip provider.





Contact: Debbie Tsai tstsai@itri.org.tw

Exhibited Technology

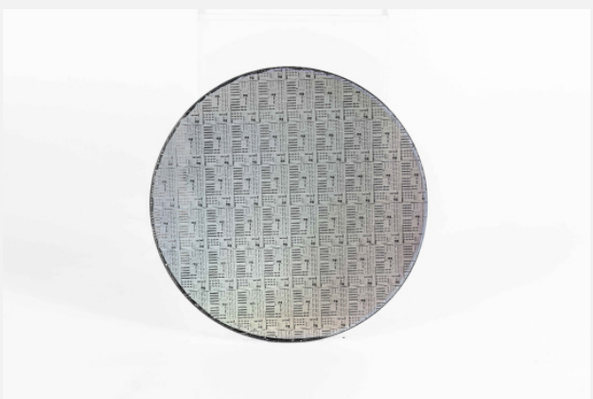
Empowering the Future of Data Centers: Silicon Photonics Technology

Technology Introduction

To support next-generation AI computing and high-speed data analytics, ITRI developed a 1.6Tbps pluggable optical engine module using high-speed optoelectronic integration. It features low power consumption, low packaging and optical path loss. With an innovative fiber interface design, it enables efficient optical-chip integration, overcoming computing and transmission bottlenecks in traditional data centers. The module is ideal for high-performance computing applications such as AI, cloud computing, and telecommunications.

Industry Applicability

This technology is highly compatible with existing optical communication packaging lines, enabling rapid deployment and mass production. By connecting key players across optical chip design, fabrication, and fiber-optic packaging, it fosters close upstream-downstream collaboration and strengthens Taiwan's silicon photonics ecosystem. This drives industry upgrades, delivering value for high-performance computing, AI, and telecommunications.





Contact: Justin Chen justinchen@itri.org.tw

Exhibited Technology

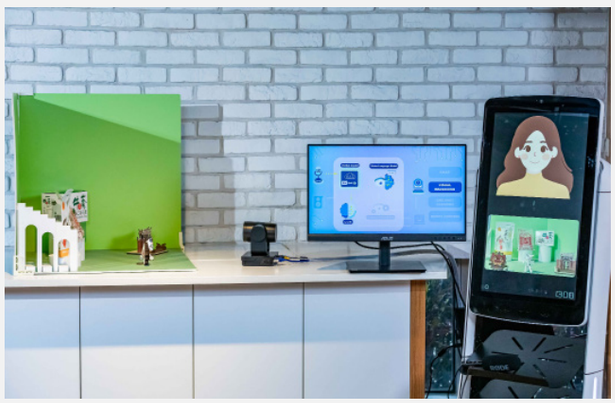
Edge AI Integration for Large-Scale Model Software & Hardware

Technology Introduction

The system uses a Large Language Model to understand spoken commands and coordinate visual, speech, and tracking models for precise PTZ camera control, enabling natural human–AI interaction. Its Visual RAG architecture allows instant, one-shot object learning without large datasets. All AI models run locally, ensuring fast response, efficient performance, and strong data privacy—marking a new era of practical, real-time AI.

Industry Applicability

Applies across industries:
In manufacturing and warehousing, it aids intelligent robots in inspection, logging, and anomaly detection. In semiconductors, it verifies circuit layouts and suggests design fixes. For IP management, it interprets patents and extracts key features. In customer service, it merges voice/visual interaction for smart experiences. In healthcare, it supports diagnostics and privacy. In education, it boosts analysis, research, and personalized learning.





Contact: Chien Hsun Chu cch7759@itri.org.tw

Exhibited Technology

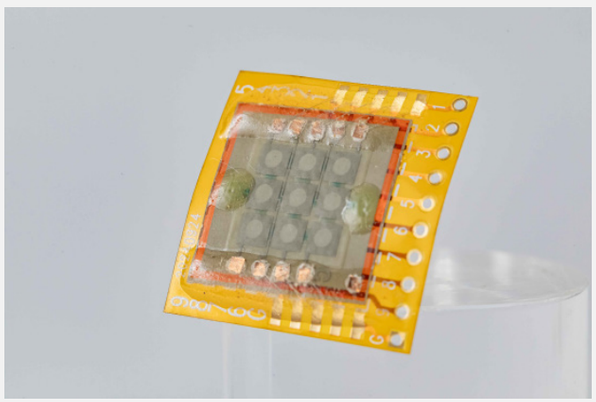
Composite Haptic Feedback Module Technology

Technology Introduction

In response to future demands for virtual-real interactive applications, we've integrated thin-film processing with haptic component design technologies to develop a haptic feedback module. This module features a deformation of 0.5mm, vibration of 0.5G, and a resolution of 9 dots/cm^2, providing a 'third sense' to enhance immersive experiences. It can be applied in areas such as smart medical remote haptics, touch inspection training, and bionic robot haptics.

Industry Applicability

The global AR/VR market is booming. Beyond visuals and audio, major AR companies are integrating haptic devices like gloves for deeper immersion. Current haptics are limited by single sensations and bulk. This new thin-film processing technology offers a lightweight, versatile composite haptic feedback solution, overcoming these issues. It's modular and applicable across entertainment, healthcare, and education, unlocking new industry possibilities.





Contact: Terry Wang wangtaijui@itri.org.tw

Exhibited Technology

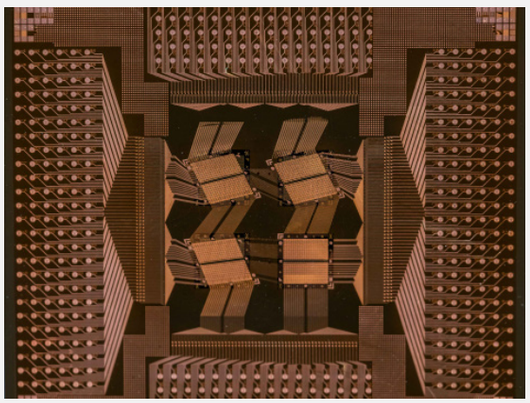
Digital Dynamic Correction Applied to Low Warpage Panel Level Package

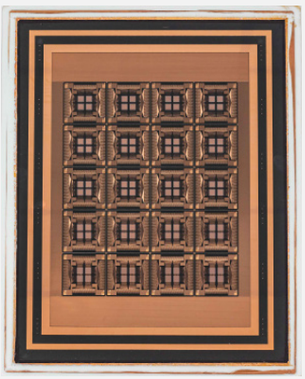
Technology Introduction

To meet future demands for high-speed IC computation, a 7-layer Redistribution Layer (RDL) has been developed. This RDL integrates maskless digital patterning and low-temperature sputtering technology to achieve high resolution (3μm) and low warpage (less than 0.3mm@G2.5). It is suitable for high-end panel-level advanced packaging applications.

Industry Applicability

We're developing real-time electrical circuit correction using chip displacement detection and digital exposure, fixing issues like chip shift from packaging.
We're also creating multi-layer circuit structures and processes to control stress, solving warpage in panel-level, large-area stacking.
These innovations help wafer foundries deploy next-gen AI chip packaging and foster collaboration,enabling panel makers to enter advanced semiconductor packaging.





Contact: Sandy Chung ishan@itri.org.tw

Exhibited Technology

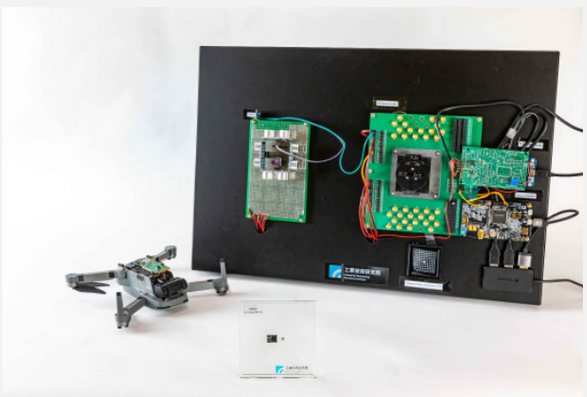
Programmable Connection Chip Configuration Platform

Technology Introduction

As multi-chip and chiplet designs rise, the IC industry faces challenges in small-volume, high-variety, fast verification. Traditional interconnects lack flexibility, slowing iteration and raising costs. The Programmable Connection Chip Configuration Platform uses array channel switching for dynamic pin routing, breaking fixed hardware limits and streamlining verification. It supports scalable multi-chip arrays and diverse chiplet packages, enabling quick strategy testing. This tech speeds development, cuts rework and validation costs, and boosts packaging automation.

Industry Applicability

The Programmable Connection Chip Configuration Platform utilizes array switching technology to enable flexible pin connections and dynamic adjustments, allowing multiple packaging solutions to be simulated without modifying the physical board. Whether designing new modules, integrating heterogeneous chips, or rapidly iterating before mass production, this platform accelerates the verification process and reduces costs, making it a key enabler for the future of advanced packaging.





Contact: Kevin Hsieh kevin@fuzetec.com.tw

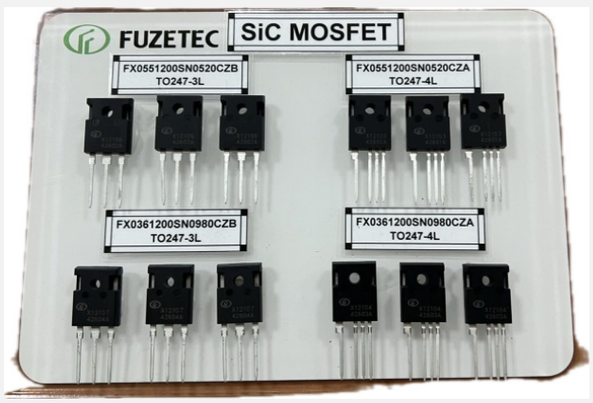
Exhibited Technology
Circuit protection resettable components-overcurrent/overvoltage /hybrid

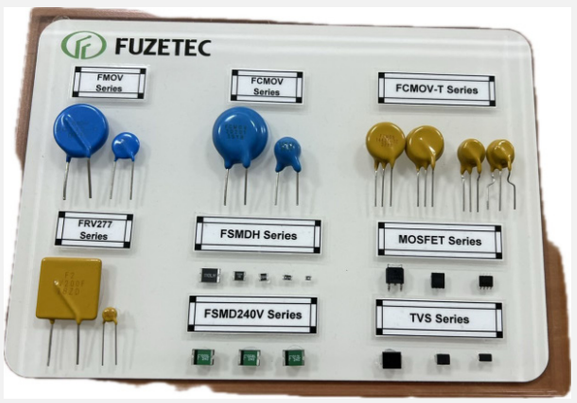
Technology Introduction

Utilizing innovative processes and patented technology, the Hybrid elements integrate Overvoltage and Overcurrent protection into one compact solution. They enhance the immunity against transient and repeated temporary surge , reduce thermal failure risk, and offer dual protection for downstream loads. Hybrid elements mitigate the aging issues of exiting Overvoltage protection elements and significantly extend their service life. Hybrid elements also improve reliability under surge stress, plus resettable. Compared to conventional solutions, they offer better performance and cost advantage.

Industry Applicability

The FCMOV-T multi-function current protection composite overvoltage protection device is a new series developed for applications such as smart grids, smart meters, and LED lighting. It offers simultaneous overcurrent protection, overvoltage protection, and component-to-component protection. Combining a PPTC (Polymeric Positive Temperature Coefficient) overcurrent protection device with an MOV overvoltage protection device, it not only provides individual overcurrent and overvoltage protection, but also provides mutual protection between the components, preventing burnout and ensuring reusability.





Contact: Hung-Yi Teng MarsTeng@itri.org.tw

Exhibited Technology
High-Efficiency Silicon Carbide Module Verification Platform

Technology Introduction

Based on 1.7kV low on-resistance silicon carbide (SiC) power devices and low thermal resistance power module packaging, ITRI has developed an 800V/250kW high-efficiency SiC module verification platform. The stray inductance of the power loop is less than 12nH, achieving a peak efficiency of 99.14%, with more than 67.16% of the efficiency map exceeding 98%. The maximum output power reaches 216kW. This platform can be used to verify key components such as power devices, power modules, driver ICs, and microprocessor ICs, significantly shortening system verification time for manufacturers.

Industry Applicability

Using an electric vehicle motor driver as the system carrier, a silicon carbide (SiC) device module verification platform has been established to facilitate the rapid verification of key components in 800V systems by domestic SiC device manufacturers, driver IC suppliers, and motor manufacturers. This accelerates customer adoption of domestically developed SiC power device modules and enhances their visibility in the international market.





Contact: Arthur Chiu ArthurChiu@itri.org.tw

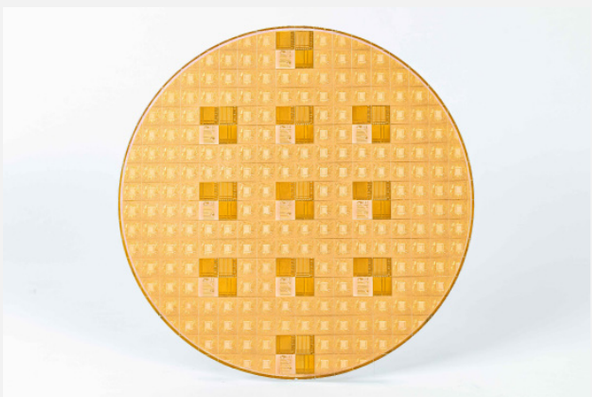
Exhibited Technology
Wafer-level low-warpage multi-layer bonding technology

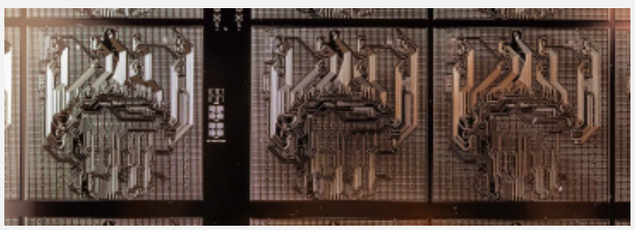
Technology Introduction

With growing demand for high-frequency, high-density heterogeneous integration, advanced packaging (2.5D/3DIC, Chiplet, FOWLP) requires high-precision, low-warp multilayer RDLs. Traditional RDLs induce thermal stress, causing warpage. A low-warp Cu/polymer multilayer bonding process—using low-CTE materials like nano Cu (Nc-Cu), PI, PBO, and stress compensation design—minimizes stress. With ≤ 200° C and 1.06 MPa for 1 hour, multiple Cu/polymer layers can be stacked. This enhances precision and supports AI, 5G, and autonomous chip integration.

Industry Applicability

This technology is not just a breakthrough in packaging, but a key enabler for enhancing Taiwan's competitiveness in semiconductor backend processes. In response to the growing trend of heterogeneous integration, its adoption will strengthen domestic capabilities in advanced packaging, particularly for chiplet architectures. It enables local production of AI accelerators, 5G baseband/ RF ICs, and HBM modules, reducing yield loss from packaging issues and improving supply chain resilience.





Contact: Ricky Yu itriA40084@itri.org.tw

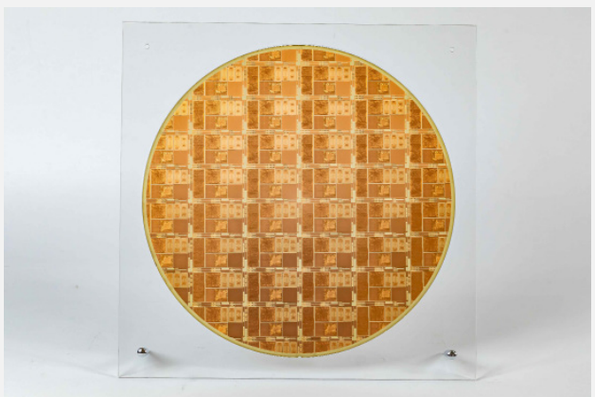
Exhibited Technology
Fan-out RDL Packaging Process and Shuttle Service Technology

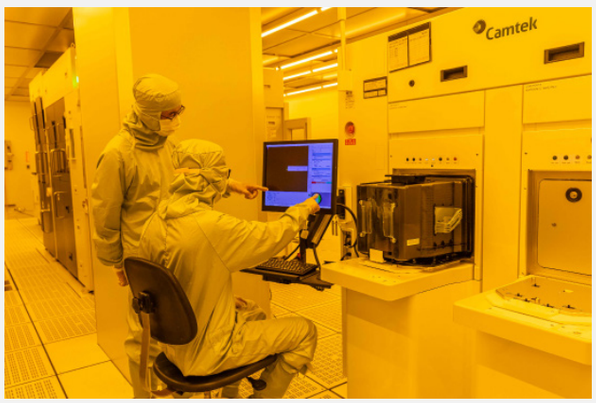
Technology Introduction

The Industrial Technology Research Institute (ITRI) has partnered with domestic industries to provide an innovative and flexible integrated packaging service platform, centered on fan-out packaging technology. This platform offers services such as photomask sharing and small-volume, high-mix packaging, while also providing standardized structural design specifications and small-volume production services.

Industry Applicability

Taiwan possesses a complete semiconductor industry chain and a globally unique integration advantage, enabling the realization of the world's first heterogeneous integration small-volume production business model. This initiative aims to drive new markets for small-volume, high-mix AI applications and enhance the overall value of Taiwan's semiconductor industry.





Contact: chienting chen chienting_chen@ulvac.com.tw

Exhibited Technology
Advanced Front-End Semiconductor Sputtering and Process Optimization

Technology Introduction

As semiconductor processes advance to the nanoscale, front-end sputtering tools face higher precision and performance demands. Our new TiN system features an adjustable cathode magnet and integrates Digital Twin tech with big data, simulation, and AI. Through multiphysics simulation and parameter optimization, we speed up design and production, improving target use and film stability. With 71+ local suppliers and our Tainan site, we reach 79% localization, showcasing Taiwan's innovation.

Industry Applicability

We developed an innovative intelligent process parameter optimization technology to help sputtering equipment users accelerate R&D, enhance performance, and reduce experimental costs and time. In advanced front-end semiconductor applications, it has increased target utilization by over 50% and reduced wafer test consumption by around 57%, significantly boosting production efficiency and economic value.





Contact: Phison Sales sales@phison.com

Exhibited Technology
Advanced 6nm GenAI Computational SSD Controller and Module

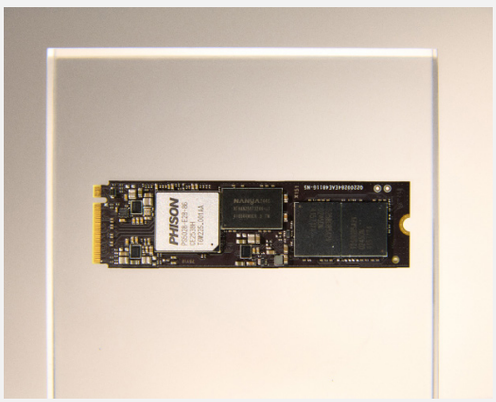
Technology Introduction

E28 is built on leading TSMC 6nm process and Phison's exclusive patent for NAND flash serving as AI cache memory. This solution transforms traditional SSDs from passive storage devices into computational storage modules, significantly accelerating overall system performance for AI workloads. It is provided with basic computational power to offload GPU tasks, revolutionizing the current AI computing unit to greatly reduce High Bandwidth Memory (HBM) and DRAM usage and increase overall computing capability by 50% and shortens the hours of AI model training up to 90%.

Industry Applicability

「Advanced 6nm GenAI Computational SSD Controller and Module」— E28, is the key component for AI systems. It targets the emerging market of edge AI model training and is designed for use in AI servers and AI PCs. It enables large language model training at just one-tenth the cost of current international solutions.





Contact: Sunny sunnypeng@biomedica.ai

Exhibited Technology

AIXA Bone Densitometer Solution

Technology Introduction

AIXA is an AI-powered platform that quickly assesses risks of osteoporosis, sarcopenia, and vertebral fractures from standard X-rays. It delivers diagnostic reports in 6 seconds, streamlining workflow and enabling early intervention.
With CCC = 0.996, sensitivity = 97.2%, specificity = 95.6%, and AUC = 0.96, AIXA provides DXA-comparable bone and muscle analysis from hip and spine images.
Its speed, accuracy, and easy integration make AIXA a scalable, cost-effective tool for musculoskeletal screening in clinical and community settings.

Industry Applicability

AIXA integrates with existing X-ray systems and PACS without extra hardware. Widely adopted in health centers, hospitals, and eldercare facilities, it enhances bone health programs and expands screening coverage. Through the AI Router platform, AIXA enables real-time data transfer, cross-site tracking, and integrated analysis to advance preventive care.



Contact: Cindy Hsiao cindy@deepradai.com

Exhibited Technology

“DeepRad.AI” DeepLung-CAC 100 & DeepBrain-Cognito

Technology Introduction

DeepLung-CAC100 is imaging AI software that, with one LDCT scan, detects lung nodules, coronary calcium, and osteoporosis risk, delivering a one-scan, three-screen function. It reduces diagnosis time to under 3 minutes and, with full automation, integrates into health checkups or clinical systems to expand screening capacity. DeepBrain-Cognito, also imaging AI software, uses one MRI to assess brain atrophy and age, and to predict 1–2 year cognitive decline risk, enabling early dementia detection and supporting preventive medicine.

Industry Applicability

DeepLung-CAC100 and DeepBrain-Cognito are based on low-dose chest CT and brain MRI, providing one-scan, three-screen and brain health analysis. They rapidly assess lung nodules, coronary calcium, osteoporosis risk, as well as brain atrophy and future cognitive decline. Both technologies address radiologist shortages and the rapid growth of imaging data. They are applicable to health check centers, public screening programs, corporate wellness, and remote health management, and can be quickly integrated into hospital systems to strengthen diagnostic decision support and advance digital transformation and smart healthcare.



Contact: Christine Liu christine.liu@growtrendbme.com

Exhibited Technology

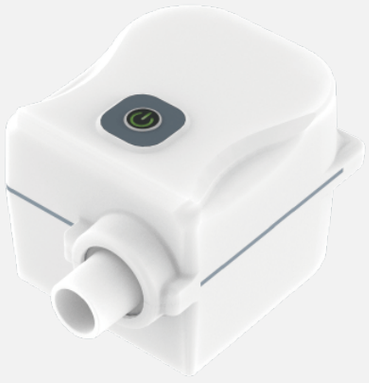
Mini Bilevel PAP(Go With the Flow Algorithm)

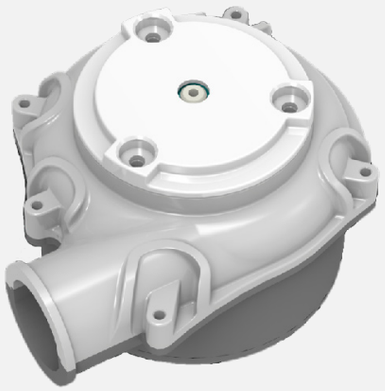
Technology Introduction

The Bilevel PAP device weighs only 395 g, is compact and easy to carry, and has a silent design of less than 30 decibels. It can provide quiet and comfortable breathing support whether used at home or outside. Through AI real-time sensing and adjustment of air pressure, it can tailor the most suitable breathing assistance for users.

Industry Applicability

This system uses the characteristic of metal products making sounds when struck. It can be used in factories to inspect semi-finished products on production lines, detect defective products immediately to reduce losses from subsequent processing and product scrapping, improve yield and increase the reliability of product shipments; it is suitable for a variety of component inspections.





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Contact: Patty patty.yang@ucaremedi.com

Exhibited Technology

FitGenie

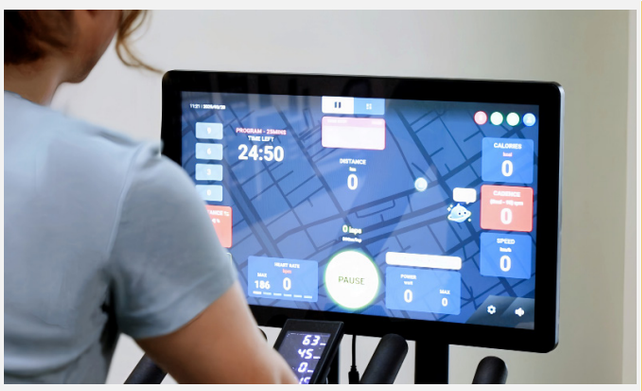
Technology Introduction

FitGenie is an intelligent operating system for fitness equipment, compatible with various machines. It iprovides AI virtual coach, interactive training programs, personalized workout suggestions, V-Run immersive exercise scenes, realistic 3D modeling, and a global ranking system. Also supports popular multimedia platforms through floating windows, enhancing the workout experience.

Industry Applicability

FitGenie supports all types of fitness machines, including treadmills, bikes, ellipticals and stair climbers. FitGenie combines AI-generated virtual workout environments, AI interaction, entertainment, and social features to make workouts fun and diverse. FitGenie helps equipment manufacturers enabling product differentiation and boosting global competitiveness.





Contact: James Huang huang.james2@iac.com.tw

Exhibited Technology

SmartMed Infustion System

Technology Introduction

The SmartMed Infusion System is the first smart infusion system developed in Taiwan. By connecting with the hospital information system (HIS), it can effectively reduce human errors, improve infusion safety, and reduce the workload of nursing staff. It can achieve the goals of improving operational efficiency, reducing human errors, and promoting next generation smart hospital.

Industry Applicability

Connecting with hospital information system, SmartMed operates on the hospital intranet to form a closed-loop system. It has been introduced and used by National Taiwan University Hospital, Taipei Medical University Affiliated Hospital System, Chimei Medical Center, and Yilan Po Ahi Hospital, etc. SmartMed has also obtained overseas medical device licenses in Thailand and Malaysia.





Contact: Annie Wang annie.wang@martsurgerytek.com

Exhibited Technology

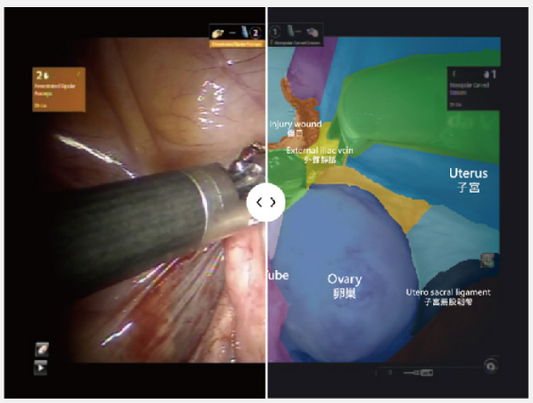
MISARS

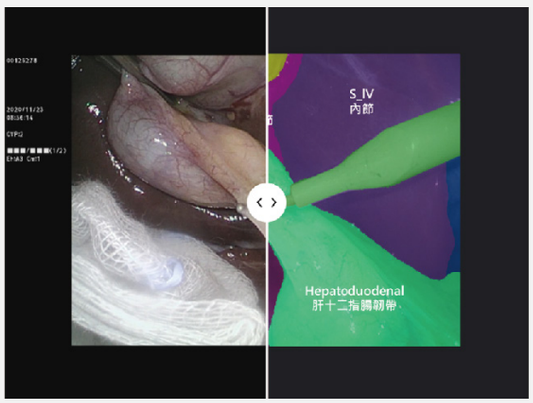
Technology Introduction

Smart Surgery's MISAR, integrated with AI image recognition technology, provides real-time surgical navigation during minimally invasive surgeries. The system is based on extensive image data and clinical experience, aiming to assist surgeons in identifying vital organ tissues precisely and offer prompts for surgical procedures. It can shorten the surgery time, increase success rate and reduce the risk of postoperative complications for patients.

Industry Applicability

The MISARS has strong industrial applicability, particularly in the field of laparoscopic and other minimally invasive surgeries. By combining AI-based image recognition with clinical expertise, MISARS can identify critical anatomical structures in real time, enhancing surgical accuracy and reducing the likelihood of human error. This technology can be widely applied in medical centers, regional hospitals, and even educational settings, helping to standardize surgical quality, reduce postoperative complications and medical disputes, and improve the training efficiency of junior surgeons.





Contact: Annie Wang annie.wang@smartsurgerytek.com

Exhibited Technology

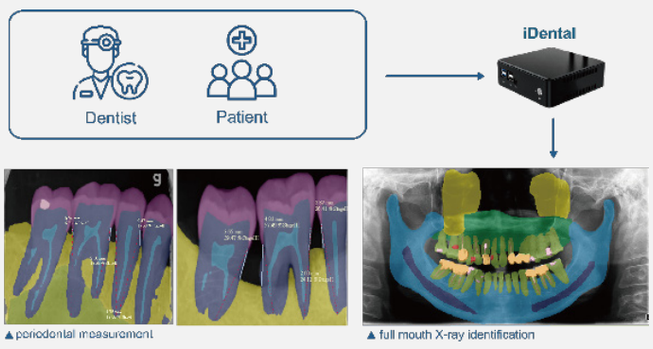
iDental

Technology Introduction

iDental is an intelligent diagnostic system specifically designed for dental clinics and hospitals, utilizing edge-cutting artificial intelligence technology for accurate detection and assessment of cavities and periodontal disease. Powered by image analysis and machine learning algorithms, iDental not only swiftly produces diagnostic results but also significantly improves diagnostic accuracy, helping to build better trust and communication between dentists and patients.

Industry Applicability

The iDental smart diagnostic system offers strong industrial value in the field of dental care. Using AI-powered image analysis, iDental can accurately and efficiently detect dental caries and periodontal disease in real time, helping dentists improve diagnostic precision while reducing human error. The system also generates diagnostic reports that support clearer communication and trust between dentists and patients, increasing patients' willingness to accept treatment.



▲periodontal measurement ▲full mouth X-ray identification

Contact: Cherry Yang cherryyang@taihaomed.com

Exhibited Technology

BR-FHUS Smart System Software

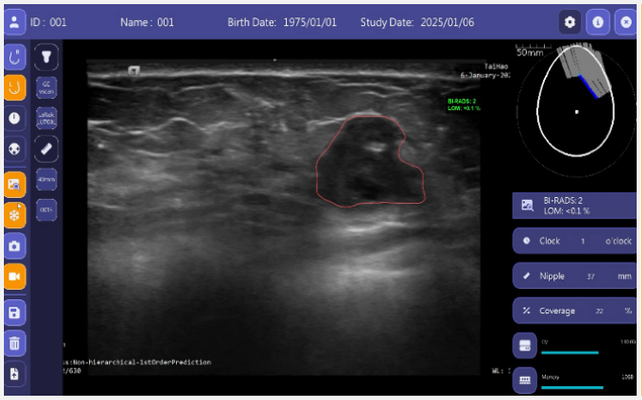
Technology Introduction

The System is compatible with existing ultrasound systems on the market. In addition to recording images, it also simultaneously records scan position, scan angle, and scan coverage information, helping operators to instantly review the completeness of the breast scan to avoid omissions that could affect diagnosis. During the scan, a lesion warning function is provided for the scanner's reference.

Industry Applicability

Taiho Biomedical's AI-powered breast ultrasound solution provides rapid and accurate image analysis for early breast cancer screening. This solution improves physician interpretation accuracy by 4.5% and reduces image reading time by 39%, significantly reducing the risk of misdiagnosis and optimizing medical efficiency. The product has received certifications from Taiwan's TFDA, the US FDA, Japan's PMDA, and South Korea's MFDS.





Contact: May Wu may.wu@cohesiondata.com

Exhibited Technology
【LibraLung】AI Lung Cancer Screening

Technology Introduction

This system utilizes a hybrid deep learning model, developed using high-quality clinical data from the National Taiwan University Hospital's lung cancer early screening program. It can accurately detect a wide range of subtle lung nodules as defined by Lung-RADS.
Rigorously validated by the TFDA, the AI achieves a high sensitivity of 92% with a top-tier performance level — delivering only 0.6 false positives per scan, even for nodules as small as 4mm. It also supports AI-powered comparative tracking and structured reporting, and can be seamlessly integrated into hospital PACS/RIS systems.

Industry Applicability

LibraLung was developed to address the growing demand of Taiwan's national lung cancer screening program. Jointly created by Cohesion Data and National Taiwan University Hospital, the system has received TFDA medical device clearance and is the exclusive AI solution recommended by the Health Promotion Administration (HPA) on its official website.
Clinically proven to significantly enhance early detection (showing a 126.7% increase in detection of Lung-RADS 4 cases), LibraLung also greatly improves physician workflow efficiency.





Contact: Chih-Hung Huang angushuang@itri.org.tw

Exhibited Technology

Intelligent Automation Technology for Cell Production

Technology Introduction

Intelligent and automated cell production system is used to replace human to complete the entire cell culture process—including cell seeding, medium exchanging, subculturing and cell harvesting. With intelligent biomedical imaging analysis, it monitors cell growth, adjusts culture parameters, and selects high-quality cells for stable cultivation. Integrated real-time sensing and big data analytics ensure standardized, optimized production, reducing costs and batch variability.

Industry Applicability

This technology will be applied to the field of regenerative medicine cell preparation industry and become a key driving force in promoting the commercialization of cell therapy.





Contact: Chien-Lung Shen clshen.0865@ttri.org.tw

Exhibited Technology

SARcura Knee Support Device

Technology Introduction

This technology utilizes a circuit fabric, replacing traditional sensors and wires with conductive fibers that are seamlessly woven into the elastic knee brace. The brace provides precise positioning upon wearing, eliminates the need for disposable electrodes, and addresses the low motivation for home training and high equipment costs among elderly patients with knee osteoarthritis. The knee brace integrates three functions—knee joint angle measurement, surface electromyography (sEMG), and electrical stimulation—making it simple and easy to use.

Industry Applicability

1. TTRI has collaborated with TAILUNG GROUP, ZENTAN , and AEUST to integrate the smart elastic knee brace with the Shape X interactive game. This solution has already been promoted to NTU Hsinchu Branch, Far Eastern Memorial Hospital, Taipei Medical University, and TSGH.
2. The Circuit Fabric Technology has been transferred to several companies (including MAKALOT, TEX-RAY/AiQ, ZENTAN, SUNSTAR, and PAILUNG), successfully supporting the launch of various smart apparel products.





Contact: Yuchi Wang yuchiw@itri.org.tw

Exhibited Technology

Tissue Sheet Biomedical Integration System

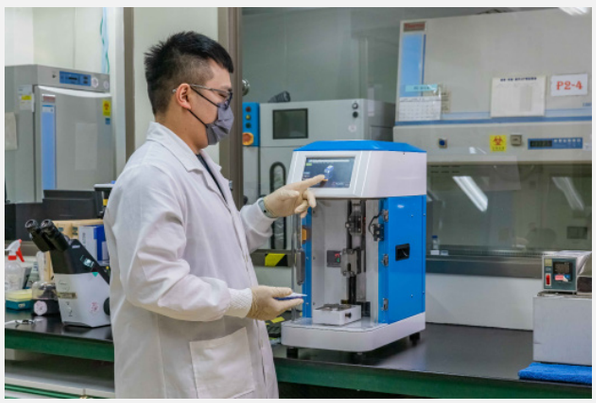
Technology Introduction

Tendon injuries from sports or accidents often heal slowly and can cause adhesions that impair function and quality of life. ITRI has developed an dual-layer tissue sheet that integrates cell with anti-adhesion biomaterials. This tissue sheet provides structural support to the injured tendon, reduces adhesion, and delivers cells to accelerate healing and enhance repair outcomes. The integration system allows precise control of cell dosage and can be rapidly prepared in the operating room. This solution helps patients recover mobility sooner and improves their overall quality of life.

Industry Applicability

Tissue sheet technology has strong industrial potential for general surgery and cell therapy. Combining therapeutic cells with biomaterials, tissue sheets can be prepared on-site during surgery to cover damaged tissue, provide support, promote repair, and reduce adhesions. The system allows flexible cell dose and size adjustment, is highly compatible, and has an intuitive interface for quick, safe use in the operating room. It is a promising solution for regenerative medicine.





Contact: Hsiao Tung Sheng sdd@firdi.org.tw

Exhibited Technology

Extrusion Technology for Oily and Juicy Wet-Type Plant-Based Meat

Technology Introduction

Taiwan's plant-based food exports are booming (NT$18.8B, 16% global share), but current dry-extruded products lack differentiation. FIRDI's multi-layered flavor design and process for structured ingredients project developed a high-oil content and juiciness high moisture meat analog extrusion technology. This breakthrough uses a multi-feed mechanism to boost oil injection to 15% (overcoming 2-6% limits), yielding 8-14% crude fat, 10-20% juiciness, and a tender texture. It's ideal for chicken alternatives, enhancing competitiveness.

Industry Applicability

FIRDI authorized Stentorian Industries Co., Ltd. to use its Juicy Plant-Based Meat Extrusion Processing Technology, enabling the setup of a new production process. As a leading local producer with a 1,600-ton annual capacity and NT$1.6 billion output, Stentorian plans a NT$5 million investment to upgrade lines, boosting output by 100 tons annually, adding NT$20 million in value.





Contact: TING-WEI CHANG itriA40534@itri.org.tw

Exhibited Technology

Multimodal Intranasal OCT System

Technology Introduction

This system integrates Optical Coherence Tomography (OCT) with nasal endoscopy, using a 0.8 mm flexible probe for high-resolution, non-invasive imaging of the nasal cavity. It enables clear visualization of olfactory and respiratory mucosa and offers objective support for diagnosing rhinosinusitis, allergic rhinitis, and olfactory dysfunction.

Industry Applicability

This system supports ENT diagnosis, olfactory assessment, and nasal surgery with non-invasive, high-resolution imaging. It improves diagnostic accuracy and can be applied in early screening, surgical guidance, and smart healthcare.





Contact: Judy Lo judylo@mail.mirdc.org.tw

Exhibited Technology

Multi-Channel rTMS System

Technology Introduction

Utilizing the principle of electromagnetic induction, through innovative coil design, multi-axis magnetic field control and electric field visualization navigation technology, it can simultaneously stimulate multiple brain areas, accurately locate and shorten treatment time by 70%, thereby improving safety and clinical efficiency.

Industry Applicability

Domestic substitution for imports: Develop local rTMS systems to create job opportunities and technological energy.
Key technology improvement: Transfer technology to domestic technology companies in the rTMS E-Navi open electric field positioning visualization product, integrating the development of transcranial magnetic stimulation treatment navigation system.
Connect with the international community and enhance Taiwan's visibility in the global medical electronics field.





Contact: Kuo-Chang Chen kerwin_c@itri.org.tw

Exhibited Technology

AI-based Ward All-day Health Care System

Technology Introduction

Facing aging and caregiver shortages, the AI-based ward system uses contactless, privacy-preserving sensors to monitor respiration, heart rate, and temperature around the clock. It provides real-time alerts for bed-exit and abnormal events, reducing caregiver workload by 25% and emergency response time to under one minute. This improves care quality in remote or understaffed areas and shows strong potential for industry adoption.

Industry Applicability

Developed by ITRI and Cemsun Technology, the AI-Based Ward Care System is Taiwan's first AI solution for privacy-preserving, accurate, and contactless abnormal behavior detection. Designed for nursing homes and remote care, it reduces fall alert response time from 1 hour to under 1 minute, ensuring timely emergency intervention.





Contact: Lun-De Liao, Ph.D. ldliao@nhri.edu.tw

Exhibited Technology

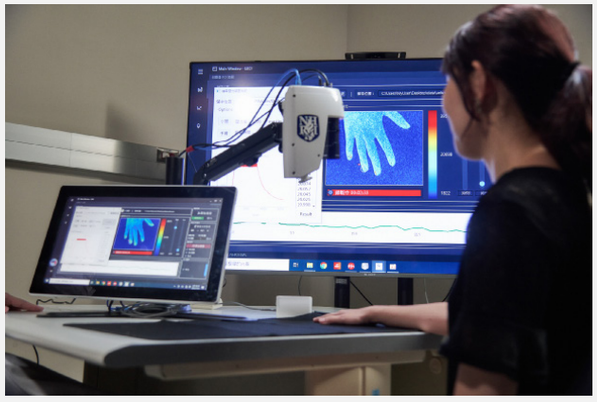
Application of Laser Speckle Contrast Imaging system in Skin Perfusion Pressure Detection

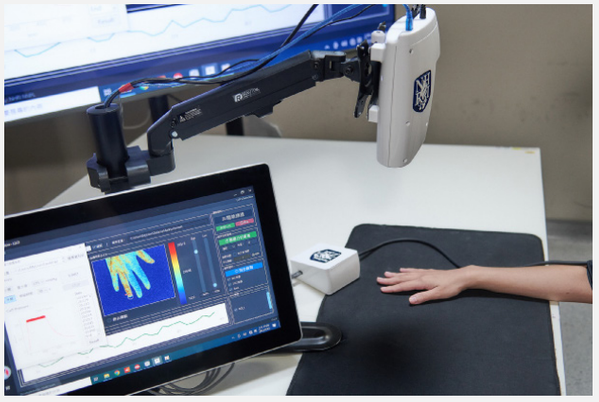
Technology Introduction

This technology uses LSCI and a cuff-based pressure system to provide a non-contact method for measuring Skin Perfusion Pressure (SPP), supporting early diagnosis and healing prediction in wounds like diabetic foot ulcers. Unlike contact-based LDF, it offers wide-area, contact-free microcirculation assessment, reducing infection risk and improving efficiency. LSCI's high-speed imaging captures real-time blood flow changes during pressure modulation, objective visualization of SPP.

Industry Applicability

The Blood Circulation Imaging Machine system fosters interdisciplinary collaboration, integrating optoelectronics and high-speed computing into medicine, boosting industry intelligence and opening new ICT development avenues in Taiwan. It spurs innovation, upgrading medical equipment, and enhancing market competitiveness. With telemedicine, it lowers costs, improves accessibility, and enhances healthcare quality, promising substantial benefits for Taiwan's medical industry.





Contact: Judy Lo judylo@mail.mirdc.org.tw

Exhibited Technology
Autofluorescence-based Dental Bacteria Device and Oral Care System

Technology Introduction

Using UV light to stimulate dental plaque fluorescence, no need to apply a display agent, the cleaning status of teeth can be displayed within 5 seconds. With the mobile phone APP and AI image analysis, the level of dental plaque coverage can be quantified and the cleaning can be tracked accurately and intuitively.
In the future, cloud data management will be integrated and applied to day care centers and home care, and smart medical devices (SaMD) will be used to obtain evidence to accelerate clinical introduction. Let the elderly, caregivers and families have control over their oral health.

Industry Applicability

Provide dental medical staff with efficient clinical solutions, use lightweight detection devices for clinical detection and service verification, combine with relevant care payments, specifically promote the implementation of early screening, diagnosis, treatment and care, improve the accessibility and efficiency of medical care, medical institutions/long-term care institutions: improve medical efficiency and reduce medical costs estimated at 250 million yuan.





Contact: Chiu-Lien Hung joyhung@itri.org.tw

Exhibited Technology

Novel Therapeutic Approach for Protein Degradation in Castration Resistant Prostate Cancer (CRPC)

Technology Introduction

Prostate cancer is the second most common cancer among men globally and the fifth leading cause of cancer death in Taiwan (2023). Standard treatments often lead to drug resistance, reducing 5-year survival in castration-resistant prostate cancer (CRPC) to 30%. ITRI developed ITRI-148, Taiwan's first oral PROTAC drug targeting AR/AR-V7. Designed for drug-resistant CRPC, it selectively degrades diseased proteins with low toxicity and shows superior efficacy over existing therapies.

Industry Applicability

ITRI-148, an innovative drug for castration-resistant prostate cancer (CRPC), has completed kilogram-scale production and process optimization, with GMP readiness. Patents have been granted in Taiwan, Japan, China, and the U.S., with European patents pending. ITRI-148 a protein degrader offers high clinical potential to replace chemotherapy. It may drive high-value drug development in Taiwan's biomedical industry.





Contact: Ming-Hsi Wu rexwu518@itri.org.tw

Exhibited Technology
Development of Critical Raw Materials for Advanced mRNA Production

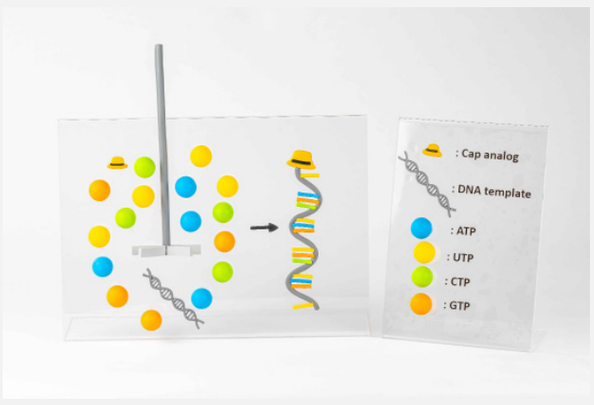
Technology Introduction

This technology focuses on developing a patented 5' cap analog (ITRI-Cap), a critical component in mRNA drug production, aiming to bypass existing international patents. It also integrates an advanced one-pot in vitro transcription (IVT) process. Compared to CleanCap®, ITRI-Cap offers simplified synthesis, improved translation efficiency, and reduced production costs. The solution reduces reliance on imported raw materials and high licensing fees, providing CDMO manufacturers with a competitive and flexible alternative, while reinforcing Taiwan's position in the nucleic acid supply chain.

Industry Applicability

The 5' cap analog and one-pot IVT process technology provides domestic CDMOs with an alternative to CleanCap®, expanding product options and global competitiveness. As mRNA applications grow, the global raw material market is projected to reach USD 3.25 billion by 2033, with cap analogs as key high-value inputs. With low cost and strong performance, this technology supports Taiwan's material self-sufficiency and export potential, enhancing nucleic acid supply chain resilience.





Contact: Yu-Wen Lo itri950682@itri.org.tw

Exhibited Technology
A 505(b)(2) Eye Drop Product for Dry AMD Treatment

Technology Introduction

ITRI's 505(b)(2) eye drop offers a non-invasive, self-administered therapy for intermediate to late-stage age-related macular degeneration (AMD), utilizing a patented formulation to enhance drug exposure in posterior ocular tissues. Preclinical studies show superior efficacy over intravitreal Risuteganib in preserving photoreceptor integrity and supporting retinal pigment epithelium (RPE) function by reducing endoplasmic reticulum (ER) stress and sub-RPE lipid accumulation. Animal studies also confirm good ocular safety, supporting strong clinical potential.

Industry Applicability

With global aging, dry AMD cases are rising, and the treatment market is projected to reach USD 10.06 billion by 2032 with a 9.1% CAGR. ITRI provides a non-invasive treatment for intermediate to late-stage dry AMD, with potential extension to other posterior eye diseases. This technology enhances Taiwan's R&D autonomy and capabilities in ophthalmic drug development, driving the high-value growth and global competitiveness of the biotech and pharmaceutical industry.





Contact: Cheng-Chou Yu chengchouyu@dcb.org.tw

Exhibited Technology

NTSR1-ADC: A Novel Therapeutics for Head and Neck Cancer

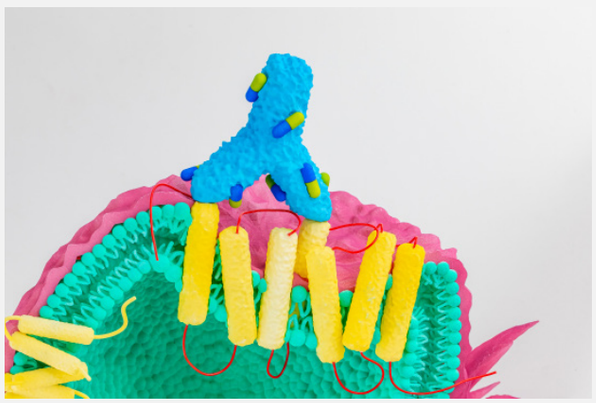
Technology Introduction

Head and neck cancer, the fifth most common cancer based on MOHW 2011 report in Taiwan, has suboptimal treatment response rates. Recently literatures suggest that Neurotensin receptor 1 plays a very important role in cancer progression and overall survival of patients. To provide a novel therapeutic modality for cancer therapy, DCB and NHRI have developed an anti NTSR1 antibody drug conjugate DCBAD2301 with high specificity, potent tumor suppression, favorable PK, and low toxicity in vitro and in vivo. With a high-yield CHO cell line, DCBAD2301 offers innovative potential for cancer therapy.

Industry Applicability

Head and neck cancer, a common cancer in Taiwan with~8,000 new cases annually, has a high incidence in Asia.The global drug market of head and neck cancer was$2.09 billion in 2021 and projected to reach$4.33 billion by 2026 with a 15.7% CAGR.If launched, NTSR1-ADC will be the first NTSR1-targeted ADC globally, capture market share and boost Taiwan's ADC development capabilities, and foster growth in pharmaceuticals, CDMO, and clinical trials with high added value and technology export potential.





Contact: Shing-Cheng Chang S.C.Chang@itri.org.tw

Exhibited Technology
Shalun Hydrogen Application Technology Demonstration Platform

Technology Introduction

Through scientific research integration, ITRI establishes a hydrogen energy industry development platform at Shalun Smart Green Energy Science City to build the first demonstration and verification site for hydrogen production, transportation, storage and application.The park integrates MW-level renewable energy power, 100-kilowatt-level electrolysis hydrogen production systems, composite hydrogen energy/battery energy storage, distributed power generation and combustion heat applications, as well as hydrogen source recovery and purification applications, to fully present a demonstration and verification park for hydrogen energy production, transportation, storage, and utilization, helping the industry to chart a technical path and development blueprint for net zero emissions hydrogen energy.

Industry Applicability

Providing one-stop technical services from materials, components to systems, we build the Shalun Hydrogen Energy R&D Center as an international renewable energy hydrogen composite energy storage demonstration base, integrating renewable energy power, composite hydrogen/battery energy storage systems, and fuel cell power generation systems, and cooperating with the Shalun field EMS to conduct field power dispatching, improve the flexibility of energy dispatching, and achieve a storage capacity of 500 kWh and an output power of 110 kW, promoting the establishment of a hydrogen energy industry chain and promoting domestic and international industrial technology exchanges and cooperative verification.



Booth: IE01

Contact: Shing-Cheng Chang S.C.Chang@itri.org.tw

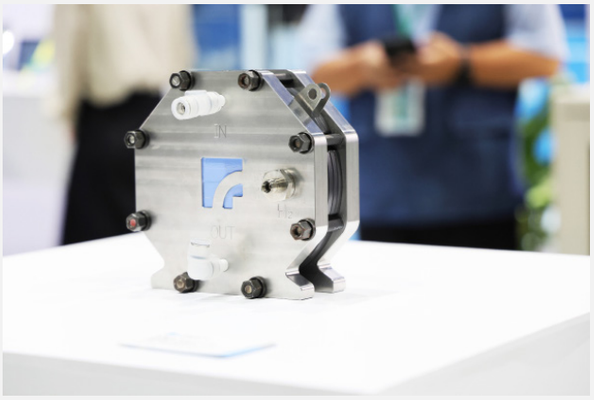
Exhibited Technology
High-pressure Anion Exchange Membrane Water Electrolyzer

Technology Introduction

The hydrogen production efficiency of anion exchange membrane (AEM) high-pressure electrolyzers surpasses that of conventional alkaline electrolysis technology, and its material costs are more favorable than proton exchange membrane (PEM) technology. This technology offers advantages such as reduced usage of precious metals, high-pressure output, and adaptability to fluctuations in renewable energy. The hydrogen production efficiency of this technology can reach 65%, and it can operate at low alkaline concentrations (<1M KOH), providing operational and maintenance advantages. Additionally, the ability to directly generate hydrogen at 30 bar pressure reduces pipeline transportation costs or lowers the energy consumption for high-pressure storage on the back end.

Industry Applicability

AEM electrolysis technology can improve the shortcomings of traditional PEM, which relies on precious metals and AE, and occupies a large area. It can produce hydrogen with only low-concentration alkaline electrolyte. The industry can introduce an on-site hydrogen production and use model, which can be used as needed and has flexible operation. In addition to power generation, hydrogen can also be transferred to industry, transportation and other sectors, which will help achieve the net zero goal and corporate carbon reduction.



Contact: Shing-Cheng Chang S.C.Chang@itri.org.tw

Exhibited Technology

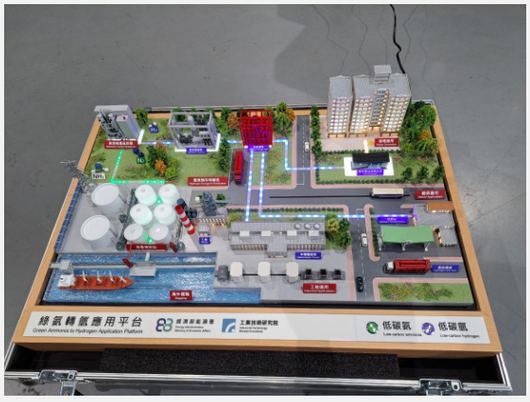
Green Ammonia to Hydrogen Application Platform & High-pressure Anion Exchange Membrane Water Electrolyze

Technology Introduction

High-efficiency ammonia cracking and hydrogenation technology, using low-energy catalyst and high-efficiency reactor design. Develop medium-temperature catalyst (<=600 ℃) and ammonia cracking reactor, 100 Nm3/h green ammonia hydrogenation system with an energy efficiency of >75% and integrate 200kW hydrogen/ammonia feed SOFC systemfor power generation application. Provide low-carbon hydrogen source for the industry, combined with power generation, industry, transportation and other applications, to create a net zero carbon reduction solution for the industry.

Industry Applicability

By importing green ammonia through a mature ammonia supply chain and converting it into hydrogen domestically for low-carbon applications such as power generation, industry, and transportation, we will deploy patents for high-performance catalyst materials, develop green ammonia-to-hydrogen conversion, hydrogen-ammonia combustion, and integrated power generation application technologies, which can accelerate the industry's achievement of carbon reduction goals and enhance product export competitiveness.



Contact: Hao Tung Lin haotunglin@itri.org.tw

Exhibited Technology
Vanadium Redox Flow Batteries and Application Scenar

Technology Introduction
With its features of high safety, long lifespan, and high efficiency, vanadium redox flow battery energy storage systems are well-suited for the following applications:
Data centers, Government facilities, Commercial buildings, Healthcare facilities, Residential complexes, Remote areas, Industrial zones, Renewable energy power plants

Industry Applicability
The Vanadium Redox Flow Battery (VRFB) features high safety and long life, ideal for renewable energy, peak shaving, and microgrids. Its non-flammable, stable design suits critical uses like data centers. With modular design and EMS support, VRFBs aid efficient energy management and low-carbon transitions.



Contact: Chen, Chih-Hao itriA50019@itri.org.tw

Exhibited Technology

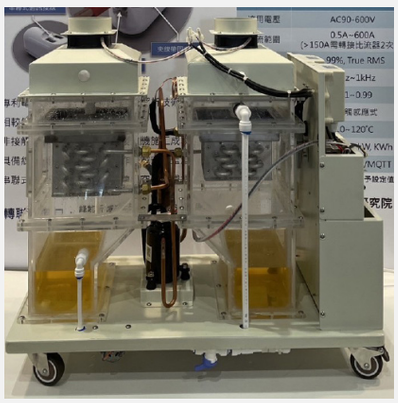
Energy-Saving, Dehumidification and Drying Technology & WBG Power and Specialized Power Technology

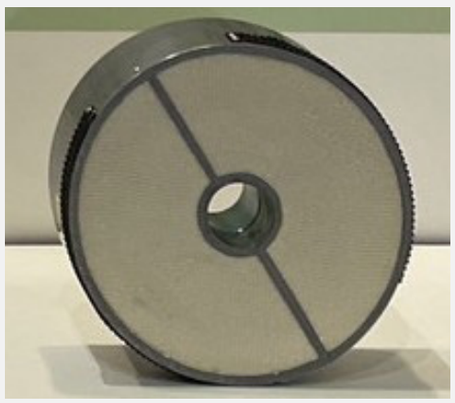
Technology Introduction

Heat pump-driven solid dehumidifier or liquid dehumidifier will achieve more energy-saving dehumidification performance, which can be applied to sludge drying, plastic drying, constant temperature and humidity processes, etc. For example, the air conditioning dehumidification system's energy consumption index can be increased from 1.8~2.0 kg/kwh of the traditional condensation dehumidification system to 2.5~2.7 kg/kwh. Solid dehumidification can reach extremely low humidity and can be applied to lithium battery processes. Liquid dehumidification systems can apply waste heat without distance limit, and can sterilize and purify the air, which can be applied to green buildings and clean rooms. Both have their advantages.

Industry Applicability

Liquid and solid desiccants can utilize van der Waals forces to capture water vapor from the air directly, achieving efficient dehumidification. Compared to the energy-intensive process of supercooling and reheating in traditional condensation-based dehumidification systems, this method offers significant energy savings. Moreover, new desiccants feature low-temperature regeneration.





Contact: Wen-Tien Tsai itriA20152@itri.org.tw

Exhibited Technology

High Power Density GaN PD Charger

Technology Introduction

The high-density GaN PD power supply uses the buck-type patented architecture as the main design axis to design a 240W power supply that complies with the PD 3.1 specification. Its power density is 30% higher than the traditional design, reaching 25W/in3.

Industry Applicability

DC power supplies and chargers for information and communications, electronics and optoelectronics, and daily life applications





Contact: Wen-Tien Tsai itriA20152@itri.org.tw

Exhibited Technology

Special specification power supply (for 222nm UVC lamps)

Technology Introduction

1. This product is designed with a single switch, quasi-resonant circuit, which can convert a 12V DC power into a 6kV, 50k~100kHz AC power to illuminate a 222nm light source.
2. This power converter has the advantages of high efficiency and small size.
3. The antibacterial effect of 222nm wavelength has been confirmed by many medical experiments and has been gradually introduced into disinfection and medical applications.

Industry Applicability

Green energy and environment





Contact: Tseng, Chih-Yung chihyungtseng@itri.org.tw

Exhibited Technology

1v2 Electronic control valve

Technology Introduction

• Using a stepping motor to control the total flow and ratio of the two outlets can reduce 50% of control wiring and drive compared to traditional methods. It is suitable for HVAC&R or electronic cooling fields with limited space.
• The world's first high-speed (90 pulse per second) variable flow 1v2 electronic control valve.

Industry Applicability

High-performance computing servers use active fluid circulation with cold plate solutions, especially when using refrigerant as the working fluid, which requires multiple electronic expansion valves for control. Our 1v2 Electronic control valve can reduce the use of control components by 50%. And it can be quickly adjusted according to the heat dissipation requirements.

Contact: Charles Chiang chiangcl@itri.org.tw

Exhibited Technology

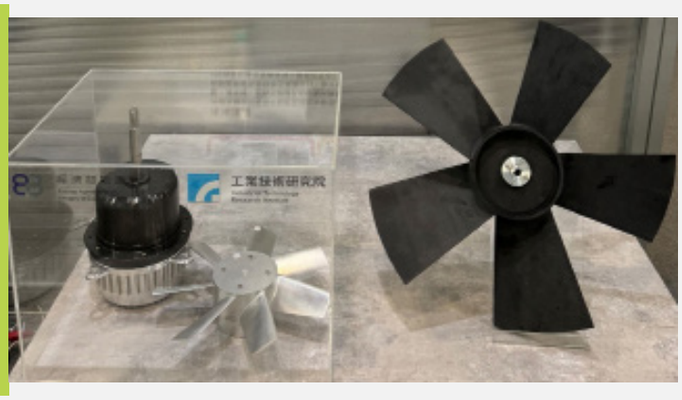
High-Efficiency EC Fan Module

Technology Introduction

• Technological Innovation – The fan integrates a high-efficiency EC motor with a NACA airfoil fan blade. In addition to the motor's energy savings of at least 40% compared to traditional systems, its application in HVAC equipment can boost overall system efficiency by 5–11%, helping the equipment achieve energy efficiency level 1 or above.
• Competitive or Intellectual Property Advantages – The only EC motor solution that combines an electrolytic capacitor-free controller with a rare-earth-free IE5 efficiency-class motor.
• Important Achievements / Awards – Overcoming critical bottlenecks to facilitate industrial upgrading and assist in the development of EC motor and driver production lines.

Industry Applicability

EC fans offer high efficiency, low energy consumption, intelligent control, and long service life. They are widely used in various industries, including HVAC systems, refrigeration units, cleanrooms, ventilation systems, data centers, server rooms, residential and commercial air conditioning, and industrial process cooling. Due to their superior energy efficiency and intelligent speed control, EC fans are particularly favored in applications with strict energy-saving and environmental requirements.





Contact: Liang-Qiao Huang liang.qiao@itri.org.tw

Exhibited Technology

Development of variable frequency drive module for compressors

Technology Introduction

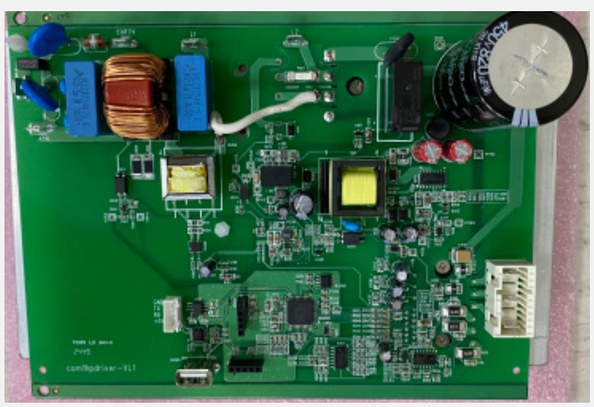
• Technological Innovation – The 7kW compressor variable frequency drive module for heating uses field-oriented control (FOC) without sensors, and a boost circuit architecture with active power factor correction (APFC) is installed in the front stage to improve the power factor. Users can control the compressor speed through RS485 communication or speed modulation command (PWM interface). The rated power is 1.3kW, and the drive efficiency is ≧ 93%.

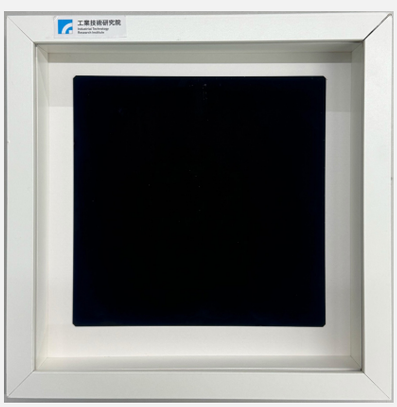
• Competitive or Intellectual Property Advantages – Special inverter for refrigerant compressor with Taiwan's production line.

• Important Achievements / Awards – The MIT solution and supply chain for compressors of HVAC application.

Industry Applicability

This module develops wide-range capacity-adjustable compressor drive control technology, with a compressor load capacity range of 20~130%. This helps to improve electromechanical module technology, open variable-frequency electromechanical drive firmware, support the domestic heat pump industry's electromechanical control software/hardware independent capabilities, and establish a complete compressor/drive controller supply solution.





Exhibited Technology

Taiwan's Renewable Energy Achievements and Advanced Technology Showcase

Technology Introduction

• Digital Geo-BWhale Automatic Well Production Testing system : This all-in-one system is compact for easy transport in mountainous areas and reduces noise. It automatically records and analyzes geothermal fluid flow, temperature, and non-condensable gas ratio in real time, providing accurate data for assessing well conditions and resource potential.
• Offshore Wind Promotion in Taiwan
• Taiwan Solar Policy Target and Current Progress

Contact: Sung-Yu Chen sungyuchen@itri.org.tw

Exhibited Technology

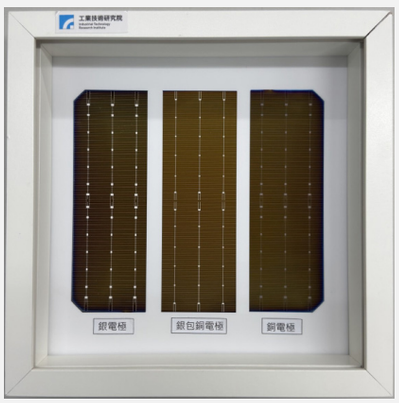
Laser-Assisted Silver-Coated Copper Electrode Technology

Technology Introduction

This exhibit showcases advanced laser-assisted silver-coated copper electrode technology, combined with innovative laser-assisted sintering, effectively reducing contact resistance while enhancing material performance and stability. This innovation lowers solar cell production costs by 8% and is expected to generate approximately NT$200 million in annual output value. By reducing the use of precious silver, it supports the sustainable development of the photovoltaic industry. In addition, by linking domestic equipment, material, and solar cell manufacturers, and promoting diverse collaboration models—such as technology licensing, technical services, and equipment leasing—the technology facilitates a comprehensive upgrade of the upstream and downstream industry chain, enhancing overall competitiveness and economic value.

Industry Applicability

The laser-assisted sintering technology, combined with innovative silver-coated copper conductive paste, successfully enhances the conversion efficiency of solar cells while significantly reducing silver consumption, thereby optimizing production costs. This technology offers high scalability and has been proven compatible with existing manufacturing processes, bringing a dual breakthrough in performance and cost-effectiveness to the solar photovoltaic industry and demonstrating strong potential for industrial-scale green energy applications.



Contact: Sung-Yu Chen sungyuchen@itri.org.tw

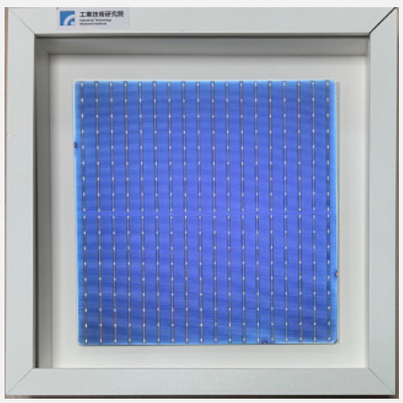
Exhibited Technology
Tunnel Oxide Passivated Back Contact (TBC) Solar Cell

Technology Introduction

ack-contact solar cells are an innovative structure that places all electrodes on the rear side of the cell, maximizing the light-absorbing surface, reducing losses during photoelectric conversion, and improving both efficiency and visual aesthetics. This makes them especially suitable for applications such as Building-Integrated Photovoltaics (BIPV).
This exhibit features a back-contact design integrated with TOPCon technology, utilizing doped polycrystalline silicon and a tunnel oxide layer to achieve bipolar passivated contacts. This significantly reduces carrier recombination, thereby enhancing open-circuit voltage and overall efficiency.
Moreover, the technology is compatible with existing TOPCon production lines, enabling rapid industrial adoption. It facilitates both horizontal and vertical integration within the domestic PV industry, creating new market opportunities.
Introducing the TOPCon technology to the front and rear sides of the solar cell, forming a bifacial TOPCon structure, enhances passivation property and improves efficiency.

Industry Applicability

Creating New Business Opportunities:
Establish a back-contact technology platform and collaborate with domestic manufacturers to develop new materials and equipment, strengthening both horizontal and vertical integration within Taiwan's solar photovoltaic (PV) industry chain.
Technology Advancement:
Develop next-generation solar cell technologies by introducing new structures and specialized processes to achieve high-efficiency TBC solar cells, thereby supporting industrial upgrading.
Silicon-Based Tandem Technology Platform:
Expand the PV technology platform to serve as the foundation for silicon-based tandem cell technology, guiding the domestic industry in evaluating next-generation solar photovoltaic solutions.



Contact: Chih-Jeng Huang cj_huang@itri.org.tw

Exhibited Technology

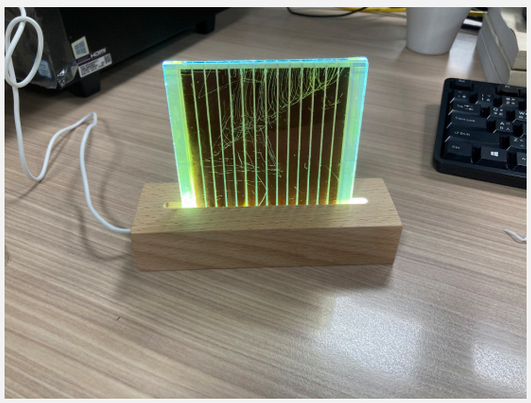
Semitransparent Perovskite Solar Cells

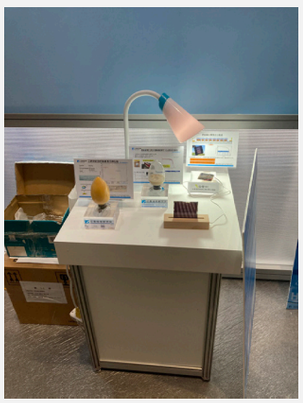
Technology Introduction

Tandem solar cells which combine silicon with organic/inorganic hybrid perovskite is a promising option for breaking the single-cell efficiency limit. The research group of ITRI dedicates to develop the technology of semitransparent perovskite solar cells. The technical content encompasses the synthesis method of perovskite precursor materials - lead iodide (patent application in CN; granted TW Invention Patent, patent number TW I825,487) and the perovskite thin-film fabrication process (patent application in CN; granted TW Invention Patent, patent number TW I717,133), gradually gaining recognition on the international stage.

Industry Applicability

Perovskite materials are characterized by their lightweight, ultra-thin, and semi-transparent physical properties, enabling easy application onto a wide range of substrates. These attributes make them suitable for integration into diverse surfaces—including building facades, automotive exteriors, window curtains, and even wearable textiles—transforming everyday structures into potential platforms for energy generation and storage. Moreover, perovskites can be effectively combined with silicon-based or organic photovoltaic technologies to create complementary hybrid systems, offering improved performance and flexibility at a lower cost compared to traditional single-crystal silicon solutions. As a result, the growing adoption of perovskite materials is poised to drive transformative advancements in the field of solar energy.





Contact: Hung-Yi Sung Michaelsung@itri.org.tw

Exhibited Technology

Introduction of iPV System Inspection Laboratory

Technology Introduction

The PV system testing laboratory is aimed at assisting the completion acceptance of the case, system maintenance and operation, which is conducive to the construction and maintenance approval of the construction company, reducing the doubt of credit, and achieving the financing purpose; the PV system inspection body aims at Assist the first stage due diligence review and the second stage design specification review, which is conducive to the lending mechanism on the financing side. Both testing and inspection have obtained TAF certification.

Industry Applicability

We primarily assist businesses with technical services for the final inspection and acceptance of PV systems. This includes verifying whether the PV system with design drawings and identifying any major anomalies defects. Electrical measurements are conducted based on design documentation. We provide system O&M training. By conducting thorough electrical, IR diagnostics and analyzing the data. To identify failure effects and recommend corresponding corrective actions. Also analyze PR to assess the power generation of the PV site.





Contact: Han-Chang Liu itri960529@itri.org.tw

Exhibited Technology

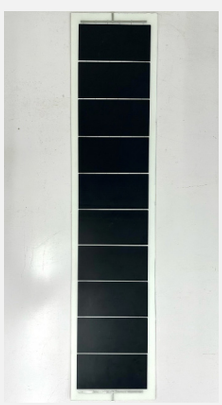
Flexible Silicon TBC PV Module

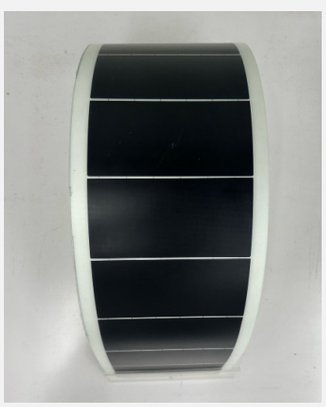
Technology Introduction

The Flexible Silicon TBC PV Module uses the independently developed high-efficiency TBC (TOPCon Back Contac) silicon solar cell technology and uses high-transmittance with low-glare encapsulant. It can replace the glass of traditional solar panel. The module not only reduces the weight by 70%, but also weighs only 3 kilograms per square meter. The bendable and easy-to-install features can be applied to old roofs with insufficient load-bearing capacity or large-span agricultural power symbiosis sites. It can also be widely used in mobile power sources such as campers, ambulances, etc., demonstrating multiple system applications and helping to increase the amount of solar photovoltaic installations.

Industry Applicability

The Flexible Silicon TBC PV Module has bendable and easy-to-install features can be applied to old roofs with insufficient load-bearing capacity or large-span agricultural power symbiosis sites. It can also be widely used in mobile power sources such as campers, ambulances, etc., demonstrating multiple system applications and helping to increase the amount of solar photovoltaic installations.





Contact: Hsin-Wei Fang SteveFang@itri.org.tw

Exhibited Technology

Amine-based carbon capture-solid adsorption carbon capture technology

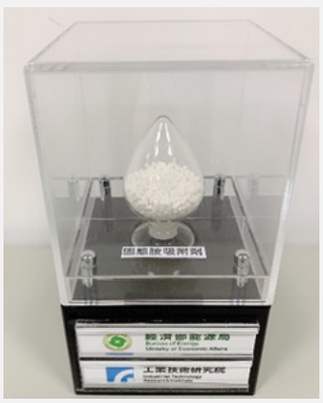
Technology Introduction

Instead of liquid ethanol amine, porous amine-based solid sorbents apply for flue gas CO2 capture under dry and humid conditions. CO2 adsorption shows better effect in kinetics and thermodynamics, sorbent regeneration, cyclic stability, essential regeneration techniques, and techno-economic analysis for CO2 capture from air.

Industry Applicability

Application for DAC could have benefits of carbon negative, also being a direct way of VER market (voluntary emission reduction).This technology could build business model of carbon negative and create opportunities of net zero industry.This technology is able to operate in flue gas with low CO2 concentration , and still has excellent capture capacity.Process of solvent-free solid amine sorbent technology could achieve the standard value of EU (Regeneration consumption <2GJ/ton CO2).





Contact: Chien Yuan Su sucy@itri.org.tw

Exhibited Technology

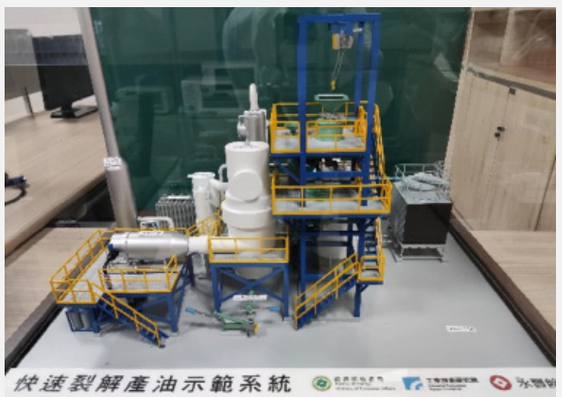
Fast pyrolysis technology and plastic chemical recycling applications

Technology Introduction

Special plastics were pyrolyzed and their monomers were recycled, For example, PMMA(Polymethylmethacrylate) was a widely used transparent plastic material. During production process, leftover pieces of PMMA were often generated. For increasing the economic benefit of the PMMA industry, this technology could decompose PMMA leftovers into MMA monomer by pyrolysis process. Furthermore, high purity r-MMA could be purified by distillation. The r-MMA could meet the specification while reuse into manufacture process.

Industry Applicability

The application of plastic pyrolysis industry mainly focuses on the recycling and reuse of waste plastics. Through fast pyrolysistechnology, waste plastics were converted into fuel oil, chemical raw materials or ecycled plastics, reducing the impact of plastic waste on the environment and creating resource value.



Contact: Chien Yuan Su sucy@itri.org.tw

Exhibited Technology

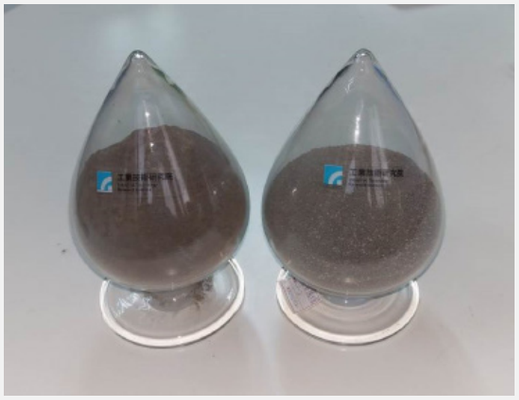
Catalytic gasification tar-removal technology

Technology Introduction

This technology used low-cost industrial byproducts as raw materials, which were reformed into bed catalysts and could be placed in fixed-bed, fluidized-bed or entrained-bed gasifiers. It had the characteristics of reducing the activation energy of the gasification reaction and the water-gas reaction. In addition to improving gasification efficiency, this developed technology also expanded the application of byproducts, improved the economic competitiveness of the gasification process, and increased the energy utilization efficiency.

Industry Applicability

De-tar catalyst is mainly used for tar decomposition in biomass gasification, with the aim of reducing tar blockage in downstream system and increasing the calorific value of the synthetic gas and the system's operating period.



Contact: Ming-Der Bai MDBai@itri.org.tw

Exhibited Technology

Dry anaerobic Fermentation and patented hydrolytic bacteria

Technology Introduction

Dry anaerobic fermentation system converts solid biomass waste such as food waste, poultry and livestock manure, and agricultural waste into biogas, which can be used for biomass heat and electricity. Combined with patented hydrolyzing bacteria (cellulose/protein/oil), it can improve the decomposition rate of feed source, increase gas production and shorten fermentation time.In addition to helping industries solve the problem of biomass waste pollution, it can also expand the application scope of green energy industry materials.

Industry Applicability

★ Agriculture: fruit and vegetable residues, livestock manure (cows, chickens, pigs), agricultural sludge, waste mushroom bags
★ Industry: Food scraps, food sludge, other organic sludge
★ Livelihood: food waste, sewage sludge



Contact: Jun-Jie Lin JunJieLin@itri.org.tw

Exhibited Technology

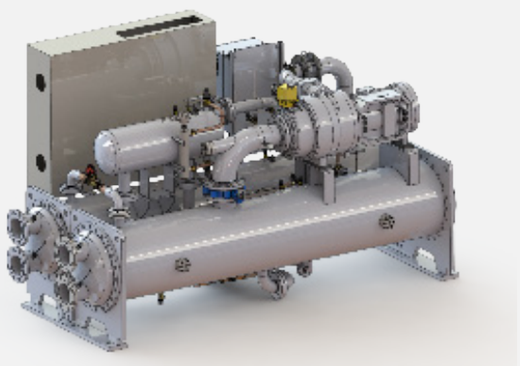
Low-carbon-emission High-efficiency Magnetic Bearing Centrifugal Chiller

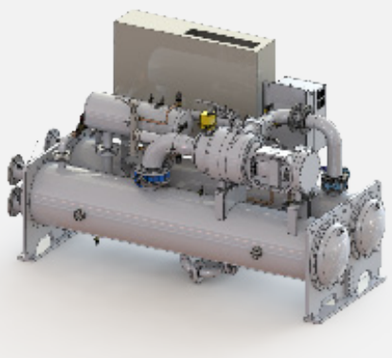
Technology Introduction

• Technological Innovation – Mass production of 120–550 USRT high-efficiency centrifugal chillers/ compressors using low-GWP (GWP=1) R1234ze refrigerant and magnetic bearings. System efficiency exceeds Taiwan's Level 1 energy standards by 10%, with IPLV 25% above ASHRAE's top benchmark. Operating noise is below 75 dB.
• Competitive or Intellectual Property Advantages – Proprietary high-efficiency aerodynamic components, permanent magnet motors, and heat exchangers.
• Important Achievements / Awards – Five commercial demonstration sites in Taiwan, applied in semiconductor manufacturing and central HVAC, achieving over 40% energy savings.

Industry Applicability

Chillers are essential for building HVAC and industrial process cooling, accounting for over 50% of total central air-conditioning electricity use. According to the International Energy Agency (IEA), global cooling energy demand could triple by 2050. Adopting chillers with low-GWP (GWP=1) refrigerants and 10% higher efficiency than Taiwan's Level 1 standard can reduce annual energy use by over 40% and cut carbon emissions by more than 45%, making it a key technology for achieving net-zero emissions by 2050.





Contact: Yu-Chi Chang YuChiChang@itri.org.tw

Exhibited Technology

Graded Energy Labels to Help You Buy Smart &Point-Absorber Wave Power Generator Design and Development Technolog

Technology Introduction

Taiwan is surrounded by the sea and is in a typhoon area. It is necessary to design WEC that overcome extreme weather conditions to meet Taiwan's geographical conditions. The method is to use long drift distances to solve the wavelength problem, and develop active passive cable recovery mechanisms combined with optimized electromechanical control technology to achieve the best reliability and efficiency. Through 1,600-hour tests at sea, the maximum wave height can be reached 5 meters.

Industry Applicability

In order to accelerate the feasibility of the construction of Taiwan's Wave Energy Power Plant, extreme weather and environmental factors and the difficulty of deploying maritime projects are needed. The point-absorbing wave power generation system developed by this technology has a patent for a long-stroke cable reply mechanism and is integrated into a modular floating structure. It can meet the needs of low-cost settings in different depths and wave seas. It is easy to maintain and can survive in typhoon weather environments, greatly improving the feasibility of domestic wave energy industry settings.



Contact: Cheng-Hao Yang CHYang@itri.org.tw

Exhibited Technology

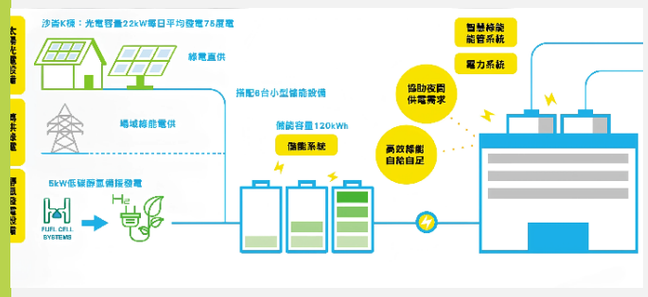
Solar Photovoltaic Systems Combined with Energy Storage

Technology Introduction

The distributed energy resources supply architecture integrates photovoltaic, energy storage, and low/zero carbon backup power to deploy net-zero, low-carbon electricity. It's modular, scalable, and supports fast-deployed green energy supply solutions. All of these features make it an effective tool for achieving net-zero carbon emissions goals.

Industry Applicability

This distributed energy resource (DER) supply architecture, integrating photovoltaic systems, energy storage, and low/zero-carbon backup power, offers a modular and scalable solution ideal for diverse industries. It enables rapid deployment of clean energy in microgrids, commercial buildings, data centers, remote sites, and disaster-resilient infrastructure. By ensuring energy reliability and flexibility while minimizing carbon emissions, it plays a vital role in supporting the energy transition and achieving net-zero carbon goals across urban, rural, and industrial applications.





Contact: Ping-Kuan Chang itriB10058@itri.org.tw

Exhibited Technology
Application of Flexible Photovoltaic Modules Integrated into Noise Barriers

Technology Introduction

This technology integrates flexible photovoltaic modules into noise barriers, enabling a multifunctional and composite application that combines both sound insulation and power generation. In addition to establishing a demonstration site and analyzing its power generation performance, future expansion will target installation on noise barriers along high-speed railways, conventional railways, and bridges.

Industry Applicability

Photovoltaic noise barriers integrate solar power with noise reduction, offering high industrial potential. They reduce traffic noise and generate green energy along roads and railways, improve land use, support local power needs, and align with net-zero goals-making them key to smart cities and sustainability.





Contact: chechih su chechih_su@retech.com.tw

Exhibited Technology
Chip-based Real-Time Metal Ion Sensing System

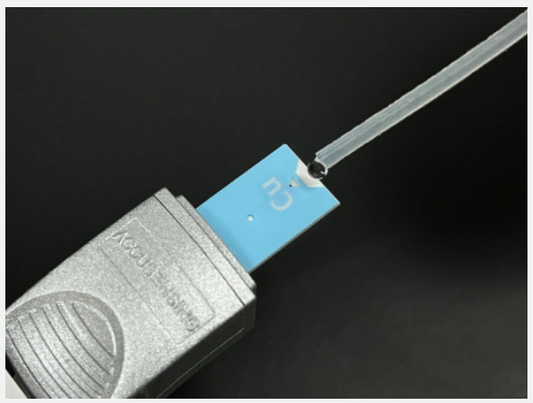
Technology Introduction

Smart sensor for analyzing heavy metal doesn't require any reagent and only needs one drop of sample to complete the analysis with digital reading in minutes, to ppb level.
By overcoming the limitations of reagent use in conventional heavy metal analysis methods, there is no longer any need to consider reagent storage or mixing steps. Smart sensors can be easily connected to a hand-held meter, PC/laptop, or automated continuous monitoring systems. Its user-friendly design, similar to a blood glucose strip, makes it easy for even non-technical users to operate.

Industry Applicability

This system uses electrochemical current detection instead of conventional spectrometers. It resists turbidity and color interference, allowing real-time metal ion monitoring in both treated and raw wastewater. This supports source control, improves treatment efficiency, and optimizes chemical dosing with scientific data.





Contact: Brian chhs0123@gmail.com

Exhibited Technology

Transforming Recycled Textiles into Co-extruded EF Wood Composites

Technology Introduction

EF Wood is an innovative recycled material designed to address the long-standing challenge of reusing composite non-woven fabrics and polyester-blended textiles. Using proprietary technology, Crown Elite transforms PE and PET protective pads, non-woven mask offcuts, and shredded textile waste into EF Wood pellets, which are then extruded into high-strength, durable boards. By integrating textile fibers, EF Wood significantly enhances structural integrity, weather resistance, and lifespan while eliminating issues found in traditional wood or WPC, such as water absorption, swelling, and cracking. Free of wood powder, EF Wood prevents mold, insect damage, and color inconsistency while offering slip-resistant and flame-retardant properties. Fully recyclable, it maintains superior physical performance even after multiple recycling cycles, exceeding national standards. As a carbon-saving, sustainable solution, EF Wood delivers high-value applications across various industries.

Industry Applicability

EF Wood introduces a breakthrough recycling technology that transforms previously unrecyclable composite non-woven fabrics and polyester-blended textiles into high-performance, fully recyclable boards. Unlike traditional wood or WPC, EF Wood's proprietary compounding and extrusion process integrates textile fibers, enhancing structural strength, weather resistance, and durability. The technology eliminates water absorption, swelling, and cracking issues while providing slip-resistant and flame-retardant properties without using wood powder. This innovation not only extends product lifespan but also enables multiple recycling cycles without degrading physical performance, setting a new benchmark for sustainable material solutions.





Contact: Kelly Tseng kelly@ukl.com.tw

Exhibited Technology
Design and Application of Pineapple Leaves Fiber

Technology Introduction

Recycled pineapple leaves have given rise to a new sustainable textile: Pineapple Leaf Fiber (PALF). It can be spun into yarn, woven into fabric, and even transformed into leather-like materials from production residue. PALF supports responsible consumption by turning agricultural waste into eco-friendly fashion. Its applications span a wide range of products, including T-shirts, knitwear, bags, hats, home furnishings, and cultural gifts—blending sustainability with style.

Industry Applicability

Pineapple leaf fiber yarn is made from recycled agricultural wasteand features natural antibacterial, breathable, and biodegradable properties. Using professional textile techniques, it can be blended with natural fibers like cotton or tencel to create soft, comfortable fabrics. It is widely applied in T-shirts, knitwear, scarves, towels, bags, and home textiles, combining style with sustainability. By turning discarded pineapple leaves into valuable materials, it helps reduce agricultural waste and carbon emissions. With strong potential in circular economy and green fashion, it is gaining attention from more brands and designers.





Contact: Sabrina Lin sabrinalin@yesiang.com

Exhibited Technology

The World's First Carbon-neutral Regenerative Filter

Technology Introduction

In 2024, Yesiang introduced the world's first carbon-neutral chemical filter for semiconductor cleanrooms. It removes invisible AMCs—acidic, alkaline, and organic gases—to protect wafers and ensure yield. Unlike single-use filters, it features a modular design with proprietary regeneration tech. Certified by ITRI, it can be reused 10+ times, with 95% recycling and 85% lower carbon emissions.

Industry Applicability

Challenging wasteful single-use filters, Yesiang has pioneered circular solutions since 2014. Its patented regenerative filters are reusable over 10 times, effectively cutting carbon emissions and waste. Ideal for the semiconductor and precision industries, the system integrates IoT and subscription services to reduce costs and boost efficiency, advancing clean manufacturing toward net-zero goals.





Contact: Angela Tang angelatang@infinipowertech.com

Exhibited Technology
GridEdge Regenerative Smart Grid Simulation and Testing System

Technology Introduction

GridEdge by INFINIPOWER is a regenerative smart grid simulator for EVs, ESS, renewable power, and AI server testing. It combines bidirectional AC/DC power, energy recovery, waveform simulation, and AIoT monitoring, supporting full four-quadrant control and IEC 61000 grid fault simulations.Its modular design improves cooling, reduces EMI, increases power density by 50%, and boosts output current by 35%.

Industry Applicability

GridEdge Regenerative Smart Grid Simulation and Testing System is built for EVs, energy storage, PV inverters, data centers, and industrial power. It simulates grid anomalies like voltage sags and frequency shifts to verify product stability.
It supports EVSE and BOBC testing (IEC 61851, GB/T 18487), renewable energy validation, and energy recovery efficiency analysis. Ideal for server, telecom, and aerospace power testing.





Contact: Chen, Hsuan-Chi jeschen@itri.org.tw

Exhibited Technology

AI to the Rescue: Turning Waste into Value to Improve Road Quality

Technology Introduction

A new formula leverages the hardness and durability of steel slag to extend road life and reduce gravel use, helping eliminate potholes and supporting low-carbon, sustainable infrastructure. Through intelligent verification using AI and blockchain, the quality and flow of recycled aggregates are fully tracked, enhancing transparency, brand credibility, and market trust.

Industry Applicability

This technology combines steel slag with other inorganic resources to enable 100% recycled material substitution and cross-industry reuse. By integrating AI, IoT, and blockchain, it ensures full tracking of recycled materials' quality and flow. This transparent system enhances the image and trust in recycled products. Proven in the steel industry, it also shows promise for use in plastics, batteries, and textiles, supporting global circular economy goals.





Contact: WANG, TZU-CHI u227025@taipower.com.tw

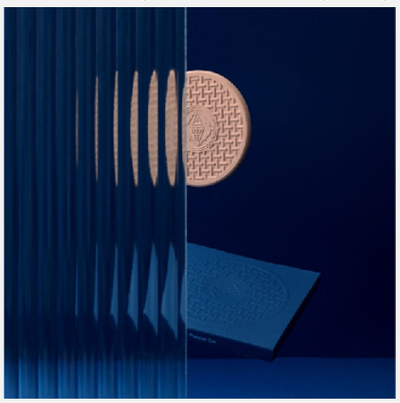
Exhibited Technology
TPCreative Reuse Project for Retired Electrical Materials

Technology Introduction

This project centers on the concept of circular regenerative design, breathing new life into decommissioned power equipment. Retired wooden crossarms are transformed into reading lamps; transformer box casings are repurposed into heat-insulating pads and trays; Sun-Moon Lake sediment is kiln-fired into manhole-cover-style coasters; and brass sealing strips are reforged into pens and spinning tops. Integrating material processing and cultural design, the project creates unique, unreplicable works that exemplify Taipower's commitment to circular economy and sustainability.

Industry Applicability

This project transforms decommissioned power equipment into valuable resources, showcasing its versatility across design, architecture, culture, and craft.
Weathered wooden crossarms, with natural texture and stability, are ideal for furniture and spatial design. Transformer box steel panels, combining strength and visual character, become cultural products and decorative materials. Treated Sun Moon Lake reservoir sediment offers ceramic and pottery applications. Brass sealing strips are recast into historically rich pens and art, expanding the high-quality metal craftsmanship market.
This initiative integrates circular design, fostering a green supply chain and regional revitalization.





Contact: Lin, Jhe-Yu u621680@taipower.com.tw

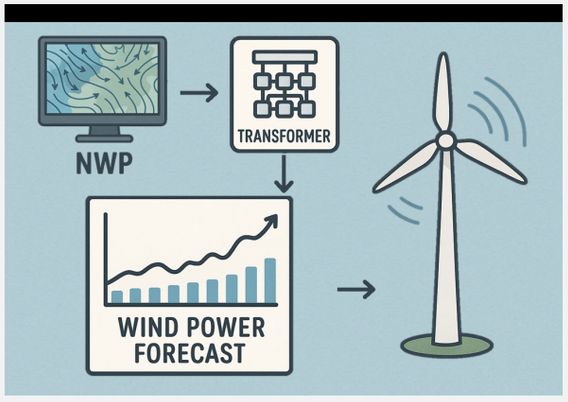
Exhibited Technology
Rapid Deployment of Wind Power Forecasting Technology

Technology Introduction

Wind power forecasting typically relies on supervised learning with observational data, a process that requires months of data collection, particularly in Taiwan due to its seasonal wind variations. This study, however, utilizes Numerical Weather Prediction (NWP) data and a Transformer-based model to rapidly generate reasonably accurate forecasts without observational inputs.

Industry Applicability

Wind power forecasts are critical for grid operators to optimize dispatch units. Our technology enables immediate model training once wind turbine grid connection times and locations are known, providing grid operators with up-to-date wind power information for operational planning. This addresses the challenge of significant delays caused by relying on months of observational data for model training.





Contact: Su, Yan-Ju a64394@taisugar.com.tw

Exhibited Technology

T-REC Production Model of Sugar Mills

Technology Introduction

TSC Huwei and Shanhua sugar mills produce 110,000 metric tons of bagasse annually, 70% of which powers on-site cogeneration. To advance the green energy transition, Huwei was certified as a renewable energy facility in 2024 and is expected to generate 5,000-6,000 T-RECs in 2025; Shanhua targets 3,000-4,000 T-RECs in 2026. These initiatives drive the sugar industry toward net-zero sustainability.

Industry Applicability

By promoting biomass renewable energy certificates, the sugar mills can sell them through trading platforms to environmental benefit users — including banks, tech, and biotech firms — to support RE100 goals, enhance ESG scores, and improve corporate image. This not only creates additional revenue for the mills, but also drives domestic renewable energy adoption and green economic growth.




再生能源憑證
Renewable Energy Certificate

Contact: Lu, Chia-Yen a05917@taisugar.com.tw

Exhibited Technology

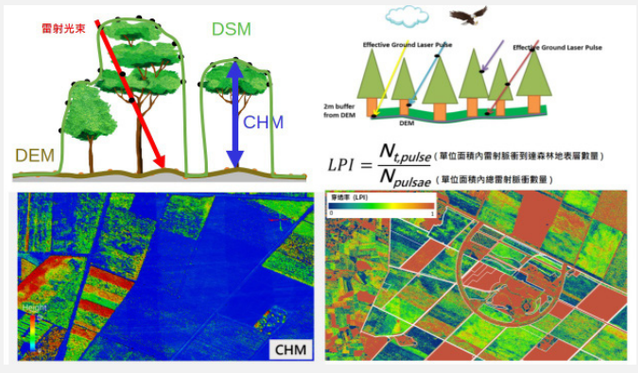
Airborne LiDAR-Based Assessment of Carbon Sequestration Potential in Afforestation Sites on Taiwan Sugar Corporation Farmland

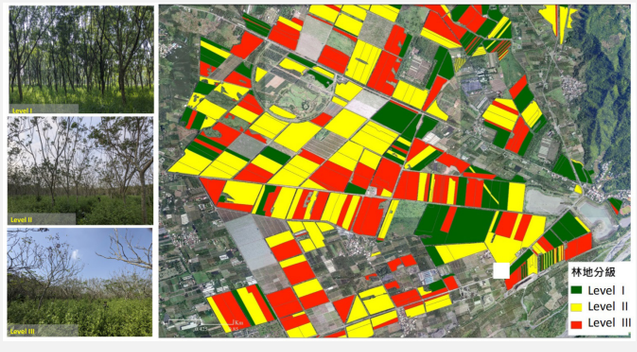
Technology Introduction

TSC collaborated with Professor Wang Chi-Kuei's team at the Department of Geomatics, NCKU, to apply airborne LiDAR technology to digitalize 10,337 hectares of afforestation land. Over 6,000 forest blocks were identified, with tree density, height, and crown penetration measured for each. The blocks were classified to identify areas with high potential for natural carbon sequestration applications.

Industry Applicability

In alignment with Taiwan's Pathway to Net-Zero Emissions by 2050 policy, airborne LiDAR technology and digital modeling are applied to assess tree growth across large-scale afforestation areas. This supports the identification of natural carbon sink sites and the planning of long-term carbon sequestration strategies, advancing corporate social responsibility and environmental sustainability.





Contact: Chia-Lin Chang 078794@cpc.com.tw

Exhibited Technology

CPC Soft-Carbon Batteries for E-Scooter

Technology Introduction

CPC develops CPC-001 scooter battery using proprietary soft-carbon anode. It delivers 3C fast charge, 2C discharge and 3,500+ cycles with >85 % local content. Paired with a 2C fast-charging swap cabinet that supports reservations for guaranteed full batteries, CPC is Taiwan's first swap operator applying for domestic cell subsidies, enabling efficient low-carbon mobility.

Industry Applicability

Optimized for e-scooters, fleet sharing and delivery services, CPC-001's 3C/2C capability minimizes downtime while its 3,500-cycle life cuts replacement costs. Reservable fast-swap cabinets can be deployed at stations, hubs and high-demand zones, boosting operational efficiency and doubling as grid-support storage to drive low-carbon transport.





Contact: YU YU-MEI yumei@mail.water.gov.tw

Exhibited Technology

Develop small hydropower plants at Shalu Water Distribution Center and Hushan Water Treatment Plant

Technology Introduction

1. The Shalu Water Distribution Center uses a natural drop clean water pipeline with a capacity of 715KW and an annual power generation of 4.8 million kWh. It is the first commercial site in Taiwan to use tap water clean water pipelines for power generation.
2. The Hushan Small Hydropower Plant is the largest closed pipeline small hydropower plant in Taiwan with a capacity of 1.5MW and an annual power generation of 9 million kWh.

Industry Applicability

The new small hydropower plant utilizes a closed-pipeline system and high-efficiency turbines to achieve zero-carbon power generation through pure hydropower. It provides stable, clean energy while significantly reducing greenhouse gas emissions, supporting Taiwan's goal of net-zero carbon emissions by 2050.





Contact: Tao-Lin Li tllinsc@mail.mirdc.org.tw

Exhibited Technology
Enduring-High-Efficiency Combustion System for Industrial Furnace

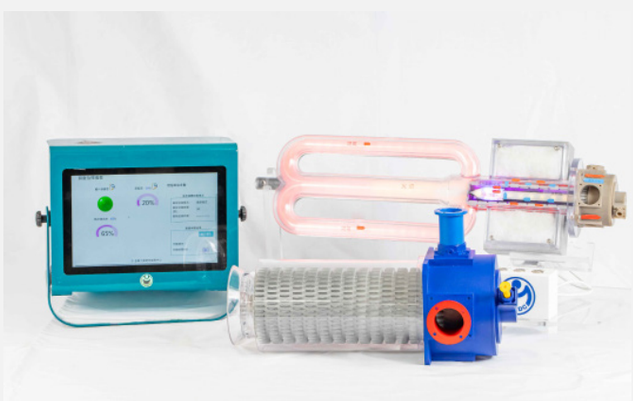
Technology Introduction

AI learning establishes a prediction model that can truly reflect the characteristics of combustion furnaces and self-preheating burners. According to the needs of individual combustion furnaces, intelligent dynamic decisions are made on the switching time and switching mode of multiple burners. Through the rolling correction of historical parameters, the model accuracy can be continuously operated in the best energy-saving mode at high average temperature. Provides solutions for improving the long-term energy-saving efficiency of medium and high temperature (500~950 ° C) combustion furnaces.

Industry Applicability

Reduced energy costs: Reduced production costs through optimization of the AI dynamic parameter adjustment system.
Stable product quality: Temperature uniformity reaches ±3° C to ensure stable product quality.
Extended equipment life: The application of the dynamic parameter adjustment system can reduce excessive equipment operation and unnecessary energy consumption, and extend the service life of industrial furnaces





Contact: Yen-Tang Chen t106459003@ntut.org.tw

Exhibited Technology

AI-Based Hydrogen-Natural Gas Combustion and Mixing Control System

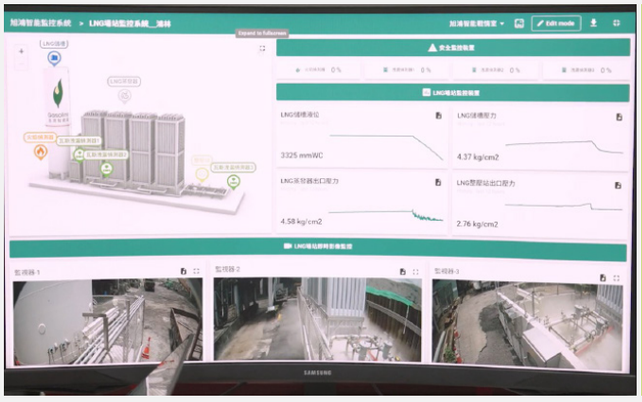
Technology Introduction

This AI-assisted system optimizes hydrogen-natural gas combustion by adjusting mixing ratios in real time using flame, temperature, and exhaust data. It improves efficiency by 20%, reduces fuel use, and cuts carbon emissions by up to 25%. Powered by a proprietary LSTO model, it ensures stable performance under varying conditions. Ideal for boilers and furnaces in sectors like semiconductors, food, and biotech, it supports clean energy use and net-zero goals.

Industry Applicability

This technology is applicable to industrial combustion equipment such as boilers and furnaces, especially in hydrogen-natural gas co-firing scenarios. It is well-suited for energy-intensive industries such as semiconductors, food processing, and biotechnology, effectively improving combustion efficiency, reducing carbon emissions and fuel costs, and helping enterprises achieve energy transition and comply with carbon regulations and net-zero targets.





Contact: Hsiu-Cheng Chang shawn1210@pidc.org.tw

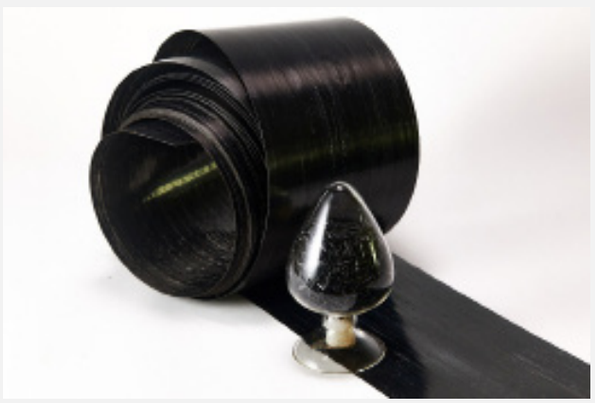
Exhibited Technology
Next-Generation Thermoplastic Composite UAV Manufacturing Technology

Technology Introduction

To meet rising demand for thermoplastic composite UAVs and reduce import dependence, we developed high-performance prepregs, long-fiber thermoplastics, and hybrid molding technology. This enables UAV parts production over five times faster than thermoset processes. Ultrasonic welding replaces drilling, cutting metal use, weight, and carbon emissions by over 40%. All parts are recyclable. This strengthens Taiwan's composite supply chain and boosts competitiveness in the global UAV market.

Industry Applicability

The relevant technologies have been successfully transferred to leading domestic enterprises, accelerating the integration of Taiwan's thermoplastic composite UAV industry chain. This includes assisting upstream carbon fiber manufacturers in developing high-performance fibers, enabling midstream suppliers to set up mass production lines, and working with downstream aerospace companies to apply Tape Winding and Hybrid Molding processes for the joint development of thermoplastic composite UAVs.





Contact: Chih-Wei Hsu Angus.hsu1025@itri.org.tw

Exhibited Technology

High-energy Hydrogen Portable Power Supply

Technology Introduction

As net-zero goals drive global energy shifts, hydrogen emerges as a key clean fuel for mobile power. With high energy density, fast refueling, and zero emissions, hydrogen systems outperform traditional batteries in endurance, weight, and harsh-environment reliability. Ideal for outdoor use, disaster relief, and field operations, this technology advances the hydrogen value chain and boosts Taiwan's position in the global green energy sector.

Industry Applicability

According to Precedence Research, the global portable power market reached USD 4.51 billion in 2024 and is expected to grow to around USD 6.61 billion by 2034, with a compound annual growth rate of 3.90%. Portable fuel cells, known for their high efficiency, low emissions, and mobility, are especially well-suited for outdoor power, emergency backup, and energy supply in remote areas. These advantages highlight their strong potential for future market growth.





Contact: Ying-Ting Huang het@itri.org.tw

Exhibited Technology

CO_2-fixing Polycarbonate

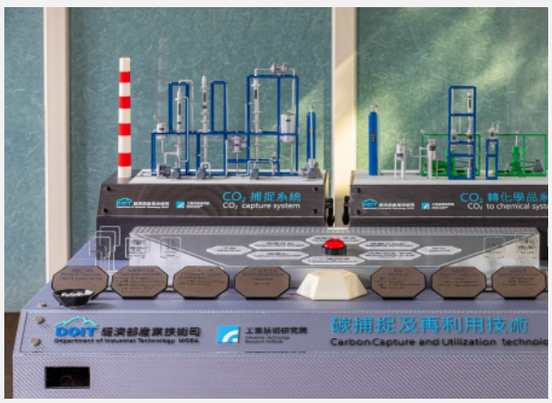
Technology Introduction

Traditional phosgene-based PC production emits high CO_2 and uses toxic phosgene. Our CO_2-based PC technology captures CO_2 from flue gas, converting it into polycarbonate via a recyclable catalyst and alcohols, with zero hazardous emissions. Each kg of PC reduces CO_2 by 1.19 kg. Honored with the 2024 R&D 100 Award, this innovation transforms waste gas into green gold, driving net-zero goals and sustainable industry.

Industry Applicability

In partnership with a specialty chemical manufacturer, this patented technology pioneers the world's first CO_2-based polycarbonate (PC) production system utilizing flue gas as a carbon source. It reduces carbon emissions by 17% by replacing petrochemical feedstocks with captured CO_2. Applicable to PC, polycarbonate diol (PCDL), and polyurethane (PU), it enables scalable, sustainable polymer production and is expanding into Taiwan, Europe, and the U.S.





Contact: Yi-Chun Liao gingkoliao@itri.org.tw

Exhibited Technology

Bio-based Chemicals with Softening- wicking- elasticity Technology

Technology Introduction

Traditional petrochemical-based textile auxiliaries fall short under rising demands for sustainability and performance. This project develops bio-based itaconate copolymers (up to 50% biocontent) that integrate softness, moisture absorption, and elasticity. Engineered with tailored alkyl chains and grafting, they boost fiber adhesion, wash durability, and processing ease—offering a low-carbon, high-performance solution for high-elasticity textiles.

Industry Applicability

This bio-based technology uses natural acids and alcohols to create a sustainable, high-performance textile auxiliary for high-elasticity knits. It improves softness, moisture absorption, and elasticity. Patented and transferred to domestic industries, it enhances product value and commercialization. With broad apparel applications, it supports low-carbon goals and reduces reliance on petrochemical imports.





Contact: Yu Ming-Hung Micah@itri.org.tw

Exhibited Technology
kV-Level Multilevel Power Conversion for High-Voltage Grid Integration

Technology Introduction

Adopting a Modular Multilevel Converter (MMC) architecture, the power conversion system enhances voltage flexibility and supports multi-voltage renewable energy. High-voltage insulation and grid-connection technology overcome low-voltage limits, enabling in-house design and validation. Patented multi-PCS phase/pulse sync control reduces circulating currents and boosts stability. Innovative pulse strategies cut switching loss and balance heat dissipation.

Industry Applicability

Overcome high-voltage technology barriers, master high-power conversion core technology, and assist in developing renewable energy grid-connected converters to meet market demands. Digital power conversion and control technology promote traditional industry upgrades, drive storage supply chain autonomy, and enter the high-voltage PCS market.





Contact: Lina Tsai linatsai@textiles.org.tw

Exhibited Technology

Mold-Free 3D Embossed Textile Technology

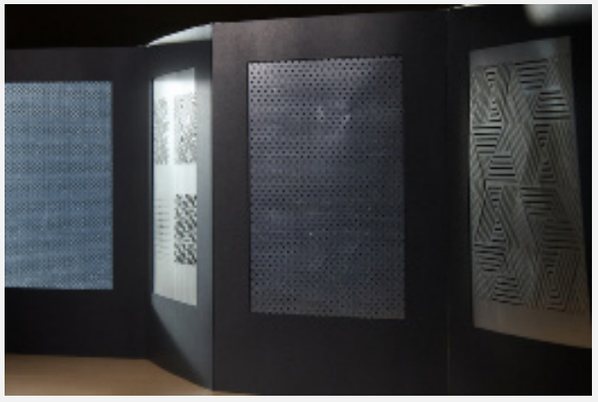
Technology Introduction

This mold-free 3D embossed textile technology eliminates the need for tooling, improving fabric texture, elasticity, and hand feel. The process is efficient and low-cost, supporting sustainability and circular economy goals.

Industry Applicability

The 3D embossed textile uses patented mold-free processing to create durable, high-quality textures and hand-feel. With eco-friendly benefits, it applies to apparel, bags, and home goods, supporting customization and small production to meet diverse market needs.





Contact: Chen,Wel-hung whChen.1093@ttri.org.tw

Exhibited Technology

One-stop breathable, waterproof, recyclable outdoor apparel technology

Technology Introduction

This Taiwan innovation offers the world's first one-stop solution for ultra-breathable, waterproof, and fully recyclable outdoor fabric. Made from non-toxic, fluorine-free all-nylon, it provides 1.0 CFM air permeability and over 20,000 g/m²·24hr moisture vapor transmission for comfort, performance, and low carbon impact. The single-material design makes recycling easier, and the process reduces carbon emissions by over 30%. This technology helps brands reach sustainability and net-zero goals, enhances competitiveness, and puts Taiwan's textiles at the forefront of green and circular fashion.

Industry Applicability

This technology uses non-toxic all-nylon and an efficient process to make breathable, waterproof, recyclable fabrics. The single-material design simplifies production and improves recyclability, reducing carbon emissions by over 30%. Ideal for outdoor, sports, and protective apparel, this innovation provides durability and comfort. By overcoming recycling barriers of multilayer textiles, it helps brands achieve net-zero and sustainability goals while increasing global competitiveness.





Contact: CHEN,WEI-HUNG Whchen.1093@ttri.org.tw

Exhibited Technology

Mycelium-Based Fiber Leather Cultivation Technology

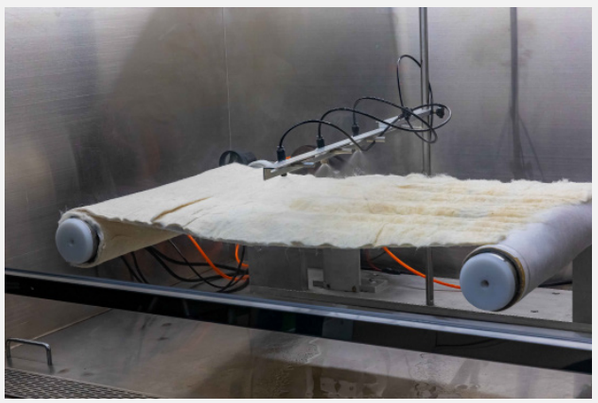
Technology Introduction

Innovative Cultivation:
Textile fiber substrates guide uniform mycelium growth, enhancing pellicle stability and strength for durable, structurally robust mycelium leather.
Roll-to-Roll System:An automated liquid and nutrient supply replaces tray-based methods, increasing production efficiency and space utilization.
Sustainable & Ethical:
Mycelium leather uses fewer solvents, creates less pollution, and avoids animal cruelty—offering an eco-friendly alternative to traditional leather.

Industry Applicability

Mycelium fiber leather combines textile substrates with controlled cultivation to enable stable, scalable production. It offers durability, flexibility, and processability, making it ideal for bags, shoes, interiors, and automotive use. Free from solvents and animal inputs, it supports ESG and carbon-neutral goals, offering a sustainable alternative to traditional leathers and gaining attention in global fashion and functional material industries.





Contact: Yunsin PAN yunsin@barkingdog.ai

Exhibited Technology

EZAMA AI

Technology Introduction

EZAMA AI Virtual Agent AI Laoshifu is a voice-based intelligent assistant designed to support real-time knowledge interaction. Using speech recognition and retrieval-augmented generation (RAG), it enables users to ask questions naturally and receive precise answers from internal content such as manuals or SOPs. The system is modular, multilingual, and easy to deploy without coding, making it highly adaptable for different training environments. With voice Q&A and context-aware responses, AI Laoshifu enhances learning efficiency and standardizes knowledge delivery across use cases.

Industry Applicability

The EZAMA AI virtual assistant, AI Master, is a voice-activated intelligent assistant. It leverages speech recognition and Retrieval-Augmented Generation (RAG) technology to enable users to ask questions naturally and receive precise answers from manuals or standard operating procedures (SOPs).
It supports multiple languages, is easy to deploy, and requires no coding. It improves learning efficiency through voice Q&A and context-aware responses.





Contact: Kelvin Huang kelvin.huang@pilotgaea.com.tw

Exhibited Technology

AI Vision Camera

Technology Introduction

The MES3D integrates a high-performance binocular camera with depth processing and AI capabilities. It captures synchronized 3D images, enabling on-device measurements such as length and area without a computer. With built-in object recognition and image classification, it's ideal for inspections, site surveys, and spatial analysis—streamlining fieldwork with speed and precision.

Industry Applicability

AI vision cameras offer instant depth-of-field imaging and spatial measurement capabilities, making them widely used in industrial applications requiring rapid recording and precise positioning. They are suitable for landscape documentation, post-disaster surveys, environmental monitoring, and other applications, providing reliable image data with spatial positioning and measurement capabilities, facilitating academic research, policy formulation, and engineering review.





Contact: Hung-Tsai Wu HungTsaiWu@itri.org.tw

Exhibited Technology

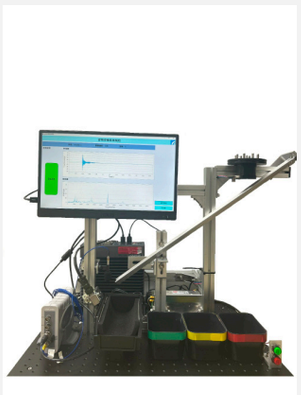
Acoustic-based Non-Destructive AI Inspection

Technology Introduction

This technology realizes automatic identification of sound signal characteristics by tapping and collecting sound of metal products, combined with audio signal analysis and AI technology. It can detect the internal quality without destroying the workpiece. It also has a systematic database and AI training interface, which can provide instant feedback and adjust the AI model when the recognition rate decreases.

Industry Applicability

This system uses the characteristic of metal products making sounds when struck. It can be used in factories to inspect semi-finished products on production lines, detect defective products immediately to reduce losses from subsequent processing and product scrapping, improve defect detection rate and increase the reliability of product shipments; it is suitable for a variety of component inspections.





Contact: Chin-Kuei Chang Craig@itri.org.tw

Exhibited Technology

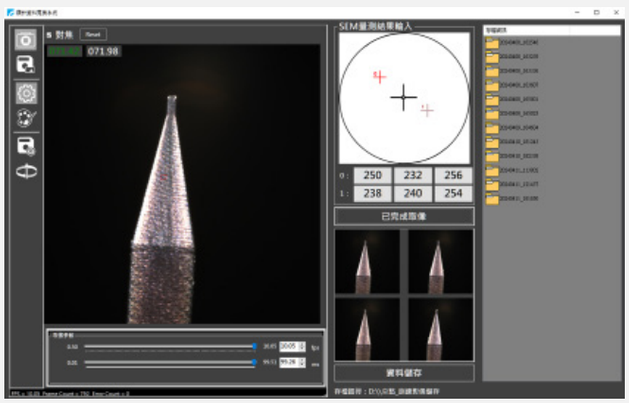
Intelligent non-destructive drill bit detection module

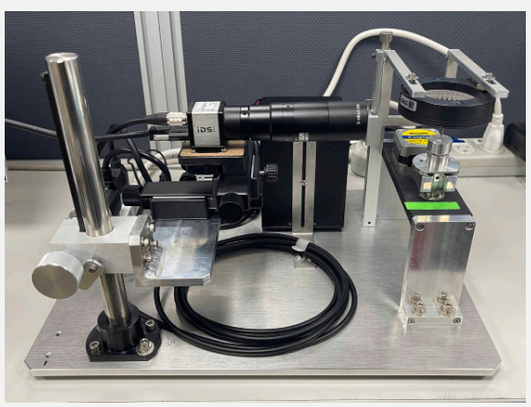
Technology Introduction

Precision drill bits are key components in the PCB micro-drilling process. Their quality directly affects the performance and durability of PCB boards. The intelligent detection system can improve real-time quality control and accuracy, reduce the risk of human error, and provide higher quality products.

Industry Applicability

This module is based on non-contact machine vision inspection technology and combined with AI models. It is mainly used for precision drill bit inspection of key components in PCB micro-drilling process. It can quickly detect the quality of drill bits and help manufacturers improve production efficiency and control the quality of finished products.





Contact: Jen jen@yichan8.com

Exhibited Technology

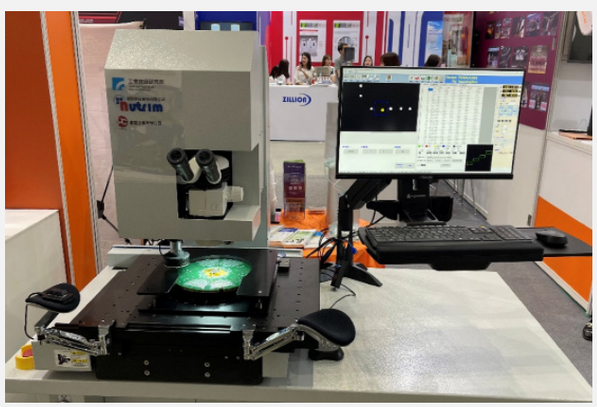
AI intelligent probe identification and needle adjustment collaborative system

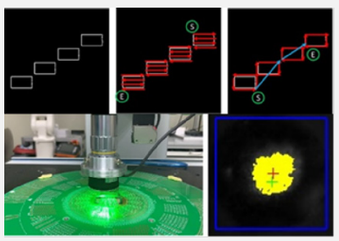
Technology Introduction

The rapid automatic alignment technology and Auto Focus technology are introduced and a high-precision calibration microscopic image coordinate system is established to assist the existing manpower in the automated full-range inspection of probe cards, achieving a human-machine collaborative alignment mechanism to reduce the probe adjustment time.

Industry Applicability

It will promote the intelligent transformation and upgrading of semiconductor peripheral equipment. In the future, a high-precision automatic needle adjustment system can be developed in combination with intelligent probe automatic alignment technology, in order to achieve the upgrade from human-machine collaboration to fully automatic intelligent needle adjustment, greatly speeding up the system needle adjustment time and reducing the dependence on skilled inspection personnel.







Contact: Will Chiu willchiu@glucktech.com

Exhibited Technology

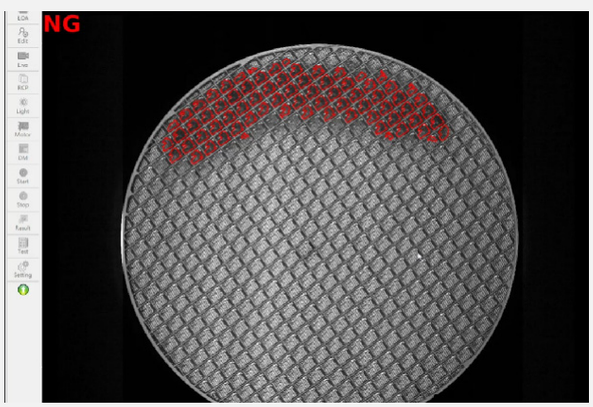
Gluck AI

Technology Introduction

This system overcomes the bottleneck that hinders the industrialization of traditional AI: it integrates supervised classification and unsupervised anomaly detection to address the cost pain point of industrial data annotation. It achieves a 98% defect recognition accuracy with only 30 sets of samples. It can be directly connected to PLC or PC systems, seamlessly integrating with existing production lines, and requires only the computing power of a single graphics card.

Industry Applicability

This system enables even those with limited coding skills to create AI-based applications. It deeply integrates process parameters and quality correlation models to achieve production-level reliability with a false alarm rate of less than 0.1%. Combined with a modular licensing model, it enables small and medium-sized manufacturers to upgrade to smart inspection at one-third the cost of traditional AOI equipment.



Contact: Harry Lai 7107@tpi.tw

Exhibited Technology

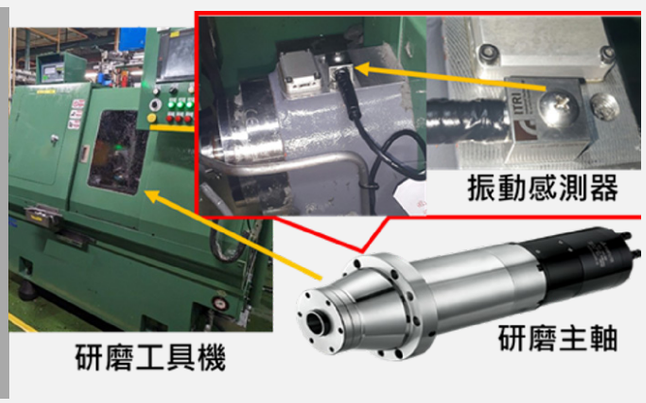
AI-based Monitoring and Adaptive Control

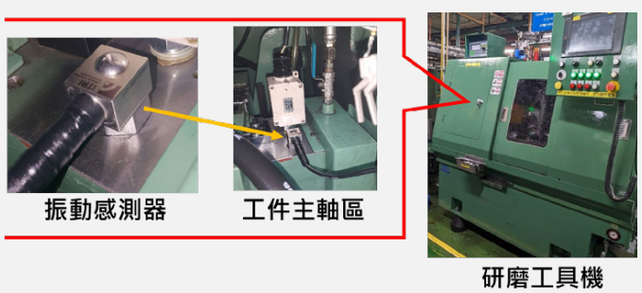
Technology Introduction

Spindle Condition Monitoring:Establishes a bearing health index based on signal characteristics to ensure machining quality.
Adaptive Control of the Grinding Spindle:Builds a grinding process decision-making model to diagnose the grinding wheel condition in real time, and adjusts grinding parameters through adaptive control to ensure overall process efficiency.
the system enables real-time assessment of spindle health.

Industry Applicability

This solution integrates low-noise vibration sensors with edge computing technology into a single module. Through envelope spectrum analysis and signal filtering techniques, it extracts effective sensing signals to establish a bearing operation health index, enabling real-time monitoring of spindle bearing conditions.
By analyzing signals from current, vibration, and non-contact sensors, a grinding process decision model is constructed to diagnose the grinding wheel condition in real time.





Contact: Tiffany Lin Tiffanylin@via.com.tw

Exhibited Technology

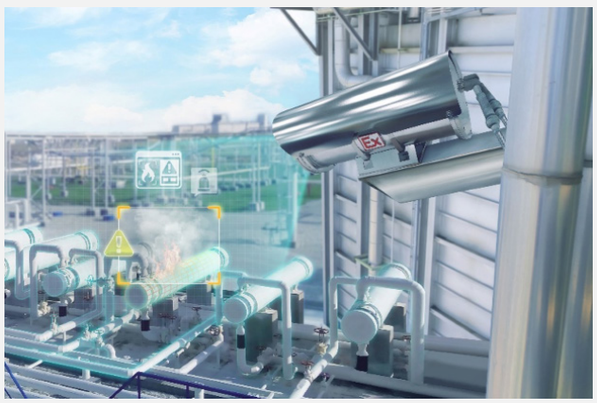
VIA FireWatch 365 Fire Alert & Prevention System

Technology Introduction

Prevent fires in factory and warehouse facilities with the VIA FireWatch 365 Fire Alert & Prevention System. Once a threat is identified, the system automatically alerts operators and records the incident for review. The system can be deployed at scale across industrial environments. By automating smoke detection, it enhances operational safety and enables proactive responses to potential fire risks.

Industry Applicability

It enhances industrial safety by creating a secure factory environment and promoting sustainable development. Widely used in the petrochemical industry, it is also being adopted across various factory-related sectors. The system is easily deployable in harsh environments, including sensitive process areas (explosion-proof + IP68) and high-risk zones (outdoor type + IP68).





Contact: carol carol@droxotech.com

Exhibited Technology

AAROW Smart Cleaning Technlology Efficient Cleaning for Gas Storage Tanks

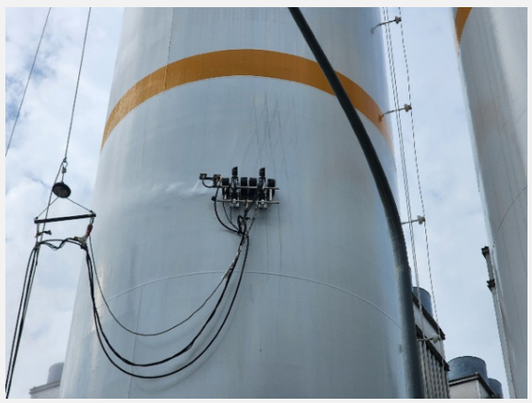
Technology Introduction

The cleaning robot is optimized for the surface of large curvature tanks. It uses a magnetic wheel crawling module, which can stably adhere to the surface of various curvature tanks and can move flexibly even on vertical surfaces. The cleaning module is equipped with a high-pressure water gun system to ensure that every surface is thoroughly cleaned during the cleaning process, greatly improving cleaning efficiency and quality.

Industry Applicability

As the demand for gas tank maintenance increases, cleaning robots have expanded from the semiconductor industry to a variety of tank structures and application scenarios, such as the steel industry, high-pressure gas storage equipment, and new energy industries. In the future, they may become an important solution for the tank maintenance market and improve the safety and operating standards of industrial sites.





Contact: Pey Lu pc.lu@kopherbit.com

Exhibited Technology

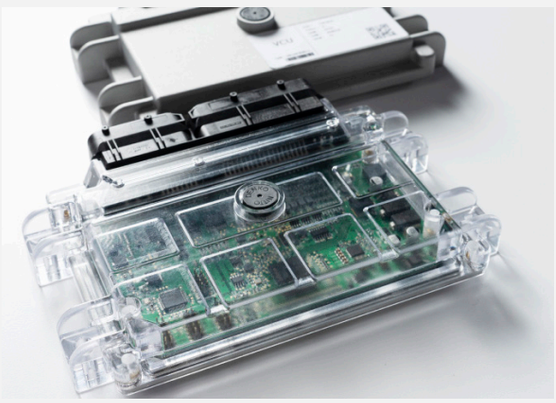
KopherBit Universal Controller & ECU Development Platform

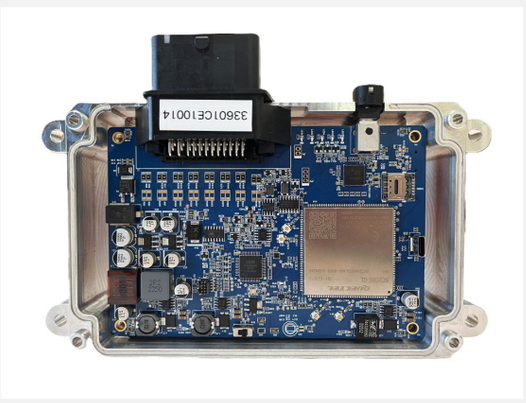
Technology Introduction

KopherBit is Taiwan's pioneer to develop an AUTOSAR-compliant embedded platform. KopherBit helps small to mid-sized OEMs build ECUs faster and with fewer resources. KopherBit Universal Controller integrates automotive-grade hardware with in-house KopherOS, besed on KopherSAR middleware and a smart toolchain (KITE). With an open application layer, clients can flexibly develop their own VCU, BMS, or EVCC functions. Deployed in 70%+ of Taiwan's e-buses, KopherBit Universal Controller now expands to Japan and Southeast Asia for sustainable mobility.

Industry Applicability

Electric control is 1 of 3 important core technologies in EVs. KopherBit streamlines ECU development for electric control. KopherOS is an AUTOSAR-compliant OS, while KopherSAR handles communication, memory, and diagnostics, removing repetitive coding. With unified development environment integrated in one environment, accelerating VCU, BMS, and EVCC deployment.





Contact: Lion Wang lion.chwang@tcotek.com

Exhibited Technology

Solid-state LiDAR Application Unmanned Vehicle

Technology Introduction

This Flash-type solid-state LiDAR operating at a 905 nm laser wavelength, featuring one-shot imaging, no mechanical scanning, and high reliability. It is designed for high-precision, short- to mid-range 3D sensing applications. With a wide FoV (120°× 50°), angular resolution of 0.33°, and measurement accuracy of ±5 cm, it can detect objects up to 50 meters away and delivers data at a 10 Hz update rate.
Compact in size (96 × 65 × 70 mm) and lightweight (600 g), the device supports Ethernet data output and DC 9–16 V power input. This LiDAR offers superior indoor and outdoor applications.

Industry Applicability

Flash LiDAR offers high-resolution, full-field imaging with a compact, solid-state design, making it ideal for smart transportation, autonomous vehicles, robotics, and surveillance. Its reliability and ease of integration support industrial automation and smart city development, driving the adoption of next-generation sensing solutions.





Contact: HSU CHENG CHIEH itri538452@itri.org.tw

Exhibited Technology

Smart ICM Crop Protection with AI Pest & Disease Alerts

Technology Introduction

Climate change drives a 40% global crop loss to pests and diseases, pushing farmers toward costly, land-degrading chemicals. Evergrain Smart Agriculture tackles this with the first multi-core AI pest/disease early warning system, using a two-stage model for over 70% accuracy. Our ICM digital platform offers instant field insights and expert advice via phone, enabling proactive risk control. Evergrain will continue developing AI for sustainable, safer farming.

Industry Applicability

Our tech in Nantou's Dapingding passion fruit cured anthracnose, thrips, and armyworms. 2025 results: near-zero pest incidence, 78% less pesticide cost, 75% less synthetic pesticide. This boosted quality, eased farmer burden. Industry-praised, we're discussing with California Fruits/Vegetables, expanding to the U.S./Australia, proving our eco-friendly, export-boosting value.





Contact: CHEN,CHUN-HO chunho@tbnet.org.tw

Exhibited Technology

An E-MTB with Auto Shifting

Technology Introduction

This innovation combines cadence, power, and speed data to determine the optimal gear in real time, improving shifting efficiency by 50% and enhancing ride smoothness. With Model-Based Design (MBD), it also speeds up full-suspension frame development, cutting product development time by up to 75%. Beyond enabling smarter products, it's projected to generate tens of millions in annual value and drive the e-bike industry toward higher value.

Industry Applicability

To meet the trend of smart cycling, CHC offers two innovations: Electronic auto-shifting and Optimized suspension pivot geometry. These enhance performance, fill industry tool gaps, and can extend to shared bikes and light electric vehicles—strengthening Taiwan's global e-bike competitiveness.





Contact: Lin, Yu-tong ytLin.1072@ttri.org.tw

Exhibited Technology

Yarn Sizing Forecasting and Decision-Making

Technology Introduction

This AI-powered yarn sizing forecasting and decision-making system improves traditional processes that rely on manual experience. Using machine learning, it analyzes production and historical data to recommend optimal parameters in real time. It improves sizing consistency, reduces waste and errors, and boosts efficiency. Its modular design integrates with existing equipment, while a visual interface helps operators monitor and adjust settings. This solution supports digital transformation and shows strong potential for industrial application and technology transfer.

Industry Applicability

This technology is applied in warping and yarn sizing, especially for woven and functional textiles. It integrates AI and sensors to reduce manual errors, improve sizing consistency, and minimize material waste. The modular and flexible design enables quick deployment and integration with existing equipment, improving process stability and efficiency. With strong commercialization potential, it serves as a smart and sustainable solution for modern textile manufacturing.





Contact: YEN NING nYen.1494@ttri.org.tw

Exhibited Technology

Ultrasonic Ambient System for Separating Polyester/ Cotton Blends

Technology Introduction

The Polyester/Cotton Blend Ultrasonic Ambient-Temperature Recycling System separates polyester/ cotton blends by degrading cotton into cellulose, which disperses in water, while polyester retains its fiber form, achieving two-phase separation. Operating at 25° C, it offers high recovery rates and efficiency, addressing the challenge of recycling blended textiles. Its modular design lowers equipment development barriers, enhancing industry adoption. It could enable the recycling of 30 million tons of global textile waste.

Industry Applicability

The Polyester/Cotton Blend Ultrasonic Ambient-Temperature Recycling System revolutionizes textile recycling, enabling direct polyester reuse, streamlining processes, and cutting energy use. Ultrasonic modules boost efficiency by 50%. Operating at 25° C, it achieves >90% resource reuse, minimizing waste. The modular system aids industry adoption, with Taiwan's only demonstration site for validation, fostering cross-sector recycling innovation.





Contact: Yu-Ting Peng pyt@soic.org.tw

Exhibited Technology
Artificial Intelligence Navigation Assistance System

Technology Introduction

The AI Navigation Assistance System combines image recognition, radar, AIS, and AR to enhance maritime safety and decision-making. Certified by CR, it identifies 17 vessel types and predicts risks in poor visibility using visible-light and thermal imaging. Co-developed with Merit Lilin, it covers a 2-nautical-mile range and supports vessel recognition, harbor monitoring, and collision warnings. Already used on Kha Shing and Porrima vessels, it paves the way for autonomous ship monitoring and smart maritime operations.

Industry Applicability

The system is deployed on Kha Shing yachts, navy research ships, and the THETIS smart vessel, with future plans for Porrima and CSBC. We collaborate with local firms like Merit Lilin and Creative Sensor to develop maritime AI imaging. The product is IEC60945 certified and has secured NT$1.25 billion in U.S. orders.





Contact: Minyonne, Huang min.huang@artc.org.tw

Exhibited Technology

Magnetic-guided Virtual Track Autonomous Driving System

Technology Introduction

Magnetically guided virtual track autonomous driving is a trackless, metro-like system. It uses on-board magnetic sensors and RFID for high stability, all-weather public transport, offering a cost advantage (10% of rail, 30% of LiDAR AVs).
It achieves centimeter-level positioning (straight error <10cm, docking accuracy<10cm) and won the AutoTech Breakthrough Award. ARTC has already established Taiwan's first virtual track demonstration site to promote industrial linkage and commercialization. Future applications include logistics in science parks and smart city public shuttles .

Industry Applicability

1.Demonstration Site Establishment : ARTC has established Taiwan's first virtual track demostration site for technology validation and commercial linking.
2.Logistics & Transportation : Driven by the demand for autonomous transport in science parks, chip transportation, and tourism/leisure parks, there are plans to AGVs and logistics vehicles.
3.Public Shuttle : Applications include Airport's new terminal shuttle, public transit, scenic area transport, and smart city autonomous bus systems.





Contact: minyonne, Huang min.huang@artc.org.tw

Exhibited Technology

SAE Level 3 Intelligent Electric Bus

Technology Introduction

SAE Level 3 Intelligent Electric Bus won a 2025 Edison Award Bronze Medal, integrating three AI systems:
•AI Driving: UN R157 compliant, it uses AI vision/radar for autonomous driving, offering cruise, lane keeping, changing, and obstacle avoidance.
•AI Cockpit: Monitors driver; if unresponsive, automatically stops (minimal risk control).
•AI Cybersecurity: UN R155/156 compliant, with V2X supporting OTA updates/security.
This system, leveraging Taiwan's tech, promotes widespread use in city buses/logistics, easing driver load, boosting safety/efficiency, and enabling Level 3 commercialization.

Industry Applicability

System Safety Benefits:AI monitors driver status, auto-stopping safely and alerting if unable to take over. It can detect passenger falls、child presence detection , instantly remind the driver. This reduces workload, human risk, and accident rates. Ideal for elderly care, campuses, and parks, enhancing active safety.

Domestic Technology Integration: The Intelligent e-bus integrates Taiwan's chips, sensors, computing, operators, and manufacturers, forming a complete industry chain.





Contact: Chien-Yi Lee joelee@itri.org.tw

Exhibited Technology

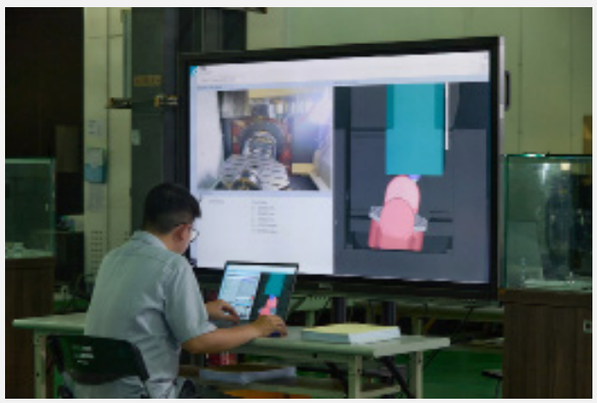
AI-Driven Cyber-Physical Digital Twin Platform for Machine Tools

Technology Introduction

The AI-driven digital twin platform for CNC machines integrates smart manufacturing technologies, supporting multi-brand controller simulation and various machine tool types. It enables real-time synchronization between physical and virtual machines. With AI, it offers spindle thermal displacement compensation and on-machine inertia estimation, optimizing servo parameters and improving machining accuracy. The system also imports 3D machining files, uses AI to recognize geometric features, and auto-generates NC programs with simulation and interference checks to streamline process planning.

Industry Applicability

This digital twin platform supports machine tool manufacturers in building cyber-physical integration for five-axis machine tools. By integrating commercial CNC simulators, it accelerates digital transformation. The application of improved AI thermal model cuts modeling time by 50%. It boosts domestic cradle-type five-axis machine tool value by 20%, and is adopted by SRAM (world's No. 2 e-bike component maker) for high-end drivetrain parts, reinforcing Taiwan's global bike part leadership.





Contact: Jyun-Kai Ciou jkciou@itri.org.tw

Exhibited Technology

80kW/L Ultra-high Power Density SiC Inverter

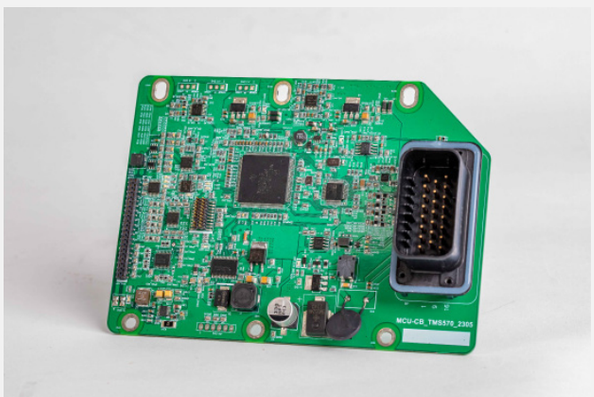
Technology Introduction

This technology mainly develops high volume power density SiC inverter, which helps to improve energy conservation and carbon reduction. For end users, it helps to improve the endurance of electric vehicles. Technical highlights include the development of thin current sensors, which can improve system reliability and reduce size, and the development of a two-in-one water channel design that can dissipate heat for power modules and capacitors, helping to increase rated power.

Industry Applicability

This technology can be widely used in motor drive control systems of various electric mobile vehicles. From low-power two-wheel electric motorcycles and passenger cars to commercial trucks, electric buses, large trucks, and even electric ships and rail vehicles with high power requirements. With high drive control efficiency and excellent volume power density, it can effectively reduce drive losses and improve overall space utilization efficiency.





Contact: Tao-Lin Li tllinsc@mail.mirdc.org.tw

Exhibited Technology

Compact and High-Performance Welding Cobot (CHPW)

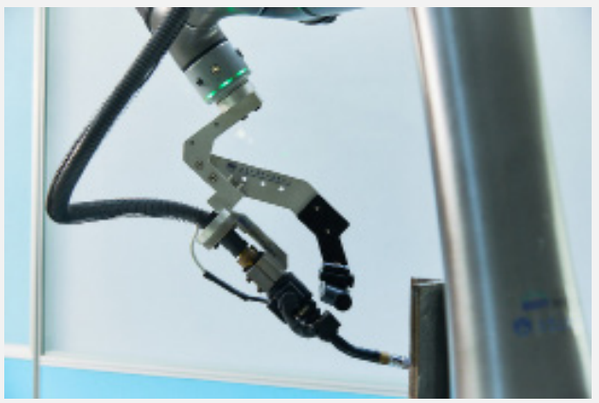
Technology Introduction

In response to the challenges of welding large metal structures, it is equipped with 3D laser coordinate generation and weld AI defect recognition technology to ensure the stability of multi-layer welding quality and reduce the number of thick plate repairs. It can not only adapt to operations in narrow spaces, but also support multi-machine synchronous operations, improve welding efficiency by 90%, and reduce equipment construction and operating costs by 60%, providing smart manufacturing solutions for aerospace, shipbuilding and infrastructure fields.

Industry Applicability

Developed an intuitive welding gun teaching tool to save 40% of adjustment time. Laser 3D weld bead recognition, real-time capture of multi-layer weld bead morphology, combined with the molten pool status, real-time monitoring to ensure stable welding quality. Built-in AI weld bead expert system, quickly generates welding reference coordinates and multi-layer bead morphology data, automatically optimizes welding processes, and improves efficiency by more than 90%.





Contact: Kai-Chieh Tsao e10505@mail.pmc.org.tw

Exhibited Technology

AI-Enabled Stacking Robotic Arm New Practices

Technology Introduction

The Smart Palletizing Expert System replaces manual point-by-point teaching with a low-code, intuitive interface and built-in algorithms for instant stack point generation. Integrated with AI and ANN, it optimizes robot paths and reduces energy use by over 15%. The adaptive gripper handles varied sizes/weights, enhancing flexibility. Supporting major brands, it's widely adopted in rice, carton, and fertilizer industries to ease labor and boost smart manufacturing.

Industry Applicability

Taiwan produces 1.5M tons of rice annually, with daily milling up to 6,000 tons. Facing labor shortages, Dongyuan and Hongchang mills first adopted smart stacking to automate stacking and improve repetitive, time-consuming tasks. This raised efficiency by 20% and saved NT$1M yearly. AI and deep learning optimize workflows and parameters, supporting various robotic arms. The tech also expands to fertilizer and paper industries to ease manpower issues.





Contact: Kevin Liu e10932@mail.pmc.org.tw

Exhibited Technology

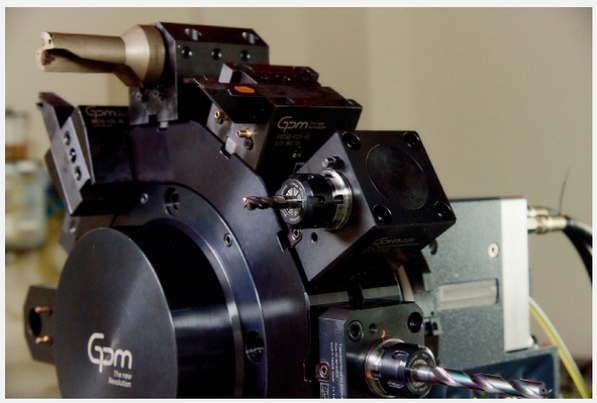
High-Speed Direct-Drive Turret

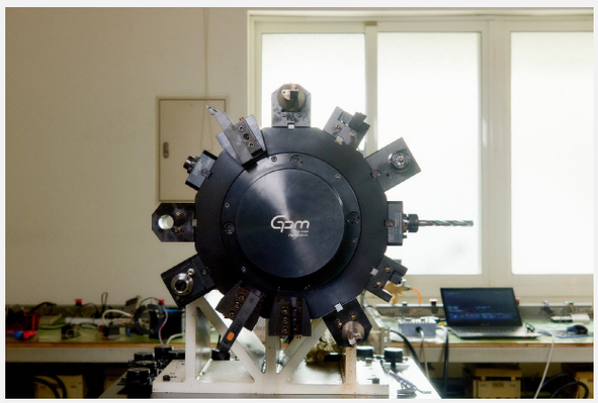
Technology Introduction

The high-speed direct-drive power turret developed in this technology represents a comprehensive upgrade in both machining efficiency and precision. By adopting an integrated direct-drive motor design, it effectively replaces traditional gear-driven mechanisms, achieving superior motion performance including high rotational speed, low vibration, and high repeatability. It is well-suited for high-precision machining applications such as automotive components and critical bicycle parts, providing the manufacturing industry with a more efficient and intelligent solution.

Industry Applicability

This technology is widely applicable to industries requiring high-speed and high-precision machining, particularly including: biomedical stainless steel microtube processing, high-purity gas fittings for semiconductor applications, aerospace structural and power components, and other precision parts involving micro-milling and multi-axis machining.





Contact: Chih-Chiang Wu John.Wu@itri.org.tw

Exhibited Technology

Smart Charging Management for Electric Vehicles

Technology Introduction

As electric vehicles become mainstream, charging infrastructure is becoming a major bottleneck. High energy costs, long queues, and reduced battery life are headaches for fleet operators everywhere. That's where our Intelligent EV Charging and Friendly Management Technology comes in. By combining AI algorithms with charging safety diagnostics, it enables non-uniform current charging, smart load shedding, and automated scheduling. A 50% reduction in grid load and 20% longer battery lifespan.

Industry Applicability

Friendly smart charging scheduling and charging health check technology has been applied to Taiwan's charging operators, allowing electric bus operators to use charging management software to assist in grid dispatching, demonstrating the electric bus smart charging service system, and has entered the bus field to carry out smart charging scheduling.






FUTEX

Future Tech Pavilion (FUTEX) focuses on breakthrough technologies projected over the next 3 to 10 years.
Under the theme “Taiwan × Global: Bridging Research and Industry, Tech in Motion,” FUTEX showcases Taiwan’s R&D strengths and global collaboration. This year’s focus includes Smart Robotics, Quantum Technology, and AI Applications, presenting cutting-edge technologies in interactive and accessible ways, bridging innovation and industry to drive global impact.

Affiliated Ministry List
AS：Academia Sinica
MOE：Ministry of Education
MOHW：Ministry of Health and Welfare
NSTC：National Science and Technology Council

Affiliated Ministry: NSTC

Exhibitor: National Chung Hsing University

Contact: Lian-Wang Lee leelw@dragon.nchu.edu.tw

Exhibited Technology

Multifunctional gait training and walking assistance robot

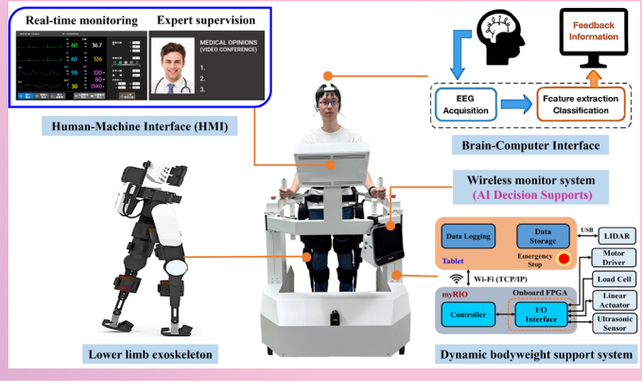
Technology Introduction

Stroke survivors show gait deficits. Traditional rehab works but is labor-intensive and hard to quantify. We built a Multifunctional Gait Training & Assistive Robot integrating lower-limb exoskeleton, BCI, asymmetric dynamic body-weight support, and AI for active, precise neuromodulation, rebuilding musculoskeletal and neural function. Clinical validation shows higher intensity, better outcomes, wider applicability, and strong market potential.

Industry Applicability

As population aging accelerates, stroke and spinal-cord injury cases are rising, driving rehab demand. The Multifunctional Gait Training & Assistive Robot integrates a lower-limb exoskeleton, BCI, asymmetric dynamic body-weight support, and safety control in a modular design deployable in hospitals, rehab centers, and community care. Clinical validation shows it shortens rehabilitation cycles, reduces staffing burden, cuts costs, and—backed by patents and awards—offers strong growth potential.





Booth: FA01

Affiliated Ministry: NSTC

Exhibitor: National Taiwan University

Contact: Vivian Pan ljpan@ntu.edu.tw

Exhibited Technology

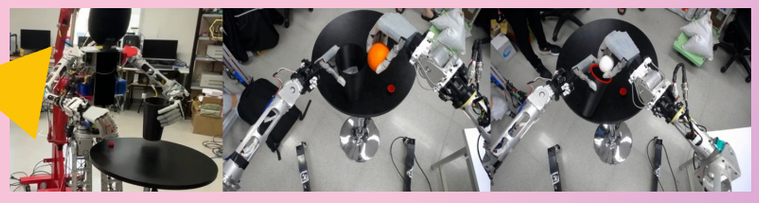
Development of a Bipedal Humanoid Robot and Its Artificial Intelligence Applications

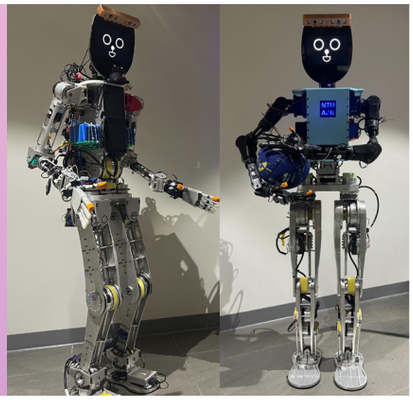
Technology Introduction

This project develops a bipedal humanoid robot (160 cm in height), equipped with 44 actuators and integrated with various sensor modules, including stereo vision, an inertial measurement unit (IMU), and a RealSense camera. Featuring 14-DOF dual arms and dexterous biomimetic hands, the robot is combined with advanced AI technologies to demonstrate high potential and practical value in future application domains such as food service and logistics.

Industry Applicability

The robot features dual arms with 14 degrees of freedom and dexterous biomimetic hands, integrated with stereo vision and AI. It performs precise object grasping with adaptive force control, handling items of varied shapes and materials. Suitable for restaurants (item placement, delivery) and logistics (handling, sorting, picking), it shows strong practicality and industrial potential in smart dining and automated logistics.





Affiliated Ministry: NSTC

Exhibitor: National Taiwan University

Contact: Vivian Pan ljpan@ntu.edu.tw

Exhibited Technology

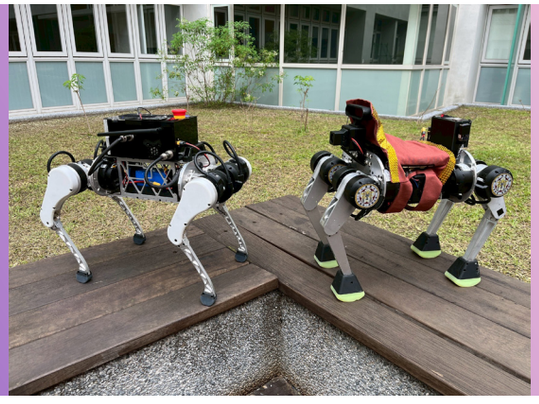
NTU DogBot Quasar

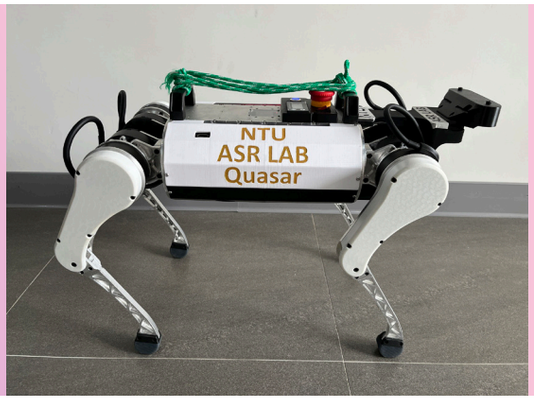
Technology Introduction

This study presents the design and implementation of a quadruped robot platform supporting Sim-to-Real reinforcement learning (RL) applications. The system encompasses electromechanical hardware design, kinematic modeling, simulation environment construction, and RL-based control training. The platform is intended as a locally developed solution for academic research in Taiwan, offering an affordable and open alternative to foreign commercial robots with limited access to low-level controls.

Industry Applicability

The quadruped robot has high potential to be applicable for industrial inspection tasks to resolve the labor storage problems.





Affiliated Ministry: NSTC

Exhibitor: National Taiwan Normal University

Contact: Yi-Hsing Chien andychien265@gmail.com

Exhibited Technology

Applications of AMRs in Hospitals

Technology Introduction

Our team has developed an intelligent care platform that leverages autonomous navigation, voice recognition, and AI analysis to help nurses reduce physical strain, improve care efficiency, and enhance the quality of patient care. This nursing cart can navigate independently, record information via voice input, and learn and remember routes. This reduces the workload of carrying items and handling paperwork, allowing nurses to focus more on direct patient care.

Industry Applicability

Our team's autonomous navigation system does not require engineers to create complex maps. The system automatically memorizes and reproduces the path, allowing for quick deployment and flexible application in various environments. This significantly enhances the convenience and immediacy of care processes. Additionally, we have developed a dedicated nursing voice input app. Nurses can use their voice to record notes, and the system automatically transcribes and saves the information, enabling them to complete handovers and data verification quickly.





Affiliated Ministry: NSTC

Exhibitor: National Taiwan Normal University

Contact: Yi-Hsing Chien andychien265@gmail.com

Exhibited Technology

AI Virtual Human Health Education System

Technology Introduction

Our AI virtual human health education system works by integrating AI and physical robots in phases to strengthen patient care and support medical staff in end-of-life care institutions. Our AI system uses natural, conversational Q&A to deliver health education. Furthermore, its autonomous navigation and holographic projection of a virtual human add a sense of technology and interactivity to the educational process.

Industry Applicability

The shortage of healthcare professionals is a growing problem in today's society, especially with the trends of an aging population and the impact of the pandemic. Consequently, finding ways to improve care efficiency, reduce labor costs, and enhance the quality of care has become a critical issue. Our team has developed a health education system that uses technologies like artificial intelligence and autonomous navigation to achieve a smarter, more automated way of delivering information.





Affiliated Ministry: NSTC

Exhibitor: National Nanke International Experimental High School

Contact: weenhung@ms.nnkieh.tn.edu.tw

Exhibited Technology

NNKIEH FRC6998 STEM INSPIRATION

Technology Introduction

•Team Introduction

In the FIRST Robotics Competition (FRC), robot manufacturing is a comprehensive engineering practice that integrates multiple fields of technology. Students and mentors must apply knowledge in mechanics, electrical control, programming, and project management in order to complete a robot that meets specifications and is capable of handling competition challenges within a limited time.

Mechanical design and fabrication form the core foundation. Teams need to be proficient with CAD software and mechanism design, ensuring that structures balance strength, rigidity, and lightweight construction. Materials commonly used include aluminum alloys, carbon fiber, and POM, with parts produced through CNC milling, laser cutting, and 3D printing. Beyond frames and drivetrains, teams must also design precise intake, transport, and climbing mechanisms to fulfill the season's tasks.

In terms of electrical control and wiring, teams must configure the RoboRIO controller, motor controllers (such as SPARK MAX), sensors, and the power system. Reliable circuit design and neat wiring not only affect performance consistency during matches but also directly relate to inspection safety. Students need to understand voltage and current distribution, fuse selection, and methods for mitigating signal interference.

Programming gives the robot intelligence. Team 6998's robot code is written in Java, integrating motor control, camera vision processing, and automated path algorithms. Common FRC challenges include closed-loop PID control, autonomous path planning, and object tracking using image processing. This requires team members to have a foundation in mathematical modeling and algorithms, and to apply theory effectively to real-world hardware.

Moreover, system integration and testing is the most time-consuming yet crucial phase. Mechanical structures must avoid interference, electrical signals must remain accurate, and repeated testing and tuning are needed to improve stability and efficiency. Teams must solve problems quickly and implement real-time adjustments—an effort that tests not only technical skills but also communication, coordination, and project management abilities.

In conclusion, FRC robot manufacturing is not just a technical challenge but also a microcosm of a true engineering project. It allows students to experience the complete process from design and fabrication to testing, while cultivating interdisciplinary integration, problem-solving, and teamwork skills. This is the true educational value of FRC.





Affiliated Ministry: NSTC

Exhibitor: National Experimental High School At Central Taiwan Science Park

Contact: chensy6769@nehs.tc.edu.tw

Exhibited Technology

FRC#7636 Robomania

Technology Introduction

•Team Introduction

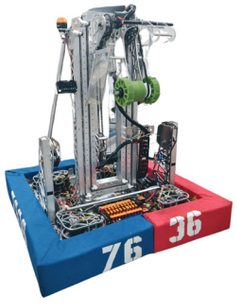
FRC Team #7636 Robomania was founded in 2018. Since then, we have participated in multiple competitions, demonstrating the core values of FIRST: Coopertition, Respect, and Understanding. Our team number, 7636, indicates that we are the 7,636th team registered worldwide. The name Robomania represents a group of students passionate about robotics. The team is composed of enthusiastic students from central Taiwan, voluntarily formed at the National Experimental High School at Central Taiwan Science Park, representing the school in FRC competitions.

•Season Robot

This season's robot is named Riptide, consisting of five major components. The chassis is responsible for driving the robot. The sliding rail elevator has three adjustable levels equipped with a camera. The intake system is used to acquire game pieces. The climbing system, designed with hooks and assisted alignment, allows a one-way in, no way out mechanism for secure attachment.

•Team Structure

The team is divided into three main groups: Strategy, Electrical, and Mechanical.
Strategy Group: responsible for strategy, public relations, and administration.
Electrical Group: responsible for circuitry and programming.
Mechanical Group: responsible for CAD design, machining, and assembly.





Affiliated Ministry: NSTC

Exhibitor: International Bilingual School At Hsinchu-Science-Park

Contact: YiChi Chu yichi@ibsh.tw

Exhibited Technology

VEX Genesis

Technology Introduction

Team Introduction
We are Genesis, a high school robotics team established in 2021 at the International Bilingual School at Hsinchu-Science-Park. In just three years, we won the title of World Champion at the VEX Robotics World Championships, standing out amongst 50+ countries. Beyond competitive robotics, we developed a robot that enhances classroom efficiency through automation, earning recognition at the Asia Pacific ICT Alliance Awards.
Across Taiwan's numerous cities, we've also coordinated a series of STEM workshops, which transcended socioeconomic boundaries to impact 100+ youths. Come see how we're shaping the future of robotics!





Affiliated Ministry: NSTC

Exhibitor: National Cheng Kung University

Contact: Wen-Yi Hsieh wenyi@ncku.edu.tw

Exhibited Technology

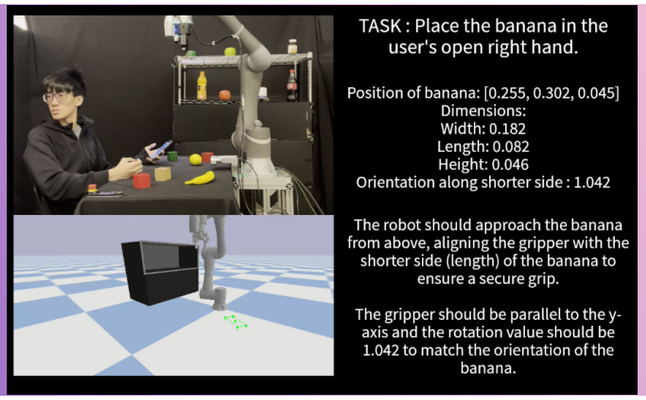
Generative AI Home Service Robots with Integrated Cognitive Capabilities for Enhanced Understanding and Decision-Making

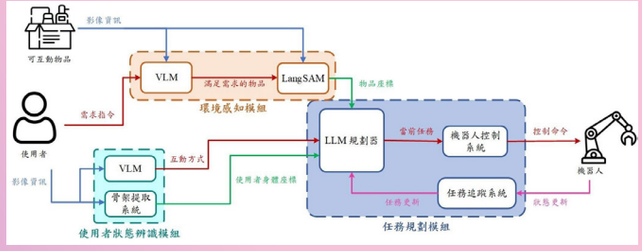
Technology Introduction

This system integrates LLMs, VLMs, object and skeleton recognition to achieve environmental perception, dynamic task planning, change monitoring, object rearrangement, and human–robot interaction. It enables accurate execution of natural language commands with continuous iteration to enhance the adaptability and reliability of home-service robots in complex environments. Real-time experiments validate generative AI's potential and practical value for semantic understanding, interaction, and planning.

Industry Applicability

With mature generative AI and multimodal technologies, our system's Dynamic Task Planner adapts workflows in changing environments for greater autonomy in human–robot collaboration and unstructured settings. The Object Rearrangement System automatically arranges tableware to international standards, and the Multimodal HRI System makes interactions more natural and diverse. Applicable to manufacturing, warehousing, home service, and medical care.





Affiliated Ministry: NSTC

Exhibitor: National Yang Ming Chiao Tung University

Contact: Yi-Ting Chen ychen@cs.nycu.edu.tw

Exhibited Technology

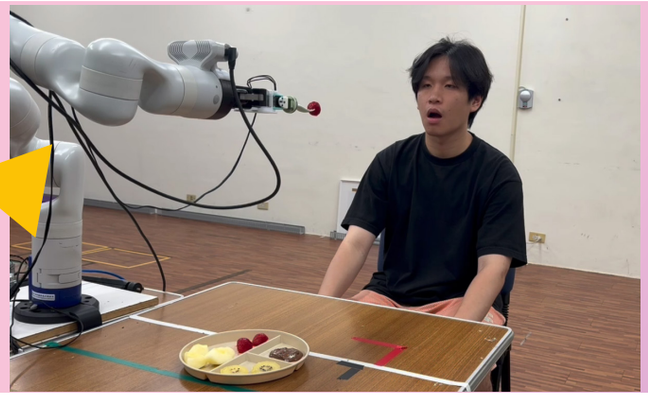
Robotic Assistive Feeding System

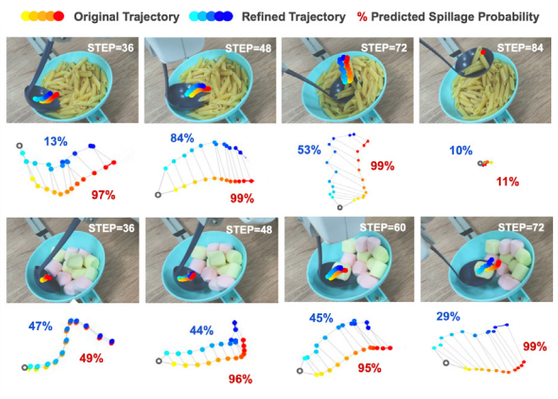
Technology Introduction

This assistive feeding robot integrates speech, vision, and depth sensing to help elderly or mobility-impaired users eat safely with minimal caregiver support. It features spillage risk prediction and real-time motion adjustment. Users interact via voice or touchscreen. The modular, scalable system suits home care, long-term care, and smart healthcare environments.

Industry Applicability

With the rapid aging of society and growing shortage of caregiving personnel, assistive feeding robots hold significant industrial application potential. This system enhances the feeding autonomy of elderly and disabled individuals, reduces caregiver workload, and can be deployed in long-term care facilities, home care, and smart healthcare markets. Its modular architecture facilitates integration with other care technologies, supporting commercialization and scalable production. It aligns with Taiwan's trends in smart healthcare and aging technology innovation.





Affiliated Ministry: NSTC

Exhibitor: National Taiwan University

Contact: Jyun-Wei Lin dwdy456852@gmail.com

Exhibited Technology

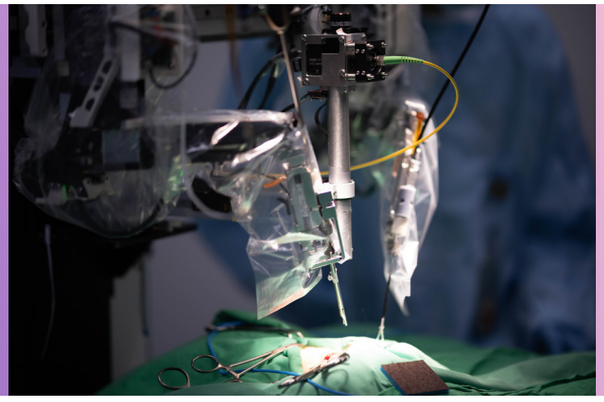
iCROSS: infant Cardiac Robotic Surgical System

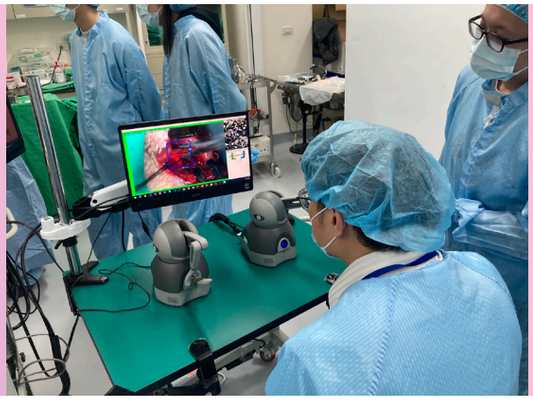
Technology Introduction

This research introduces iCROSS, a robotic system designed for infant cardiac surgery, focusing on patent ductus arteriosus (PDA) closure. The system combines high-dexterity dual-arm manipulators with a high-resolution RGB-D imaging probe, enabling precise teleoperated PDA ligation. Its performance has been validated through in-vivo trials on porcine models, demonstrating its clinical feasibility, safety, and potential for broader applications in minimally invasive microsurgery.

Industry Applicability

iCROSS is the first microsurgical robot designed specifically for infant cardiac surgery, offering strong clinical value and potential for technology translation. The system integrates depth sensing, modular surgical tools, and real-time force feedback to enable precise operations in confined surgical fields. It is suitable for microsurgical applications, surgical training, remote procedures, and intelligent medicine, contributing to advancements in medical robotics and healthcare innovation.





Affiliated Ministry: NSTC

Exhibitor: National Taiwan University of Science and Technology

Contact: Sheng-Chiang Yang scy@mail.ntust.edu.tw

Exhibited Technology

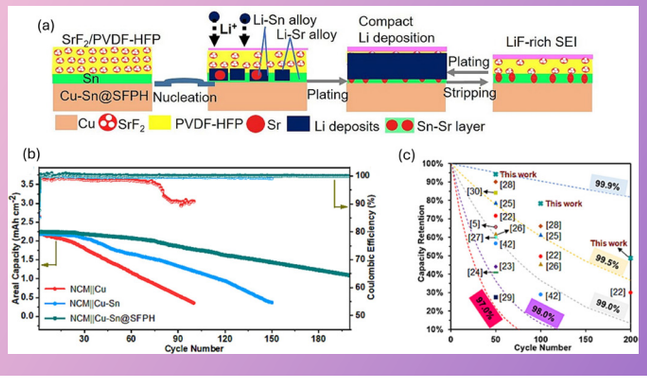
Multiple protective layers for suppressing Li dendrite growth and improving the cycle life of anode-free lithium metal batteries

Technology Introduction

This technology features a dual-protective coating on a copper current collector that, during charge/discharge, self-assembles in-situ to form multiple lithiophilic alloy layers (Li-Sn/Li-Sr) and a stable, LiF-rich interphase. This effectively suppresses dendrite growth, enabling high-energy-density, long-life anode-free lithium batteries.

Industry Applicability

This technology is applicable to next-generation, high-energy-density batteries, meeting the demands of electric vehicles, consumer electronics, and grid energy storage. The manufacturing process uses mature immersion and coating methods, offering high compatibility with existing lithium-ion battery production lines, cost-effectiveness, and strong potential for mass production and commercialization.



Affiliated Ministry: NSTC

Exhibitor: National Tsing Hua University

Contact: Hsin-Yu Wan wan@mx.nthu.edu.tw

Exhibited Technology

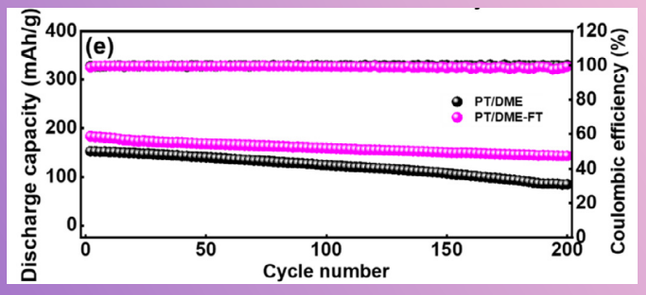
Fabrication of high-capacity and high-safety lithium half-cells and pouch cells achieved through the integrated development of negative electrode materials, protective interlayers, and electrolyte systems.

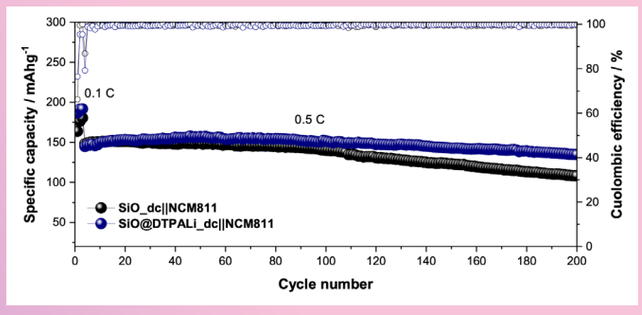
Technology Introduction

The closed-pore structure can be tuned by carbonization temperature, enabling a reversible low-potential plateau that boosts lithium-ion battery capacity while maintaining cycling stability. Electrospun PAN protective layers, optimized via the electrospinning voltage control, improve the lithium-ion transport and deposit uniformity. The high-entropy ionic liquid shows excellent compatibility with NMC811 and Si–C electrodes, significantly enhancing the battery safety. The performance of these materials can be evaluated in the small pouch cell.

Industry Applicability

Li-ion batteries of the next generation, high-performance Na-ion batteries, Li-ion capacitors, and Na-ion capacitors for the battery back unit (BBU) in the AI servers.





Affiliated Ministry: NSTC

Exhibitor: National Central University

Contact: Dr. Rita Kuo ritakuo@gs.ncku.edu.tw

Exhibited Technology

Advanced Applied Materials for Hybrid Solid-State Batteries

Technology Introduction

Developing composite solid electrolytes, taking into account the optimization of the interface between the positive and negative electrodes, to produce high-voltage, high-safety, and long-life solid-state batteries, and developing a management chip system for multi-cell solid-state batteries

Industry Applicability

With the advent of the AI era, cloud computing is gradually expanding to edge computing devices. Providing reliable energy technologies for edge computing requires both high performance and safety. Through comparative nail penetration tests using lithium-ion batteries assembled with different electrolytes, the results of this project have outperformed international competitors. It is also the only NMC811 lithium battery in Taiwan to have passed the nail penetration test. Due to the enhanced safety, increased energy density, and extended lifespan of the composite solid-state battery technology, it has already attracted collaboration from industries such as AI edge computing devices, drones, and robotics.



Affiliated Ministry: NSTC

Exhibitor: Mechavision Inc.

Contact: Tony Hwang sa02@touche.solutions

Exhibited Technology

T-Skin

Technology Introduction

The T-skin is a touch & stop system which can react in a very short time. It is suitable for robots and industrial applications. It will stop immediately when it is touched on the any location of surface. The Touche solutions can immediately improve the safety protection of the robot and release wide range of the working develop.

Industry Applicability

It is suitable for robots and industrial applications.





Affiliated Ministry: NSTC

Exhibitor: JetSea AI Co., Ltd

Contact: Monica monicaguo@jetseaai.com

Exhibited Technology

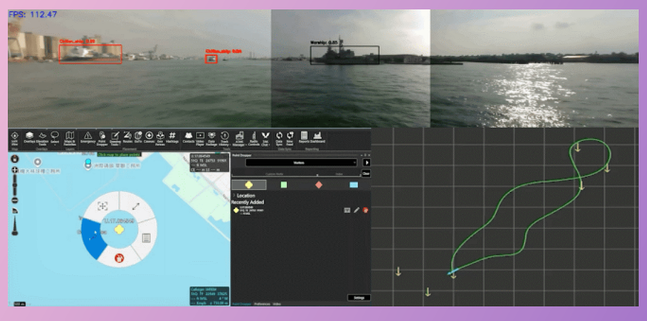
Maritime Unmanned System Technology Service and Platform Integrations

Technology Introduction

Our proprietary Autonomous Kit for Unmanned Surface Vehicles (USVs) integrates six core modules: real-time collision avoidance, autonomous navigation, remote control, and power management. Featuring advanced AI algorithms, multi-sensor fusion technology, and a highly modular design, it enables high-precision operation and flexible mission scheduling tailored for diverse applications such as maritime reconnaissance, environmental monitoring, and search & rescue missions. This cutting-edge system ensures robust performance in complex aquatic environments by intelligently adapting to changing conditions and obstacles. With its user-friendly interface and customizable parameters, operators can easily deploy and manage multiple USVs simultaneously, enhancing operational efficiency. Additionally, the Autonomous Kit is designed for energy efficiency, prolonging mission duration while maintaining safety and reliability. Overall, it offers a comprehensive, smart, and scalable solution to meet the evolving demands of modern unmanned surface systems.

Industry Applicability

This autonomous control system for uncrewed surface vehicles offers a highly efficient and reliable operational platform for diverse aquatic applications. In the defense and security sectors, it can perform tasks such as water reconnaissance, border patrol, and anti-terrorism defense, significantly enhancing operational efficiency and personnel safety while reducing human risk. For tactical operations, its capabilities, including multi-vehicle collaboration, remote control, and high-security communication, make it an ideal choice for executing complex maritime tactical missions.



Affiliated Ministry: NSTC

Exhibitor: National Tsing Hua University

Contact: Chang, Jen-Yuan jychang@pme.nthu.edu.tw

Exhibited Technology

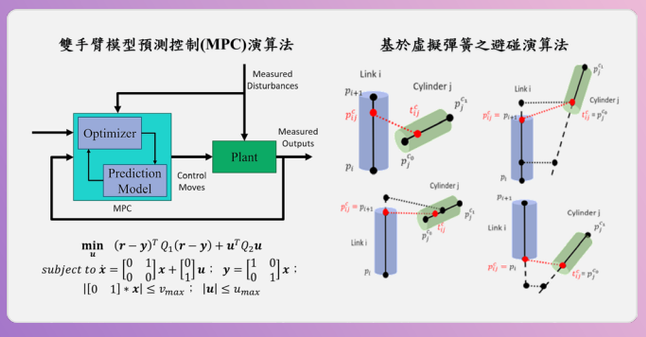
Safely Interactive Collaborative Robot with Semantic Understanding

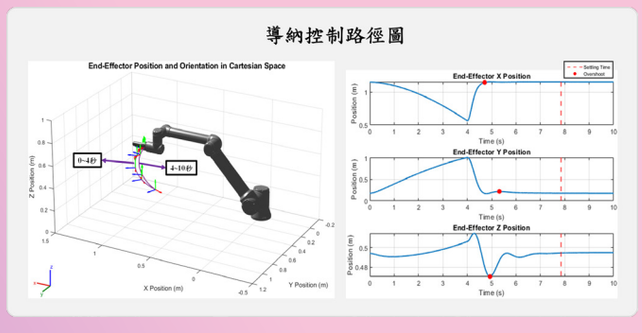
Technology Introduction

This technology showcases an interactive system combining generative AI and an intelligent robotic arm. The robot understands voice commands and uses an anthropomorphic gripper along with a custom-developed arm control algorithm to interact with visitors by grasping and handing over objects. It demonstrates innovations in language understanding, motion control, and perception, creating a safe and intuitive human-robot experience that bridges technology and daily life.

Industry Applicability

This technology integrates speech understanding and robotic control, with potential applications in smart manufacturing, service robotics, and elder care. Its ability to interact with humans and deliver objects makes it highly suitable for human-centered and flexible work environments. The platform can be extended to various interactive multi-task scenarios.





Booth: FA17

Affiliated Ministry: NSTC

Exhibitor: National Central University

Contact: Chang Hsien-Ting htchang@ncu.edu.tw

Exhibited Technology

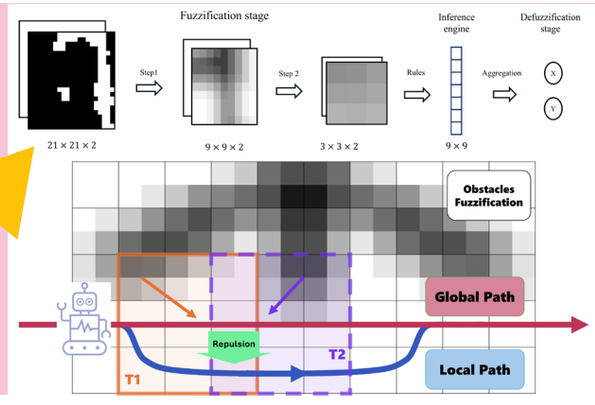
Fuzzy Dynamic Obstacle Avoidance and Reinforcement Learning for Quadruped Robot Control

Technology Introduction

This technology integrates a fuzzy obstacle avoidance algorithm with reinforcement learning to boost quadruped robot mobility and stability. Using LiDAR and IMU, the fuzzy system adjusts speed and direction in real time to avoid collisions. Reinforcement learning further ensures stable movement under uncertainty, supporting real-time obstacle avoidance, mapping, and path planning, thus demonstrating seamless integration of perception and control.

Industry Applicability

This technology integrates reinforcement learning control with fuzzy obstacle avoidance, enabling applications in intelligent inspection, energy facility maintenance, disaster relief, warehouse management, and logistics. With real-time perception, path planning, and dynamic decision-making, quadruped robots achieve stable autonomy in complex environments. It reduces human risk, boosts efficiency, drives broad industrial adoption, fostering intelligent upgrades and sustained innovation.





Affiliated Ministry: NSTC

Exhibitor: National Yang Ming Chiao Tung University

Contact: Hsien-I Lin sofin@nycu.edu.tw

Exhibited Technology

Intelligent Assistive Robotic Arm for Electric Wheelchairs

Technology Introduction

This intelligent assistive robotic arm, mounted on an electric wheelchair, integrates multimodal AI—speech recognition, LLM-based semantic analysis, image recognition, and grasping point prediction. It understands natural language commands to pick up convenience store items like rice balls and drinks. Running all models locally ensures low latency and high privacy. The system supports scenario-specific fine-tuning, making it adaptable for use in healthcare, industry, and other environments.

Industry Applicability

This technology holds strong industrial application potential and is suitable for fields such as smart healthcare, assistive medical devices, retail services, smart manufacturing, and logistics. It enables individuals with mobility impairments to retrieve objects independently, enhancing daily autonomy. It can also be deployed in factories for human-robot collaboration, object recognition, and automated grasping, effectively improving operational efficiency, reducing labor costs, and ensuring operator safety.





Affiliated Ministry: NSTC
Exhibitor: Taiwan Institute of Sports Science
Contact: TSENG,LI-TZU betty.tseng@tiss.org.tw

Exhibited Technology

Taiwan Sports Data Platform – Informed Consent Interactive Wall

Technology Introduction

An interactive experience on informed consent and data authorization is provided, accompanied by a demonstration video of the Taiwan Sports Data Platform, allowing users to understand how data is securely utilized in sports technology.

Industry Applicability

Recognizing the value and benefits generated from personal data usage after signing informed consent.



Affiliated Ministry: NSTC

Exhibitor: Taiwan Institute of Sports Science
Contact: TSENG,LI-TZU betty.tseng@tiss.org.tw

Exhibited Technology

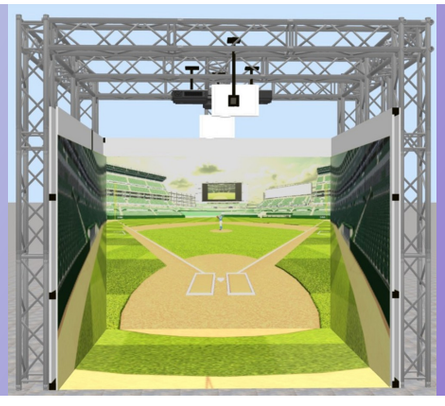
Taiwan Sports Data Platform – AR Interaction & Data Visualization

Technology Introduction

By integrating projection stitching and 3D interactive technology with AR glasses, a realistic pitching and batting training experience is created. While wearing the glasses, users can watch live games and view real-time player data and match information, as well as ask questions to the built-in AI. Game footage is displayed on side walls, where AR-powered facial recognition presents additional details. By scanning a QR code with a smartphone, users can access selected data and enjoy a multidimensional sports technology interactive experience.

Industry Applicability

Since motion-capture suits can accurately capture athletes' movements and translate them into dynamic 3D visualizations, they can recreate a pitcher's throw or a batter's stance, including ball spin, angle of attack, and hitting posture. Within the immersive projection environment, users can experience the on-site feeling and perceive the ball's speed.



Affiliated Ministry: NSTC

Exhibitor: Ministry of Sports

Contact: Jessica Chao jessica12@sports.gov.tw

Exhibited Technology

Tainan City: Baseball Player Pitching and Hitting Practice Data Application Project

Technology Introduction

This project establishes four key training systems—pitching, batting, base-running, and physical conditioning—integrated with a central database and video analysis technology. It develops a science-based training curriculum centered on pitching and hitting, incorporating sports biomechanics and injury prevention. Personalized data tracking and cloud integration enable a highly practical and data-driven training framework.

Industry Applicability

The system can be applied in schools, team training facilities, and sports centers as a tool for sports education and the implementation of technology-based training. It also supports the development of age-specific training environments and talent cultivation mechanisms, further expanding the baseball technology industry chain.



Booth: FB03

Affiliated Ministry: NSTC

Exhibitor: Taiwan Institute of Sports Science
Contact: LIN, TZU-CHI jacky.lin@tiss.org.tw

Exhibited Technology

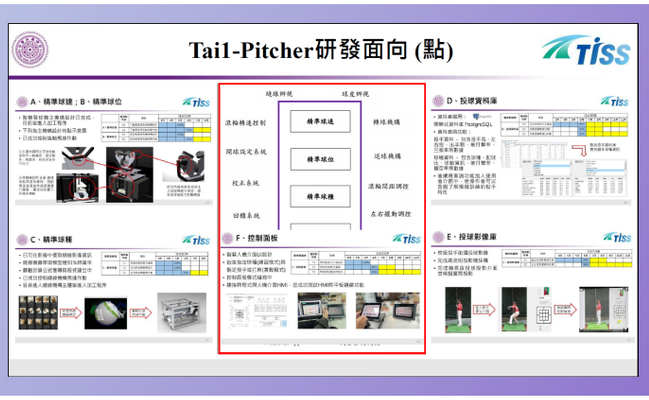
Commissioned Project by Taiwan Institute of Sports Science – Development and Research of Taiwan Smart Pitching Machine

Technology Introduction

Achieves precise control over pitch speed, location, and type, and integrates a pitching database and video system to simulate realistic pitcher-batter scenarios.

Industry Applicability

Integrates machine structure, calibration feedback system, cloud-based data storage, and projection display system to provide coaches and players with comprehensive and efficient training support, ultimately improving team performance and real-game competitiveness.



Affiliated Ministry: NSTC

Exhibitor: Ministry of Economic Affairs

Contact: LIU,FA-KUEI fkliu@moea.gov.tw

Exhibited Technology

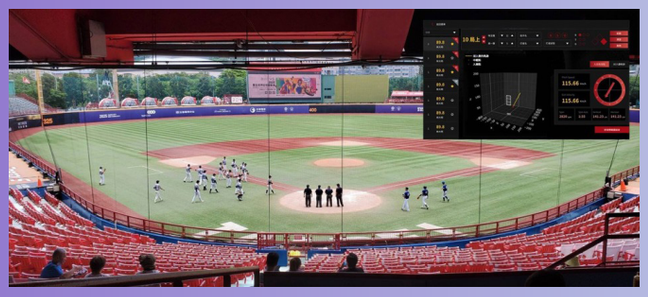
Innovative Application for Next-Gen Sports Technology

Technology Introduction

This system integrates ball and player tracking, biomechanical analysis, and ultra-wide-angle imaging to create a comprehensive video and data platform for baseball. Utilizing high-speed cameras, the technology employs computer vision and image stitching techniques to automatically extract game data. The information is then subjected to AI algorithms for sophisticated analysis, storage, and visualization. The platform also allows coaches and analysts to intuitively monitor player performance and optimize training and tactical decisions.

Industry Applicability

This system offers a holistic solution for game stats analytics, seamlessly integrating the entire in-game data pipeline from image capture and AI computation to storage. The technology has broad applications across diverse sectors, including media, fan data websites, and professional scouting and analysis.



Affiliated Ministry: NSTC

Exhibitor: Ministry of Sports

Contact: Jessica Chao jessica12@sports.gov.tw

Exhibited Technology

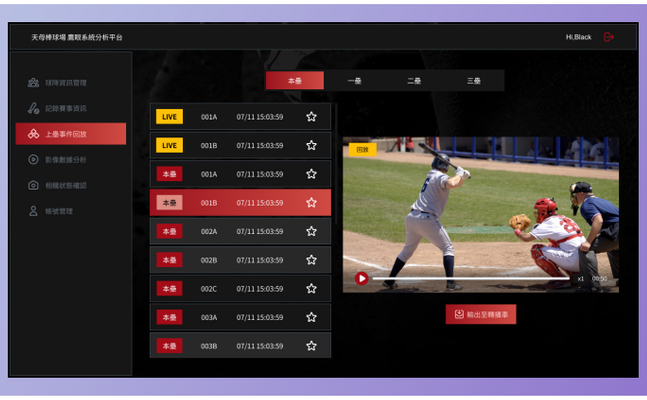
Taipei City: Hawk-Eye System Implementation at Tianmu Baseball Stadium

Technology Introduction

Focusing on three core strategies—technology adoption, data application, and industry integration—this project installs the Hawk-Eye system at Tianmu Baseball Stadium to advance the application of sports science in professional baseball. The system captures precise performance data during games and training sessions, enhancing tactical analysis, player development, and spectator engagement, while supporting the commercialization of baseball technology.

Industry Applicability

Aligned with the 2025 World Masters Games (Taipei & New Taipei) baseball events, AI-based baseball data collection will be implemented across 12 games, with data provided to participating teams. The Hawk-Eye system will be deployed at Tienmu Baseball Stadium to validate the electronic strike zone, achieving an error margin of less than 1 cm, on par with Major League Baseball's Hawk-Eye accuracy, and is expected to further improve to 5 mm in the future. This advancement will not only reduce strike zone disputes but also enhance overall game flow and efficiency.



Affiliated Ministry: MOHW

Exhibitor: Ministry of Health and Welfare

Contact: TAI, HSU-CHIH soma8989@yahoo.com

Exhibited Technology

Promotion of Sports Technology in the Field of Health Plan - The AI Coach Motion Detection System

Technology Introduction

The system can be widely applied in clinics, public health centers, community-based long-term care stations, local community hubs, fitness centers, and schools. It serves as a foundational tool for diverse and innovative health services such as exercise instruction, posture correction, health recommendations, fitness level analysis, coach training, and preventive medicine. This helps promote smart health and precision care.



Affiliated Ministry: NSTC
Exhibitor: National Taiwan University Hospital
Contact: Ting-Chun Kuo tinakuo1204@gmail.com

Exhibited Technology

Metaverse-Driven Extended Reality for Ultrasound-Guided Invasive Therapeutic and Surgical Training System

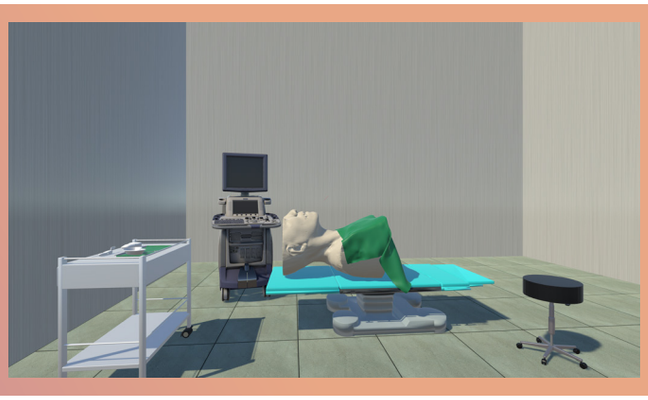
Technology Introduction

This technology presents an XR-based simulator for ultrasound-guided endocrine interventions, integrating real-time AI guidance, haptic feedback, and immersive 3D anatomy. It enables safe, repeatable, and interactive training, accelerating proficiency while enhancing patient safety and minimizing reliance on cadaveric models.

Industry Applicability

The system is applicable to medical training centers and surgical education programs, offering modular course design, platform licensing, and global scalability. It supports skill certification, remote training, and interdisciplinary applications.





Affiliated Ministry: NSTC

Exhibitor: National Cheng Kung University

Contact: Shen, Yang Ting bowbowyangting@gmail.com

Exhibited Technology

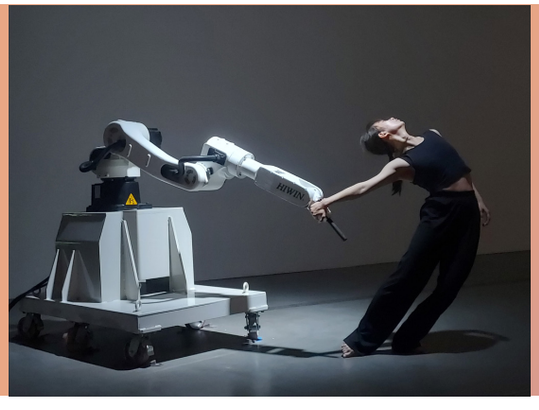
Human-Robot Co-Dancing: A Computer Vision-Based, No-Code, Intuitive Robot Arm Choreography Interface and Human-Robot Collaborative Creation System

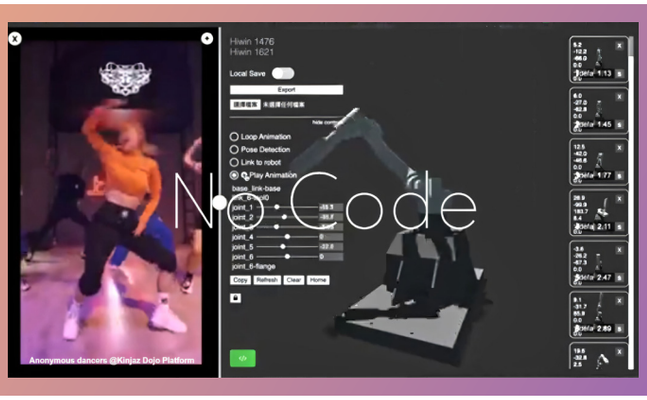
Technology Introduction

The project of "Human-Robot Dance" targets intuitive, no-code robotic arm control, enabling artists to co-create using body language. Two main workflows were developed: Teach (Offline), where a dancer's movements are captured, processed, translated, and then reproduced by the arm; and Mirror (Online), where real-time pose perception and data translation allow the arm to synchronously mimic the dancer for improvisational co-dance.

Industry Applicability

This project's technologies including intuitive robot teaching, real-time motion capture, and AI-driven motion translation offer vast potential. In Human-Robot Collaboration, they address skill gaps in smart manufacturing and construction, enabling flexible, safe co-working and fostering digital craftsmanship. In Techno Art, these tools empower artists with direct, intuitive expression, creating novel interactive experiences and allowing exploration of Human-Robot Co-Creation.





Affiliated Ministry: NSTC

Exhibitor: National University of Kaohsiung

Contact: Yen-Ping Wen yenping1985@gmail.com

Exhibited Technology

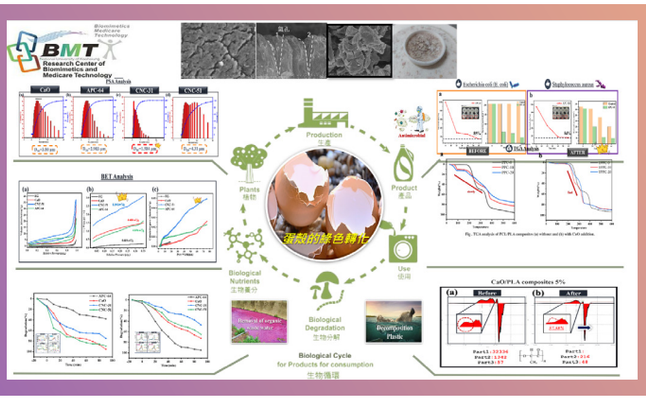
Great Calcium! Green Valorization of Eggshells into Eco-Friendly Catalysts and Advanced Biomedical Materials

Technology Introduction

This technology integrates green biomimetic concepts with an efficient microwave process to convert porous eggshells into CaO-based catalytic materials. Under sunlight or ambient light, they degrade organic pollutants in water and generate radicals to break down plastics and microplastics. Light exposure also triggers electron–hole pairs for active antibacterial effects. The materials can further evolve into calcium peroxide-based slow-release agents for treating hard-to-heal osteomyelitis.

Industry Applicability

This technology uses eggshells to produce CaO-based catalytic materials with potential for water purification, plastic degradation, and antimicrobial applications. Two industry-academic projects with an egg company have been launched to advance eggshell valorization. It enables sustainable reuses and carbon fixation with low energy input and interdisciplinary innovation. Applicable to chemical, plastic, recycling, agriculture, and medical industries, it holds strong industrial potential.





Booth: FC03

Affiliated Ministry: NSTC

Exhibitor: National Yang Ming Chiao Tung University

Contact: Hsiao Yen Liang vivi870326@gmail.com

Exhibited Technology

High-Fidelity 3D Reconstruction of Badminton Matches from Multi-View Video

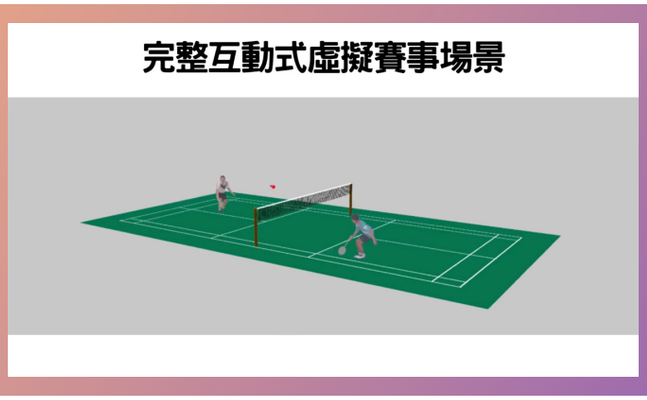
Technology Introduction

This project develops a 3D reconstruction system for badminton matches, creating a digital twin from multi-view 2D videos. It accurately models shuttlecock trajectories, player movements, and racket poses using AI detection, triangulation, and physics-based correction. Advanced pose estimation ensures players are anchored on the virtual court, while geometric constraints estimate racket orientation. The result is an interactive, realistic 3D match scene for analysis and visualization.

Industry Applicability

The 3D match reconstruction technology has strong commercial potential. In badminton, it enables tactical replay, biomechanical analysis, and injury prevention. For media and broadcasting, it enhances viewer engagement with real-time 3D visuals. It also supports VR/AR experiences and next-gen sports games by providing realistic motion data, offering immersive and interactive applications across sports tech and digital entertainment industries.





Affiliated Ministry: MOE

Exhibitor: National Taiwan University of Science and Technology

Contact: Hou-Chiang Tseng tsenghc@mail.ntust.edu.tw

Exhibited Technology

Intelligent Oral Presentation Assistance System

Technology Introduction

In vocational education, students mainly acquire knowledge and practical skills, with limited chances to present, leading to weaker speaking abilities and possible career setbacks. This project proposes an Intelligent Oral Presentation Assistance System, offering feedback on content difficulty, content coverage, speech rate, emotion, and comprehensive feedback. It allows students to practice extensively and receive real-time feedback to improve oral presentation skills.

Industry Applicability

The Intelligent Oral Presentation Assistance System not only enhances students' speaking skills but also serves as a tool for quantifying candidates' oral abilities in job interviews. The system's various models can be applied independently. For instance, the listenability model supports personalized learning, the emotion recognition model facilitates counseling and customer service, and the content coverage model assists with summary writing and assessment.





Booth: FC05

Affiliated Ministry: NSTC

Exhibitor: National Taiwan University

Contact: Ti-Fan Hung tfhung@ntu.edu.tw

Exhibited Technology

TAIHU: Taiwan Humanities Conversational AI Knowledge Discovery System

Technology Introduction

TAIHU is a dialogue-based knowledge exploration system designed for humanities research in Taiwan. It integrates multiple unique full-text primary databases. By adopting Retrieval-Augmented Generation (RAG), the system leverages designated sources to reduce the risk of AI hallucinations. It also incorporates fact-checking and source attribution to enhance accuracy and transparency. In addition, the team has developed an AI benchmarking framework and introduced user research processes to advance the system. These efforts give TAIHU strong potential for both academic and societal applications.

Industry Applicability

TAIHU can be widely applied in humanities research, educational settings, and a variety of cultural and performing arts institutions. It supports natural language queries, multi-turn dialogues, and source verification functions. These features enhance research efficiency and the learning experience. It can also serve as an intelligent guide and knowledge-sharing tool, strengthening audience engagement. The system is designed with modular scalability and can be customized to meet institutional needs, supporting the digital transformation of humanities knowledge services.





Affiliated Ministry: MOHW
Exhibitor: Ministry of Health and Welfare
Contact: Wei-Sheng, Lu cclyu@mohw.gov.tw

Exhibited Technology

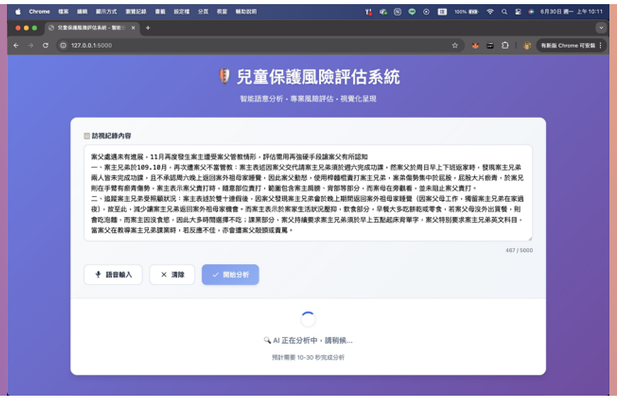
CARE-RAG (Child At-Risk Evaluation via Retrieval-Augmented Generation)

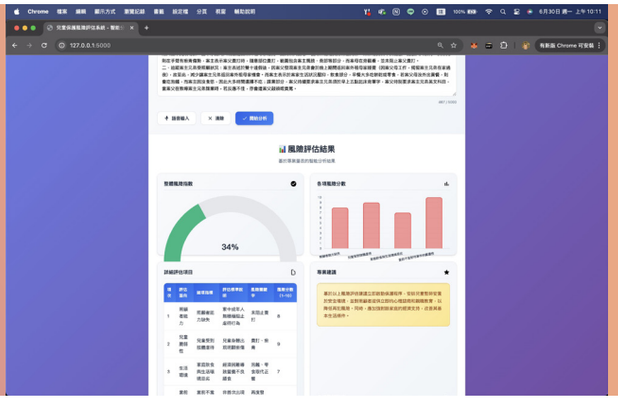
Technology Introduction

This research leverages Large Language Models and Retrieval-Augmented Generation techniques to automatically analyze unstructured visitation records, quantify child abuse risk levels, and provide precise intervention recommendations, significantly enhancing social workers' capability for timely intervention and optimal resource allocation.

Industry Applicability

This AI technology can be applied across social welfare, healthcare, education, and NGO sectors to automatically analyze visitation records, quantify abuse risks, and improve decision-making. It offers scalable deployment through a SaaS model with API integration into government systems. The framework has strong potential for international adoption and can be extended to related domains such as domestic violence and elder abuse prediction.





Affiliated Ministry: NSTC

Exhibitor: National Taipei University of Technology

Contact: Chien-Ping Chung thomas6311@mail.ntut.edu.tw

Exhibited Technology

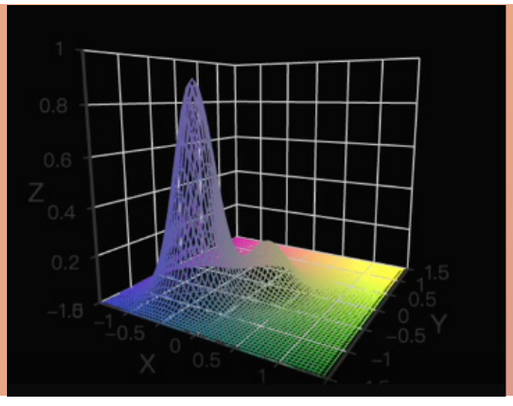
A speech recognition method for detecting fraud

Technology Introduction

API-ready platform combining speech/text emotion analysis, Transformer-based intent extraction and ten-pattern deception scoring to streamline claims and lending. A 3-D PAD dashboard visualises customer affect, while generative sample balancing and continual learning keep fraud detection sharp—delivering faster, safer and more personalised financial services.

Industry Applicability

Plug-and-play APIs let insurers, banks and SaaS call-centres stream dialogues into the platform, which returns live 3-D affect plots and risk scores. Pilots cut claim/loan cycles from 7 days to 2, trimmed call handling by 12 %, and saved NT$6 M per 100 k interactions. Flexible SaaS or on-prem licensing scales to KYC, collections and public hotlines, with ROI in under eight months.





Affiliated Ministry: NSTC

Exhibitor: National Taiwan University of Science and Technology

Contact: Pin-Chuan Chen pcchen@mail.ntust.edu.tw

Exhibited Technology

Multiscale 3D Printing Flexible Tactile Sensor for Wearable Human-Machine Interaction and Smart Sports Applications.

Technology Introduction

This 3D-printed flexible tactile sensor features high sensitivity (867 kPa^{-1}), fast response (10 ms), and low power use (0.1 V). It is made in minutes (<10 minutes), at a low cost. The sensor is scalable, customizable, and fits curved surfaces. Applied in badminton grips and insoles, it enables real-time monitoring of grip and foot pressure, aiding training and injury prevention, with further potential in wearables and rehabilitation.

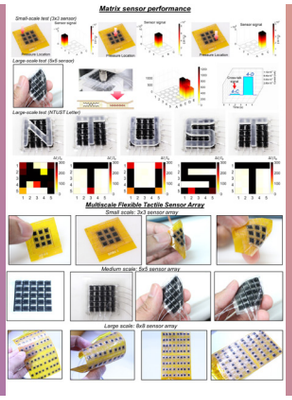
Industry Applicability

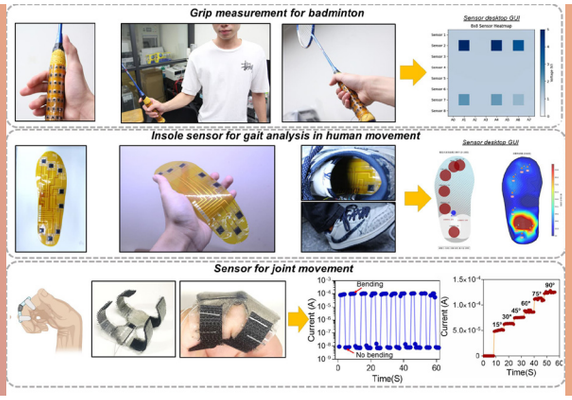
The device targets sports analytics, wearable health, rehabilitation, soft robotics, and smart insoles/gloves. It features customizable size and shape, flexible and lightweight form, and a digital pipeline for rapid tuning. Commercialization includes:

Phase 1 – athlete testing;

Phase 2 – OEM with sports/wearable brands;

Phase 3 – scaling via modular kits (4×4, 8×8), custom services (e.g., insoles), and real-time





Booth: FC09

Affiliated Ministry: NSTC

Exhibitor: National Taiwan University

Contact: Meng-Shiun Tsai mstsai0126@ntu.edu.tw

Exhibited Technology

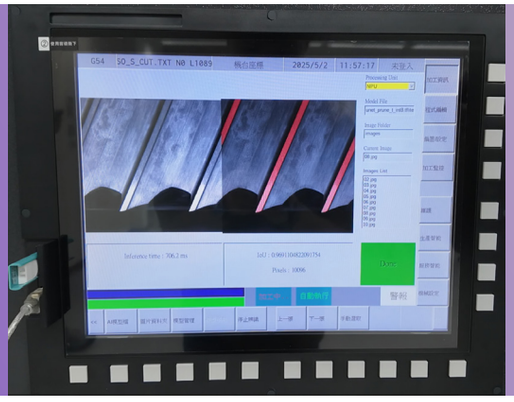
AI-Embedded 5-Axis CNC Controller

Technology Introduction

The world's first AI-embedded CNC controller was developed, enabling AI model inference on both CPU and NPU. Model pruning (compression) was applied for efficient deployment, and data can be uploaded to the cloud for model refinement. The AI technologies include axial thermal deformation prediction, tool wear image detection, and interpolation and servo parameter optimization, aiming for high speed, precision, quality, and low cost.

Industry Applicability

In collaboration with a domestic CNC controller manufacturer, this technology led to the development of the world's first AI-embedded CNC controller. It integrates motion control and AI inference on a single chip, reducing costs while enabling real-time compensation. Three key AI functions greatly enhance high-speed, high-precision, and high-quality machining. Over a thousand units have been shipped, marking a significant contribution to the industry.





Affiliated Ministry: NSTC

Exhibitor: National Cheng Kung University

Contact: Cheng-Te Li reliefli@gmail.com

Exhibited Technology

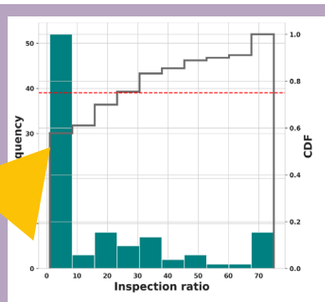
Graph Learning for Customs Fraud Detction with Label Scarcity

Technology Introduction

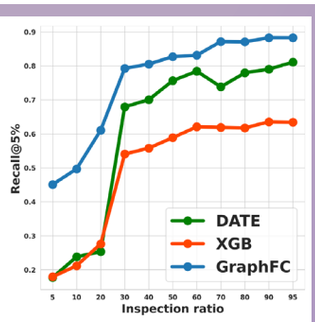
As global trade connectivity increases, so does import fraud. Facing vast trade volumes, customs can only inspect a fraction of declarations. We developed AI algorithm GraphFC, which requires minimal labeled data for training and accurately detects illegal import declarations. In collaboration with WCO, GraphFC has been tested in several African countries. The results were presented at AI top conference ACM CIKM 2023, showcasing Taiwan's significant contribution to AI in customs fraud detection.

Industry Applicability

GraphFC is currently deployed in Nigeria and Malawi's customs systems and is being promoted to all WCO member countries. It aims to impact globally by: Detecting customs fraud to ensure lawful trading, Increasing tax revenue and minimizing tariff evasion losses, and Extending to the banking sector to spot illegal financial transactions and prevent money laundering, leveraging its open-source nature. GraphFC protects customs inspectors by reducing exposure to risky environments.



(a) Distribution of physical inspection rate among 90 countries across the world.



(b) Performance w.r.t. physical inspection ratio (%).

Model	n=1%			n=5%		
	Pre.	Rec.	Rev.	Pre.	Rec.	Rev.
A-Data						
XGB	0.671	0.070	0.120	0.445	0.234	0.359
Tabnet	0.715	0.05	0.081	0.452	0.231	0.334
VIME	0.725	0.076	0.116	0.471	0.249	0.362
DATE	0.803	0.085	0.158	0.472	0.249	0.38
$\text{GraphFC}_{\text{RGCN}}$	0.819	0.086	0.146	0.525	0.277	0.424
GraphFC	**0.869**	**0.092**	**0.17**	**0.535**	**0.282**	**0.445**
B-Data						
XGB	0.151	0.061	0.109	0.045	0.092	0.184
Tabnet	0.149	0.06	0.089	0.046	0.085	0.171
VIME	0.064	0.024	0.052	0.043	0.087	0.208
DATE	0.152	0.061	0.105	0.057	0.115	0.210
$\text{GraphFC}_{\text{RGCN}}$	0.259	0.104	0.127	0.179	0.362	**0.334**
GraphFC	**0.402**	**0.162**	**0.172**	**0.200**	**0.406**	0.306

Affiliated Ministry: NSTC

Exhibitor: National Yang Ming Chiao Tung University

Contact: Lua Kim Boon engp4324@nycu.edu.tw

Exhibited Technology

High-Efficiency Distributed Electric Propulsion (DEP) Vertical Takeoff and Landing (VTOL) UAV Technology

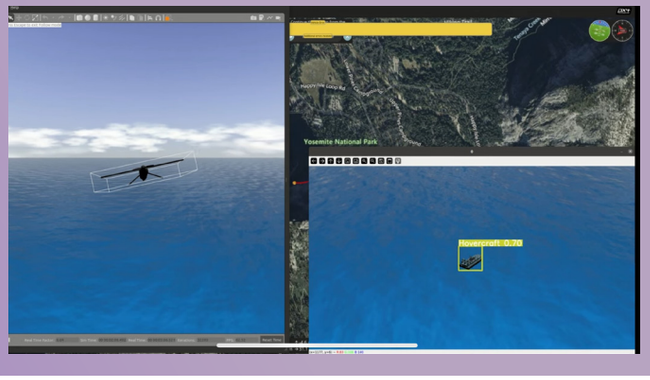
Technology Introduction

This technology presents a vertical takeoff and landing UAV system integrating distributed electric propulsion with thrust-vectoring propeller modules. The propulsion units dynamically redirect thrust for vertical and horizontal flight, reducing deadweight and improving efficiency. Research confirms enhanced lift, delayed stall, and reduced drag. Its all-electric design supports vertical takeoff, hovering, and efficient cruise through thrust-vectoring propulsion, and integrates with AI-based sensing and decision-making systems to enhance mission autonomy and adaptability. The system is well-suited for urban air mobility, disaster response, and aerial logistics.

Industry Applicability

This technology offers high endurance, adaptive control, and modular integration of distributed electric propulsion with thrust-vectoring modules. It enables efficient, flexible, low-emission flight, supporting diverse applications such as urban air mobility, disaster response, smart agriculture, energy inspection, and remote logistics. Its low noise, green design, and scalable architecture make it suitable for commercialization and export as a next-generation intelligent aerial platform.





Affiliated Ministry: NSTC

Exhibitor: National Taiwan University of Science and Technology

Contact: Pei-Jun Lee pjlee@mail.ntust.edu.tw

Exhibited Technology

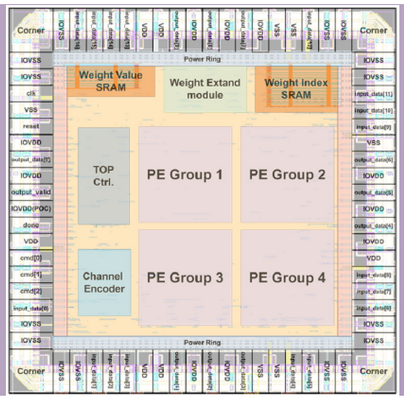
High-Area-Efficiency Sparse Neural Network Accelerator Operable at Low Voltage

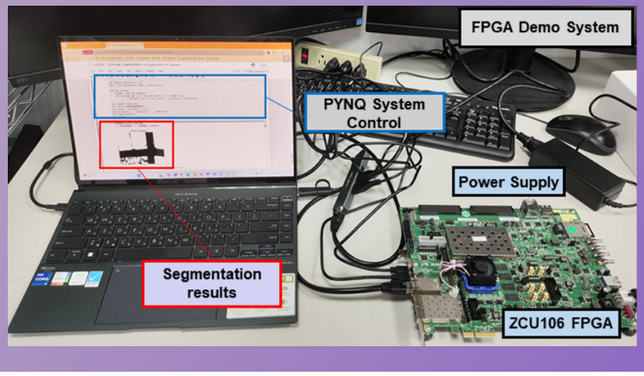
Technology Introduction

This technology proposes an algorithm-hardware co-design for low-power, compact semantic segmentation on UAV and satellite platforms. Through pruning and sparsity compression, it reduces memory and computation demand on edge devices. A dedicated hardware accelerator with retiming optimizes data paths, implemented using TSMC 28nm technology as a physical IC operating at 0.65V with 14mW power consumption, extending overall UAV and satellite system runtime by 10%.

Industry Applicability

This design uses two-stage pruning to compress model parameters to 0.47% of the original, greatly reducing memory access. On the hardware side, retiming and timing borrowing enable lower-voltage operation. Compared to the reference, this design improves power and energy efficiency by 10–40%, reduces area by 10%, and operates reliably at 0.65V under 400MHz. Overall, chip power consumption is reduced by 30%, extending payload system endurance by about 10%.





Affiliated Ministry: NSTC

Exhibitor: National Taiwan University

Contact: Winston Hsu whsu@ntu.edu.tw

Exhibited Technology

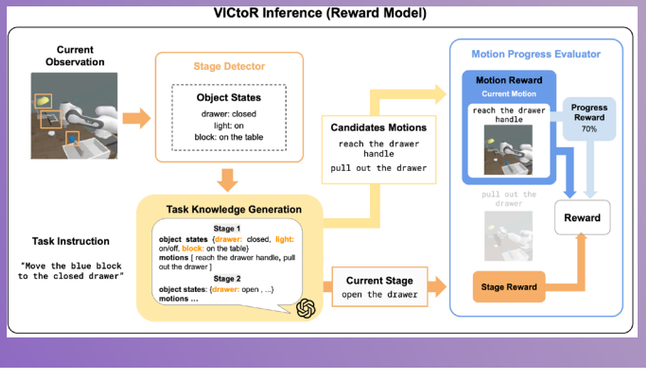
Advancing Robotic Intelligence: Rapid Learning, Instruction Comprehension, and Anomaly Detection

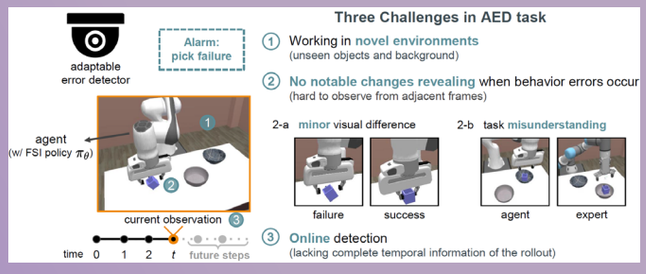
Technology Introduction

Robots in real-world environments face three challenges: requiring many expert demonstrations, lacking clear task guidance, and facing safety risks from failures. We propose three solutions: SCAN, which selects demonstrations aligned with task progress; VICtoR, which uses contrastive learning and vision-language models for dense guidance; and PrObe, which detects anomalies via feature consistency. These methods were accepted in top AI conferences AAAI, NeurIPS, and ICLR, and won multiple awards.

Industry Applicability

This technology covers few-shot imitation, (LLM-augmented) task guidance generation, and anomaly detection—key enablers for accelerating real-world robot deployment with strong industrial potential. As commercial robots face diverse, complex scenarios, the first two modules enable fast adaptation and decision-making. With real-time anomaly detection, the system enhances safety and robustness. These complementary innovations collectively drive the deployment of intelligent robotic systems.





Affiliated Ministry: NSTC

Exhibitor: National Yang Ming Chiao Tung University

Contact: Jean Lin jeanlin@nycu.edu.tw

Exhibited Technology

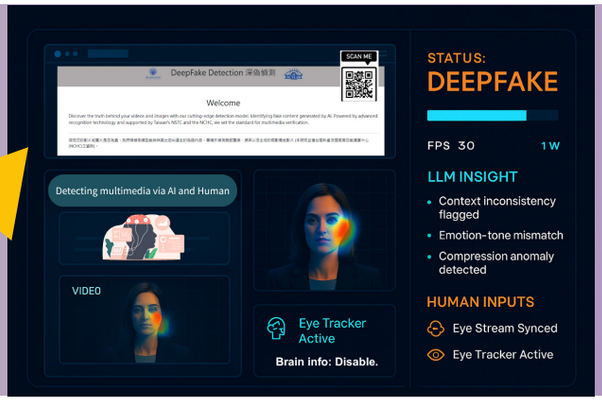
CoVerify Vision: Real-Time Trusted Media Shield

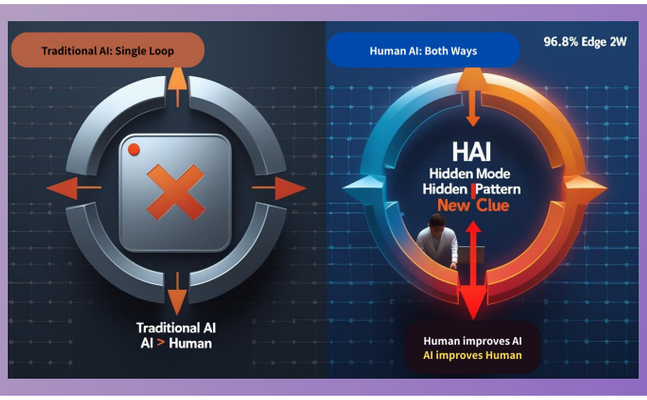
Technology Introduction

CoVerify Vision is a next-gen verification framework pioneering "Human-AI Bi-directional Augmentation." It solves critical AI bottlenecks like real-world compression and novel attacks. The technology fuses robust AI perception with a breakthrough human-cognitive loop. We quantify human expert intuition via cognitive science, feeding these 'clues' back to the AI. This creates a self-evolving, symbiotic system that fundamentally overcomes real-world detection challenges.

Industry Applicability

CoVerify Vision is piloted with National Central University's Frontier Tech Research Center and several agencies for fact-checking and media forensics. Since 2023 it has aided CNA, The Reporter, FTV, and TFC. Work with NVIDIA and PHISON speeds VLM multimodal fusion on edge devices. A three-track plan—software license, cloud API, turnkey projects—drives commercialization, while its human-AI loop counters election disinformation and deepfake fraud.





Affiliated Ministry: NSTC

Exhibitor: National Yang Ming Chiao Tung University
Taipei Veterans General Hospital

Contact: Chao Ling Shen fromrue@nycu.edu.tw

Exhibited Technology

Deep Heterogeneous Multimodal Learning Techniques for Predicting Hospital Readmission and Mortality Risk on Heart Failure Patients

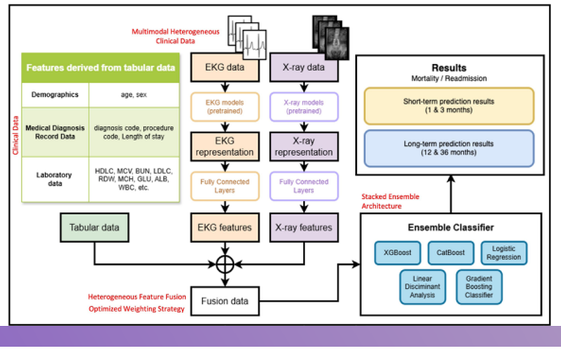
Technology Introduction

We developed a Deep Heterogeneous Multimodal Learning-Based Technique for Predicting Hospital Readmission and Mortality Risk in heart failure patients. This technique integrates heterogeneous modalities, including clinical data, electrocardiograms, and chest X-rays, to predict short-term and long-term risks for mortality and readmission. The relevant clinical application of this technique has been recognized by the 20th National Innovation Award and under validation in multiple hospitals.

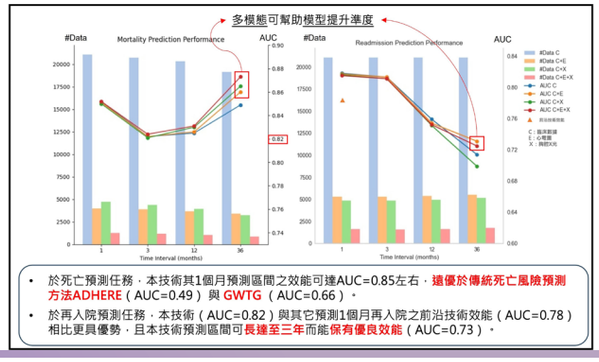
Industry Applicability

Heart failure prevalence has been rising in increased aged populations and become one of the main factors of hospitalizations for patients aged 65 and older. Due to high readmission and mortality rates, accurate risk prediction tools are under high demands. Our technique fuses heterogeneous modalities to predict short-term and long-term risks for readmission and mortality in heart failure patients, carring high application values in smart medicine areas, including effective clinical decision support, cost reduction and improved outcomes on chronic disease care.

應用於心衰竭病人再入院與死亡風險預測之深度異質性多模態學習技術－多模態學習架構



應用於心衰竭病人再入院與死亡風險預測之深度異質性多模態學習技術－效能評估



- 於死亡預測任務，本技術其1個月預測區間之效能可達AUC=0.85左右，**遠優於傳統死亡風險預測方法ADHERE**（AUC=0.49）與 **GWTG**（AUC=0.66）。
- 於再入院預測任務，本技術（AUC=0.82）與其它預測1個月再入院之前沿技術效能（AUC=0.78）相比更具優勢，且本技術預測區間可**長達至三年**而能**保有優良效能**（AUC=0.73）。

Booth: FD07

Affiliated Ministry: NSTC

Exhibitor: Kaohsiung Medical University

Contact: Li-Li Wang lilywang1120003@gmail.com

Exhibited Technology

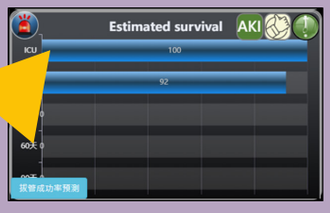
Endotracheal Tube Position Anomaly Alerting System (ETPAAS)

Technology Introduction

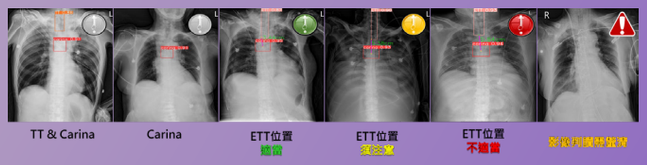
Endotracheal Tube Position Anomaly Alerting System (ETPAAS) leverages AI to automatically analyze chest X-ray images and determine whether an endotracheal tube is properly positioned. It provides timely alerts for healthcare professionals to verify and correct malposition, thereby reducing complications and tube dislodgement, enhancing the quality of care, and ensuring patient safety. The model delivers strong performance, achieving accuracy of about 95% in object detection and about 90% accuracy in evaluating tube position appropriateness.

Industry Applicability

This technology automatically detects ETT position and sends real-time alerts. Cross-hospital validation confirmed clinical benefits. It targets global markets including Taiwan, U.S.A., Asia-Pacific, and Europe, with promising financial outlook. The business model focuses on licensing and co-development with medical software and ICU integrators, leveraging existing platforms for rapid growth and stable profits, offering strong commercialization prospects.







Affiliated Ministry: NSTC

Exhibitor: National Taiwan University

Contact: Li-Ya Chiu liachiu@ntu.edu.tw

Exhibited Technology

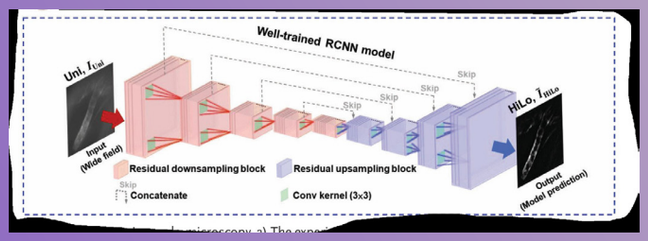
AI-powered varifocal metasurface endo-microscopy for optical sectioning system

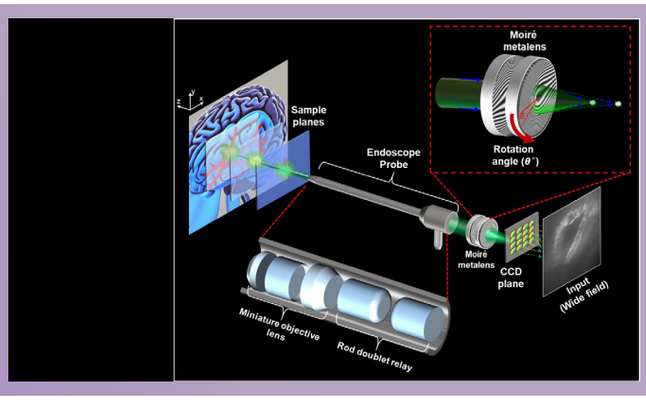
Technology Introduction

Our team has developed an AI-powered varifocal meta-optical endomicroscopy system that integrates a deep learning-based HiLo sectioning algorithm, a telecentric design, and a varifocal metalens. Using a single input image, the system can reconstruct high-contrast optical sectioning images in real time, achieving a 50-fold improvement in processing efficiency. It has been successfully applied to in vivo microvascular imaging, demonstrating high resolution and real-time performance, and is suitable for medical applications such as neural imaging and brain surgery.

Industry Applicability

Developed the AI-powered Varifocal Meta-optics Endomicroscopy System, which offers high-resolution, real-time imaging with minimal invasiveness, making it suitable for neurosurgical, cerebral vascular observation in high-precision clinical settings. Compared to confocal and multiphoton endoscopes, this system excels in compactness, imaging speed, and operational simplicity.
With AI-based image reconstruction and a modular optical design, it holds strong potential for commercialization.





Booth: FD09

FUTEX

Affiliated Ministry: MOHW

Exhibitor: Industrial Technology Research Institute

Contact: CHAN-HSUAN YANG yangch@itri.org.tw

Exhibited Technology

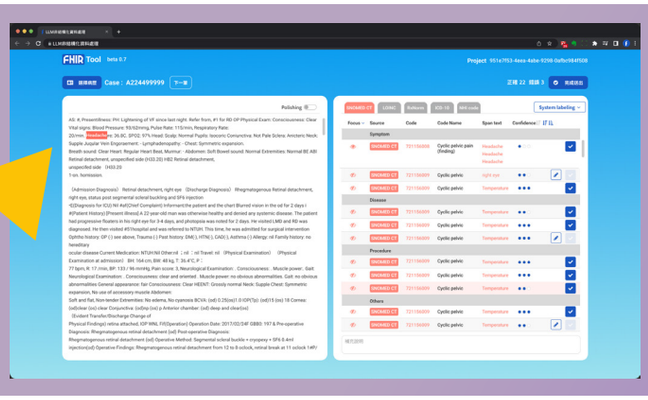
SmartEHR Coder: LLM-based Automatic EHR Clinical Coding Support System

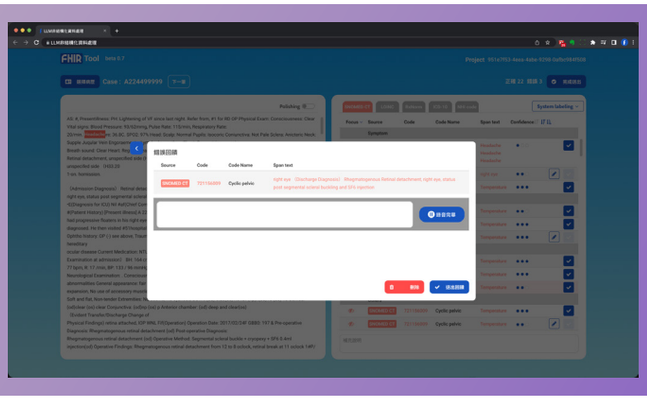
Technology Introduction

We present SmartEHR Coder, a clinical coding support system powered by large language models (LLMs), developed to transform unstructured clinical notes into standardized, computable data. Designed to address the fragmentation of Taiwan's healthcare IT environment, the system maps electronic health records (EHRs) into international coding standards—LOINC, SNOMED CT, and RxNorm—while supporting ethical, human-in-the-loop workflows.

Industry Applicability

This technology extracts semantic data from medical records and converts it into standardized codes, solving cross-hospital integration challenges and improving EMR structuring. Applicable across all healthcare levels, it supports clinical use, AI, and research. Deployable via cloud, on-premises, or within HIS, it offers scalability and value—forming a foundation for smart healthcare in Taiwan with global potential.





Affiliated Ministry: NSTC

Exhibitor: Taipei Medical University

Contact: Cailin Li a04277@tmu.edu.tw

Exhibited Technology

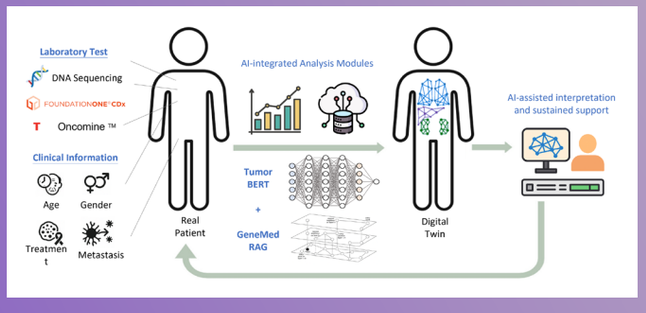
OncoDT – Oncology Digital Twin

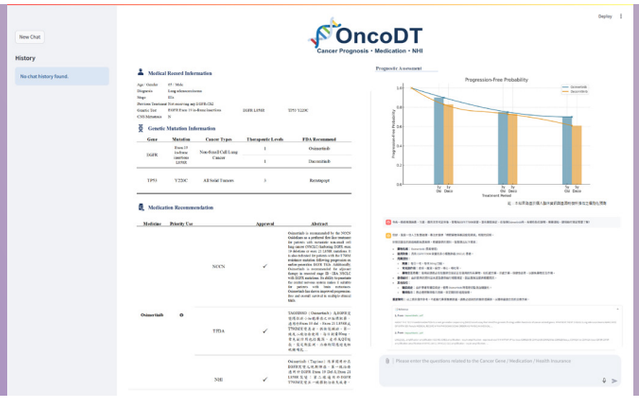
Technology Introduction

TumorBERT utilizes a BERT-based architecture to capture mutational patterns within the genomic. By integrating clinical variables, it enables personalized prediction of patient survival risk, achieving an AUROC of 0.72. GeneMed-RAG, built on RAG technology, automatically parses genomic reports and retrieves relevant therapeutic content curated knowledge base of cancer pharmacogenomics. It generates highly accurate, evidence-based medication recommendations with an accuracy of 98.3%.

Industry Applicability

This AI precision oncology solution uses OncoDT to rapidly analyze genetic reports, creating benefits for all. It enables personalized patient care and treatment. It also benefits hospitals by reducing time, pharmaceutical companies by simulating drug efficacy and screening patients. Interactive AI teaching systems help medical education. The solution targets the global tumor companion diagnostics market with test-agnostic strategies to enable partnerships for global expansion.





Affiliated Ministry: NSTC

Exhibitor: Taipei Medical University

Contact: Huang Chih-wei gracehuang@tmu.edu.tw

Exhibited Technology

A Non-Contact AI Early Warning System for Pressure Injury: Enhancing Care Quality and Patient Safety

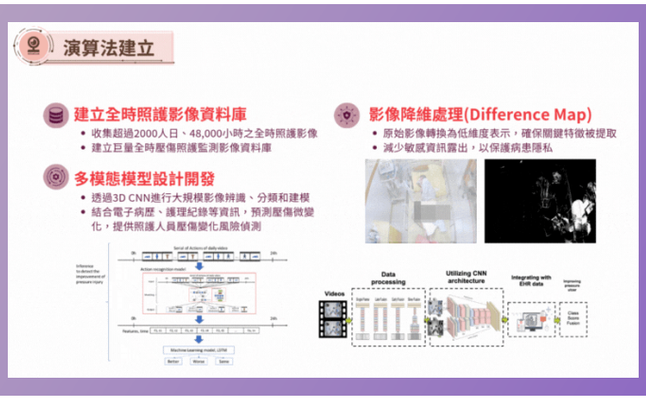
Technology Introduction

This technology integrates a non-contact smart camera with deep learning models to monitor patient activity 24/7. By combining data from electronic medical records and nursing notes, it predicts pressure injury risks and provides early warnings. With over 80% prediction accuracy, the system has received invention patents in Taiwan, the US, and China. It is currently undergoing clinical validation and commercialization in collaboration with healthcare institutions.

Industry Applicability

This technology offers a non-contact, automated, and highly scalable solution for hospitals and long-term care facilities to predict pressure injury risks and provide early warnings. It integrates smart camera hardware with AI analytics and will adopt a subscription-based model. Future extensions include fall prediction and remote care, supporting the development of exportable smart healthcare systems.





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Booth: FD12

Affiliated Ministry: NSTC

Exhibitor: National Taipei University of Technology

Contact: ZHI-XUAN ZHANG adachang0606@gmail.com

Exhibited Technology

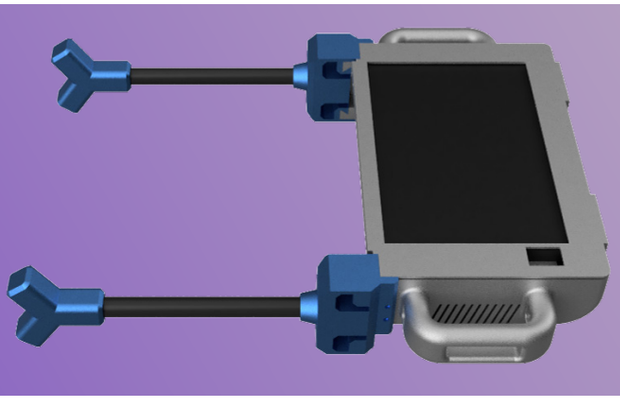
Sub-Terahertz High-Resolution And Penetrating Dynamic Electromagnetic Structure Safety Analysis And Detection Module

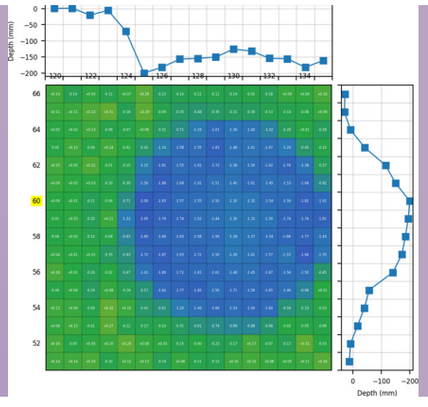
Technology Introduction

To address the increasing complexity and aging of aircraft, railways, and buildings, Professor Ming-An Chung's team at National Taipei University of Technology developed a Sub-Terahertz radar system. Combining Sub-THz frequencies, MIMO architecture, and AI imaging, it delivers high-resolution, deep-penetrating, dynamic NDT. Scans complete in just 30 seconds with 5μm depth resolution, greatly improving inspection efficiency and safety.

Industry Applicability

This Sub-terahertz radar technology, combined with AI imaging, enables non-contact, high-resolution, and deep-penetration inspection. Ideal for aviation, metro, and infrastructure sectors, it can halve inspection time for many Airlines and unlock a potential USD 5.44 million market. With applications extending to bridges, wind energy, and defense, the technology will be commercialized through hardware sales and cloud-based platform licensing, driving smart inspection at scale.





FUTEX

Affiliated Ministry: NSTC

Exhibitor: National Taiwan University

Contact: Jia-Yun Xie jyxie0818@ntu.edu.tw

Exhibited Technology

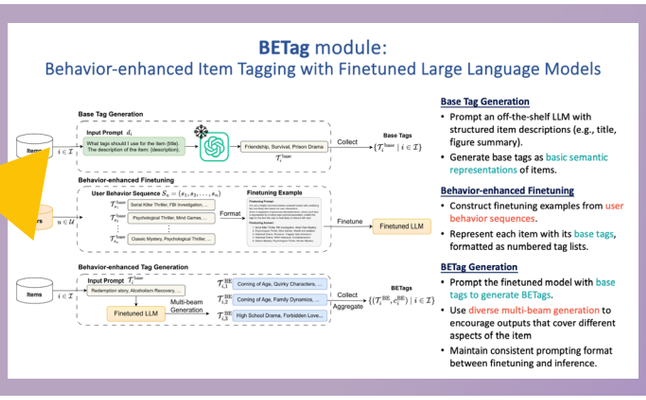
LLM-enhanced Unified Tagging and Multimodal Recommendation System

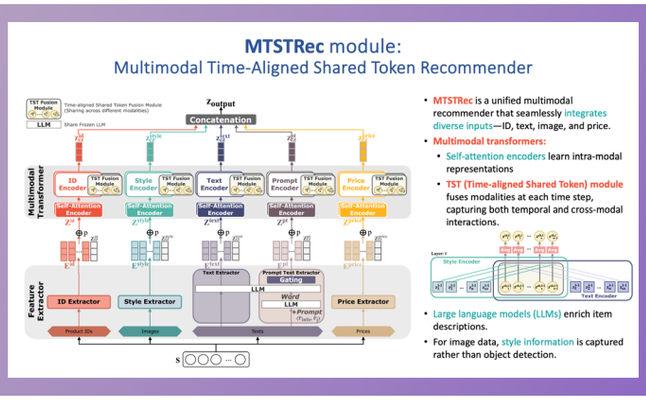
Technology Introduction

This system integrates product tagging and personalized recommendations using large language models, user behavior data, and multimodal learning. It includes two modules: BETag, which generates behavior-aligned tags via LLM fine-tuned on user history, and MTSTRec, which integrates multimodal data through a time-aligned token and Transformer to model user preferences. The system enhances tagging and recommendation accuracy across e-commerce and content platforms and supports scalable deployment.

Industry Applicability

This technology applies to e-commerce, media, and multimodal-driven industries. It addresses the challenges in product/item tagging and recommendation accuracy. BETag generates behavior-enhanced tags offline, reducing costs and boosting relevance. MTSTRec integrates multimodal data to deliver precise personalized recommendations, boosting conversion rates and user engagement. The system is easy to integrate with existing e-commerce platforms and offers an effective, scalable solution.





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Booth: FD14

Affiliated Ministry: NSTC

Exhibitor: Taipei Veterans General Hospital

Contact: Yuan-Chia Chu ycchu5@vghtpe.gov.tw

Exhibited Technology

AI-powered Real-time Monitoring and Early Warning System for Hemodialysis

Technology Introduction

This system is an integrated, multi-module AI platform for hemodialysis, incorporating heart failure risk prediction, dry-weight recommendation, hemoglobin (Hb) prediction, and a newly introduced intradialytic hypotension (IDH) prediction module in 2025. It continuously analyzes approximately 200 dialysis parameters with millisecond-level processing speed, providing real-time risk assessment and early warnings during treatment. The platform has been clinically deployed across 90 dialysis beds at Taipei Veterans General Hospital, with prospective data collection ongoing for validation.

Industry Applicability

Taiwan has more than 90,000 dialysis patients, representing a substantial and ongoing healthcare need. Real-time AI prediction can help mitigate acute complications and reduce overall costs.
The system has already been deployed in clinical practice and is positioned for nationwide scaling and international adoption. Musheng Technology is leading efforts toward SaMD certification and commercialization, through software licensing and technology transfer, with the goal of accelerating adoption and establishing the system as a compliant, market-ready AI solution to enhance dialysis safety.





Affiliated Ministry: NSTC

Exhibitor: National Yang Ming Chiao Tung University

Contact: Duc Thang Ngo thangnd1114@gmail.com

Exhibited Technology

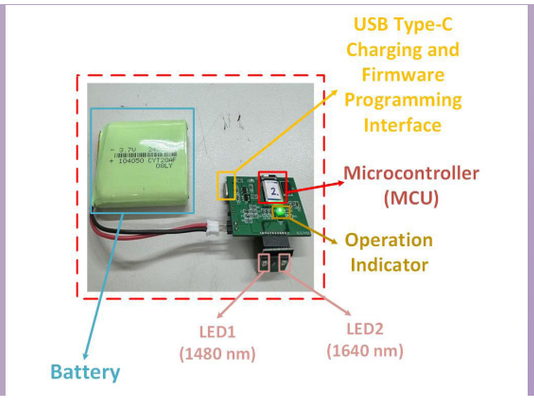
A novel finger-tip glucose sensor

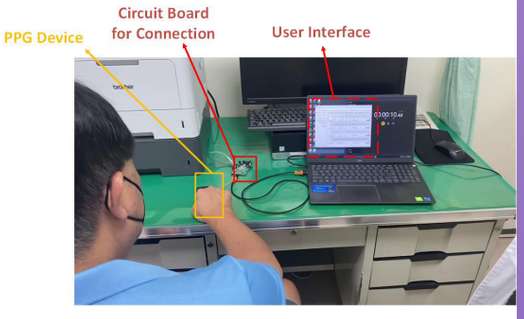
Technology Introduction

A novel non-invasive glucose monitoring system is developed with combining dual-wavelength PPG signals (1480 nm and 1640 nm) and machine learning. Real-time signal quality evaluation achieved 95.6% accuracy, and the XGBoost model predicted glucose levels with RMSE 10.932 mg/dL as presented in Appendix Fig. 4. Compared to the FDA requirement that at least 95% of values fall within Zones A and B of the Clarke Error Grid, the proposed method achieved 98.2%.

Industry Applicability

This technology offers a practical, non-invasive, wearable glucose monitoring solution for diabetic patients, improving compliance and enabling continuous metabolic health tracking. It can be integrated into smartwatches or portable health devices, supporting personalized diabetes management and early intervention, potentially reducing healthcare costs and improving patient outcomes.





Affiliated Ministry: NSTC

Exhibitor: Chang Gung University

Contact: Shu-Hui Chen phdgloria@gmail.com

Exhibited Technology

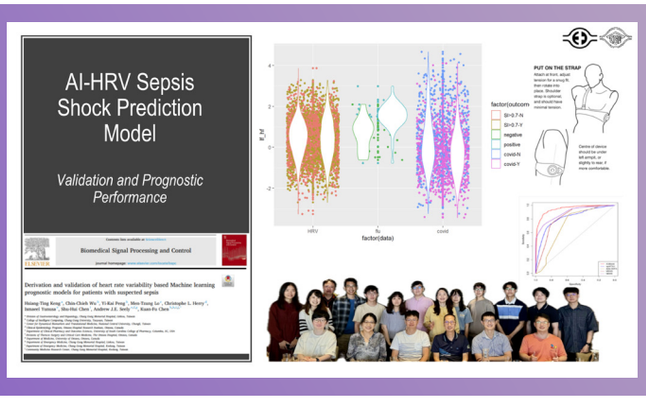
AI-HRV sepsis shock prediction model

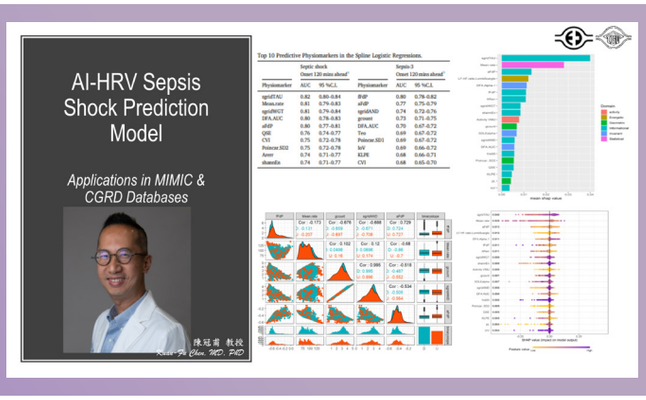
Technology Introduction

The AI-HRV Sepsis Prediction Model is an advanced, real-time software that utilizes ECG-based heart rate variability (HRV) and machine learning to predict septic shock up to 120 minutes prior to its onset. The system extracts 10 HRV features—including time, frequency, and non-linear metrics—and applies an XGBoost model to estimate risk. It integrates with EHRs, delivers alerts, supports mobile notifications, and enables early, non-invasive, and scalable interventions in critical care.

Industry Applicability

This AI-HRV system predicts septic shock up to 120 minutes in advance, enabling early intervention in emergency and ICU settings. It integrates seamlessly with existing ECG and hospital information systems, requiring no additional hardware. Its scalable, non-invasive design supports smart hospital deployment, remote monitoring, and commercialization. This innovation enhances critical care efficiency and holds global potential for sepsis management transformation.





Affiliated Ministry: NSTC

Exhibitor: National Health Research Institutes

Contact: Yu-Jie, Wang jie.wang@nhri.edu.tw

Exhibited Technology

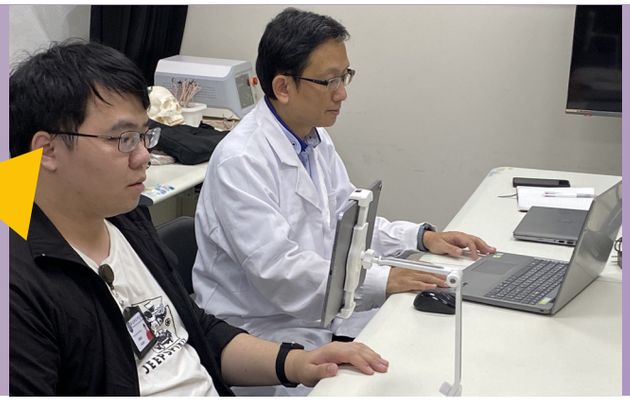
ReMIND AI: Intelligent Digital Therapeutics for Mental Health

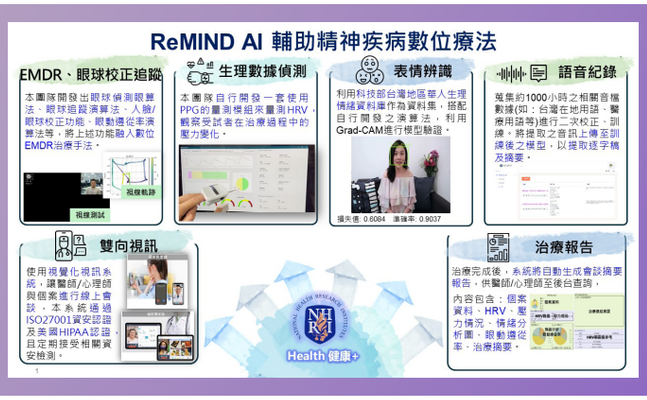
Technology Introduction

This AI-driven digital mental health platform integrates EMDR therapy with emotion recognition, eye-tracking, physiological monitoring, speech analysis, and automated reporting. It enables standardized, digital, and personalized care, enhancing treatment efficacy, efficiency, and accessibility. By addressing clinician shortages and regional disparities, the system supports a precise, scalable, and sustainable model for intelligent mental healthcare.

Industry Applicability

This AI digital mental health platform integrates multimodal sensing and supports scalable SaaS deployment for healthcare, insurance, and enterprises. It provides stress management and remote counseling, enhancing efficiency, lowering costs, and improving access—especially in underserved areas. With early detection and continuous monitoring, it promotes preventive care and mental health. Holds global market potential and reinforces Taiwan's leadership in digital mental health innovation.





Affiliated Ministry: NSTC

Exhibitor: Taipei Medical University

Contact: Syu-Jyun Peng sjpeng2019@tmu.edu.tw

Exhibited Technology

Machine Learning Quantitative Analysis of FDG-PET Images of Medial Temporal Lobe Epilepsy Patients

Technology Introduction

This technology integrates FDG-PET and high-resolution MRI to perform automated quantitative analysis and lateralization of epileptogenic foci in medial temporal lobe epilepsy (MTLE). By calculating standardized uptake values (SUVs) and using machine learning algorithms, it improves pre-surgical evaluation accuracy compared to traditional visual assessment. The system reduces the need for invasive procedures and has been clinically validated with patent protection.

Industry Applicability

This technology enables automated and quantitative analysis of FDG-PET for pre-surgical evaluation in epilepsy, reducing manual workload and invasive procedures. It is well-suited for integration into hospital systems, cloud-based diagnostic platforms, and SaMD products. With strong applicability in both advanced and emerging healthcare markets, it offers commercialization potential through clinical deployment and international collaborations.





Booth: FD19

Affiliated Ministry: NSTC

Exhibitor: National Cheng Kung University

Contact: HSIU-CHI CHENG teishuki@mail.ncku.edu.tw

Exhibited Technology

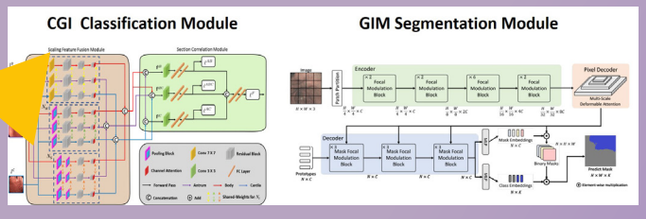
Dual Deep Learning Models for Gastric Premalignant Condition Diagnosis in Precision Health

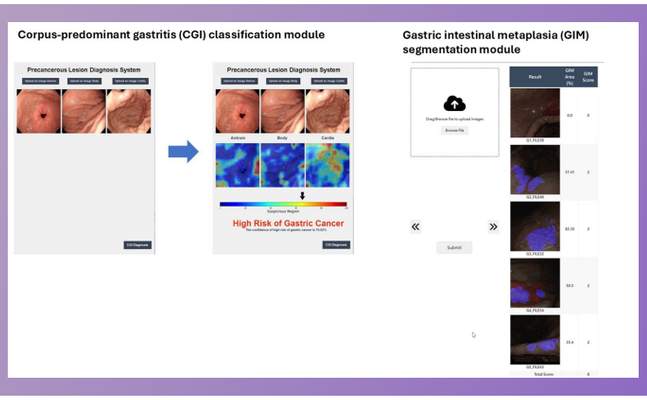
Technology Introduction

To enable timely diagnosis of gastric premalignant conditions from endoscopy images and address the issues of invasion, high cost, and time-consuming biopsies, we propose a precise diagnostic method for gastric premalignant conditions based on dual deep learning models. This AI-assisted approach facilitates quicker and more accurate assessments of gastric cancer risk by physicians, simultaneously minimizing the bleeding risk associated with biopsy procedures. Ultimately, this achievement supports the goal of precision health.

Industry Applicability

The proposed AI methods can be integrated into existing endoscope systems in medical institutions or health check-up centers. We have developed both stand-alone and cloud-based versions, which can assist endoscopists in identifying high-risk patients to arrange surveillance gastroscopy, enabling early stomach cancer diagnosis, reducing mortality, and advancing precision health. It also helps manufacturers tap into the growing stomach cancer diagnostic market with an 8.7% annual growth rate.





Affiliated Ministry: NSTC
Exhibitor: National Science and Technology Center for Disaster Reduction
Contact: Hsin-Chi Li hsinchi@ncdr.nat.gov.tw

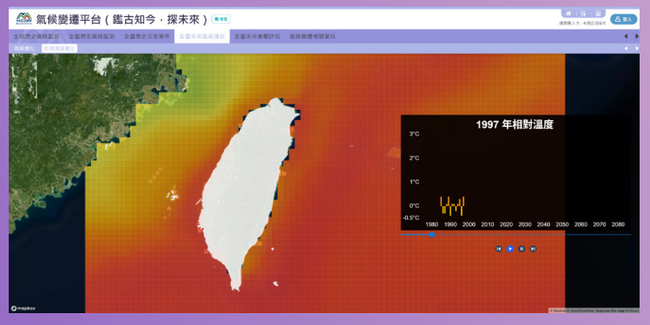
Exhibited Technology
High-Resolution Climate Data and Adaptation Application Platform

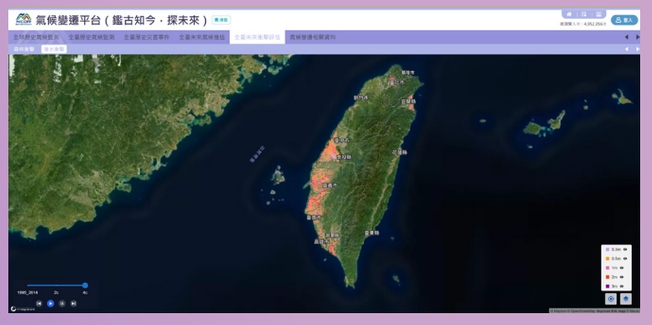
Technology Introduction

Climate change is impacting life and the economy in Taiwan, with mounting risks from shrinking mountain snowpacks and coral bleaching to more frequent typhoons and extreme heat. The Climate Change Division of the National Science and Technology Center for Disaster Reduction (NCDR) has developed the High-Resolution Climate Data and Adaptation Application Platform, integrating high-resolution climate data, localized case studies, translated scientific reports, an adaptation toolbox, and intelligent search. It provides cross-sector, science-based adaptation information to support governments, industries, and society in developing risk management and sustainability strategies.

Industry Applicability

The platform leverages high-resolution climate data, localized case studies, and adaptation resources to support industries in assessing climate change risks, enhancing their resilience and competitiveness in the face of climate challenges.





Affiliated Ministry: NSTC

Exhibitor: National Science and Technology Center for Disaster Reduction

Contact: Chun-Hung Yang chyang@ncdr.nat.gov.tw

Exhibited Technology

Cross-Domain Integrated Disaster Timeline Simulation – All-Hazard Wargaming Platform

Technology Introduction

The All-Hazard Wargaming Platform integrates digital twin technology, 3D visualization, and cross-domain data fusion to establish a compound disaster timeline simulation and exercise system. It supports multiple scenarios such as typhoons, heavy rainfall, flooding, landslides, earthquakes, radiation, and chemical hazards. The system enables real-time calculation of affected areas, estimation of population exposure, medical capacity, shelter demand, and infrastructure impact, while also simulating transportation disruption and energy loss. Designed with modular components, the platform incorporates role-based collaboration and live data integration, breaking through the limitations of traditional paper-based and static exercises, and significantly enhancing inter-agency coordination efficiency and disaster decision-making resilience.

Industry Applicability

The platform offers high industrial applicability. In addition to supporting disaster preparedness exercises for central and local governments, it can be extended to sectors such as transportation, energy, healthcare, and critical infrastructure for risk assessment and contingency planning. The system simulates disaster impacts on power supply, water supply, transportation networks, and medical capacity, assisting industries in developing Business Continuity Plans (BCP) and deploying resources in advance. Through cross-domain integration and dynamic exercise capabilities, the platform effectively enhances disaster resilience while reducing operational disruptions and economic losses.





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Booth: FE02

Affiliated Ministry: NSTC
Exhibitor: National Synchrotron Radiation Research Center
Contact: Che-Min Chou chou.cm@nsrrc.org.tw

Exhibited Technology

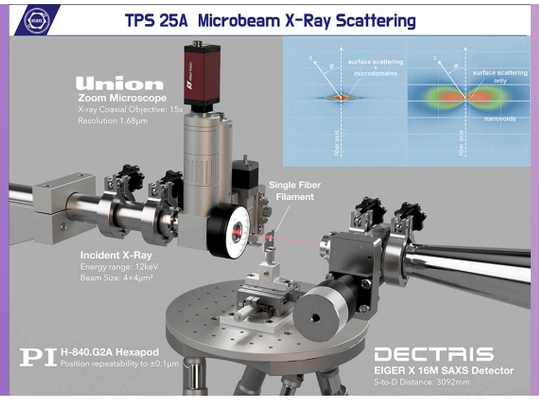
Propelled Toward Vega – Accelerating the Synthetic Fiber Industry's Next Leap

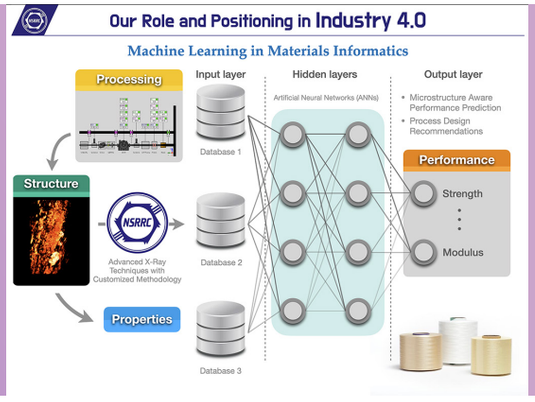
Technology Introduction

By integrating a miniaturized melt spinning device with an advanced synchrotron beamline, in-situ experiments can be conducted to observe real-time process control and microstructural evolution during melt spinning, opening up a new frontier in high-performance fiber development.

Industry Applicability

Taiwan's synthetic fiber industry is primarily based on melt spinning technology. This technology offers a miniaturized in-situ melt spinning research platform that combines real-time process control with microstructure tracking, effectively reducing R&D costs, shortening development cycles, and significantly boosting innovation efficiency in the industry.





Affiliated Ministry: NSTC

Exhibitor: Taiwan Space Agency

Contact: Yao-Chung Hsu ychsu@tasa.org.tw

Exhibited Technology

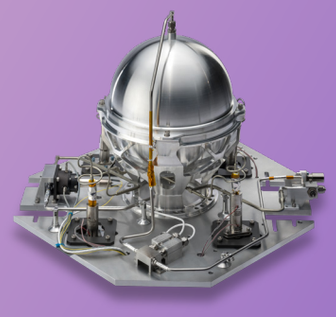
HTP RCS Components / Subsystem/Reaction Control Subsystem

Technology Introduction

The operational safety and cost are superior to the traditional space propulsion systems by utilizing nontoxic high-test peroxide (HTP) as the propellant. All components are developed and verified by TASA. A total solution for satellite applications with design flexibility can be provided to satisfy the versatility of mission requirements.

Industry Applicability

High test peroxide can be used as the monopropellant and the oxidizer of the bi-propellant propulsion system, therefore, the compatibility issue of the material is a key to meet the requirement of the versatility of the mission. The application of aerospace can be a satellite reaction control system, anti-collision system of the satellite, apogee kick motor and landing system for moon or planet. In addition, the same technology can be also applied to the underwater propulsion system.



Affiliated Ministry: NSTC

Exhibitor: Taiwan Space Agency

Contact: Huang, Po-Yen MikeHuang@tasa.org.tw

Exhibited Technology

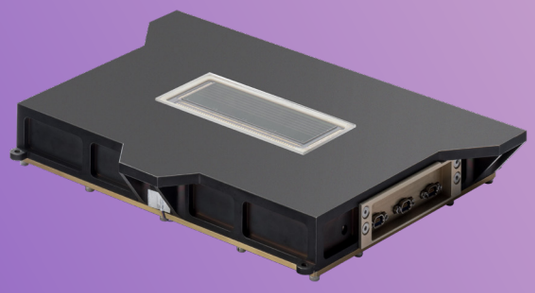
Focal Plane Assembly (FPA)

Technology Introduction

The focal plane assembly is the remote sensing component which converts the light to electrical signal. The Focal plane assembly applied on Formosat-8 telescope will perform the ground sample distance one meter of P band, two meter of MS band. In order to improve the image signal to noise ratio (SNR), Formosat-8 FPA has the time delay integration technique to perform high SNR and quality image.

Industry Applicability

Automated Optical Inspection at low-light situation、Wafer inspection、Panel inspection.



FUTEX

Affiliated Ministry: NSTC

Exhibitor: Taiwan Space Agency

Contact: Po-Hsuan Huang pohsuan@tasa.org.tw

Exhibited Technology

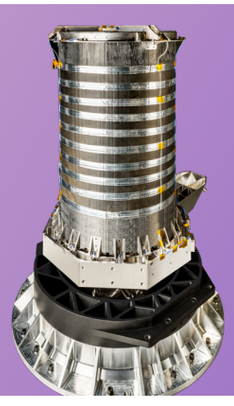
FS8A/B Remote Sensing Instrument(RSI) Optical System Assembly (OSA)

Technology Introduction

The Optical System Assembly (OSA) in the FORMOSAT-8A optical remote sensing instrument is equipped with a high-resolution Ritchey–Chrétien optical system with 396mm aperture and 3927mm effective focal length. This system can capture high-resolution images with ground sampling distance of 1.0 meter, using a 7μm pixel-size image sensor while orbiting at an altitude of 561km (0.7m GSD with post image processing).

Industry Applicability

Based on the technologies developed from the FS8A/B RSI OSA, it can be made available for the development of small-space optical systems in the optical industry.



Affiliated Ministry: MOE

Exhibitor: National Tsing Hua University

Contact: MING CHUNG LIM lmc6130@gmail.com

Exhibited Technology

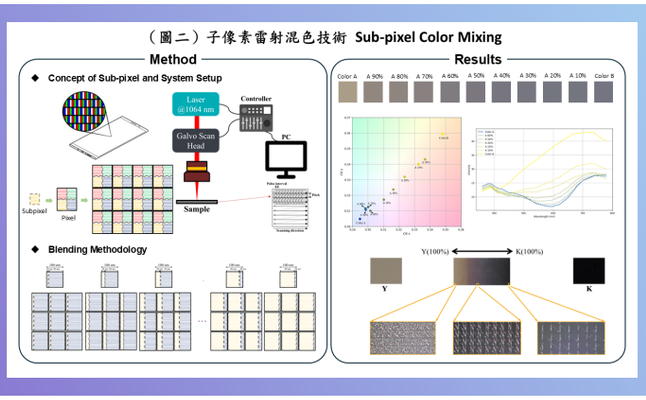
Towards Next Generation Eco-Technology: Intelligent Laser Metal Coloration

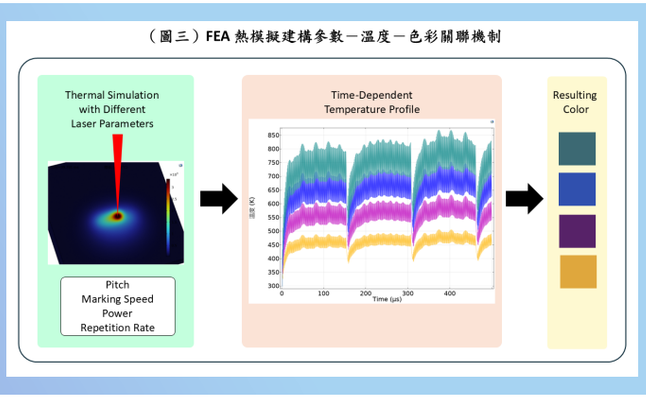
Technology Introduction

Our dry, zero-pollution laser-based metal coloring process addresses the limitations of conventional laser coloring methods in color gamut and precision. It integrates sub-pixel color mixing to expand achievable colors, and employs a physics-driven deep learning model (PD-TNN) with thermal simulation to map process parameters to color outcomes, enabling accurate prediction and efficient process design.

Industry Applicability

Our technology is a high-efficiency, low-carbon laser metal coloring process that replaces wet methods like electroplating, painting, and PVD. Using room-temperature dry processing aligned with ESG trends, it integrates AI for color prediction and parameter control. The system supports intelligent, customizable production and has applications in both industry and design, targeting commercialization in Taiwan's surface treatment market, which exceeds NT$100 billion in scale.





Affiliated Ministry: NSTC

Exhibitor: National Cheng Kung University

Contact: Yi-Cheng Sung zosia7716@gmail.com

Exhibited Technology

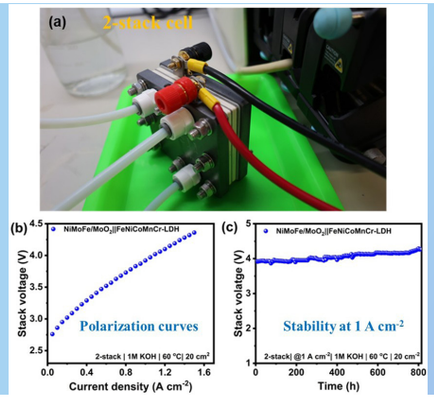
Hydrogening the Future: Non-Noble Metal AEMWE Technology Driving the Green Energy Revolution

Technology Introduction

This technology integrates non-noble metal catalysts with AEMWE system to enable high-efficiency, low-cost green hydrogen production. Featuring long-term durability and solar integration, it supports decentralized and off-grid hydrogen generation. A 3-stack AEMWE stack achieves high energy efficiency, stable operation, and H2 purity up to 99%, demonstrating strong potential for net-zero energy solutions.

Industry Applicability

This technology enables scalable, low-cost green hydrogen production via AEMWE systems using non-noble metal catalysts. It delivers high efficiency, long-term durability, and low energy consumption, meeting the EU 2030 targets. Its industrial applicability lies in its ability to decarbonize heavy industries, provide flexible energy storage for renewable grids, and enable new clean energy applications, making it a critical technology for achieving global carbon neutrality goals.





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Booth: FF02

Affiliated Ministry: NSTC

Exhibitor: National Cheng Kung University

Contact: Chuang wen shuo 11402037@ncku.edu.tw

Exhibited Technology

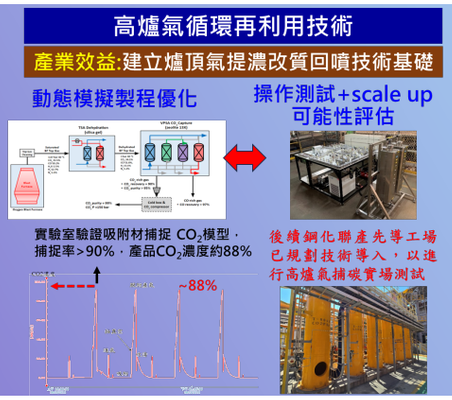
Green Steel: Hydrogen-Rich Blast Furnace Integrated with Carbon Recycling Technology

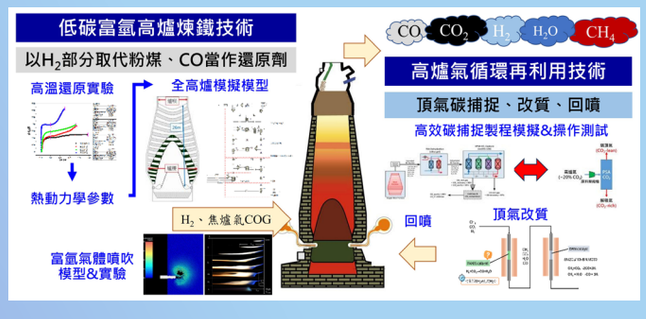
Technology Introduction

This technology integrates two major strategies: hydrogen-rich blast furnace ironmaking and top gas recycling and reuse, effectively reducing blast furnace carbon emissions through both direct and indirect hydrogen-based carbon replacement reactions. By injecting hydrogen to reduce coke consumption and improve reduction efficiency, combined with top gas recovery and reutilization technologies, the overall CO_2 reduction performance is significantly enhanced.

Industry Applicability

This integrated solution has been successfully implemented in collaboration with China Steel Corporation (CSC) for on-site production of low-carbon hot metal. By supplying low-carbon upstream materials, this technology is supporting the domestic metal products industry—including sectors such as machine tools, automotive components, and hand tools—and driving the overall industrial transition toward a net-zero carbon future.





Booth: FF03

Affiliated Ministry: NSTC

Exhibitor: National Chung Hsing University

Contact: Ying-Chen Chen janice870419@gmail.com

Exhibited Technology

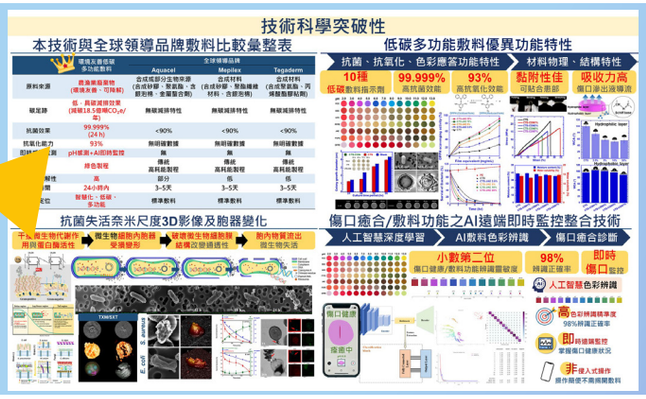
An Innovative AI-Integrated Platform for Eco-Friendly, Low-Carbon, Multifunctional Smart Medical Dressings

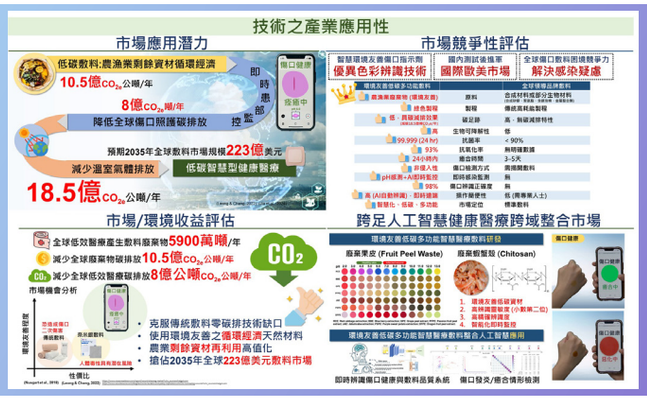
Technology Introduction

This globally pioneering low-carbon smart wound dressing, derived from agricultural and fishery waste polyphenols and chitosan, features antibacterial (99.999%), antioxidant (93%), anti-inflammatory properties, real-time pH sensing, and AI-based infection detection. It offers high exudate absorption, excellent adhesion, and non-cytotoxicity, and promotes wound healing within 24 hours, enhancing medical innovation and environmental sustainability.

Industry Applicability

Current mainstream products such as Aquacel, Mepilex, and Tegaderm mostly use high-energy-consuming processes and non-biodegradable materials, lacking real-time infection monitoring and carbon reduction features. Future market demand will focus on eco-friendly, smart, multifunctional dressings with real-time monitoring. The market is expected to exceed USD 22.3 billion by 2035, driven by the growing needs of an aging society and chronic wound care.





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Booth: FF04

Affiliated Ministry: NSTC

Exhibitor: Yuan Ze University

Contact: Guo-Bin Jung guobin@saturn.yzu.edu.tw

Exhibited Technology

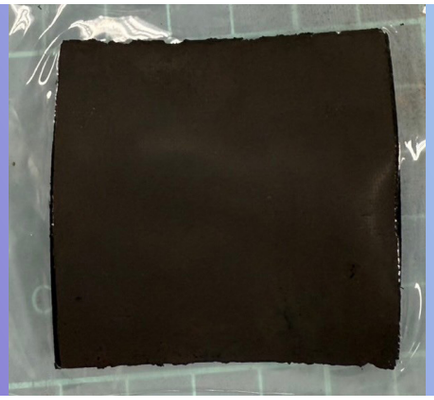
Generation of Low-Carbon Ozone and Negative-Hydrogen with Next-Generation Proton Exchange Membrane Water Electrolysis Technology

Technology Introduction

Generated low-carbon and high concentration ozone from our unique NG-PEMWE are utilized to efficiently treat the liquid waste from semiconductor industry successfully from Taiwan Semiconductor Manufacturing Cooperation (TSMC) with Trusval Technology Corp (信紘科). Negative-carbon and free hydrogen can be stored and utilized for diverse applications accelerating hydrogen economy realization.

Industry Applicability

After implementing the Scientific Research and Entrepreneurship Plan (Germination Case) supported by the National Science Council (from January 2023 to March 2024), our team has successfully modularized PEMWE technology and established a collaboration with a leading semiconductor equipment manufacturer. We are currently focusing on the offline degradation of process waste liquid using ozone generated by our system, while the hydrogen produced can be utilized to generate green electricity.





FUTEX

Affiliated Ministry: NSTC

Exhibitor: Agricultural Technology Research Institute

Contact: Shao-Wen Hung 1032169@mail.atri.org.tw

Exhibited Technology

New generation of light-emitting diodes to degrade harmful substances technology innovation applied to traditional meat stalls or meat store environmental control

Technology Introduction

This technology utilizes a 450 nm wavelength light-emitting diode (LED) combined with a surface plasmon structure. The LED light induces surface plasmon excitation that promote the ionization of water molecules in the air. These ionized molecules effectively decompose harmful airborne substances. The system can be applied to animal health management. It improves air quality, helps reduce carbon emissions, and supports the development of a more sustainable and animal-friendly farming environment.

Industry Applicability

This technology is applied for active purification of $PM_{2.5}$, viruses, bacteria, and harmful gases without chemicals. Proven effective in livestock farms and meat retail settings, it improves air quality, controls pathogens, and extends meat shelf life. With smart monitoring and environmental control, it aligns with net-zero and ESG goals. Highly commercializable, it offers scalable applications across the livestock and food industries, supporting sustainability and industry advancement.





Affiliated Ministry: NSTC

Exhibitor National Cheng Kung University

Contact: Kuan-Ting Lee ktlee@thu.edu.tw

Exhibited Technology

High-performance carbon capture, conversion for reuse, and carbon material manufacture

Technology Introduction

Our team has developed efficient CO_2 capture, conversion, and reuse technology by combining chemical absorption with microalgae-based capture. This allows us to turn atmospheric CO_2 into biochar for lithium-ion battery anodes. Producing 1 ton of anode material captures about 11.37 tons of CO_2 annually.

Industry Applicability

High-gravity rotating bed technology captures CO_2 and produces bicarbonates for microalgae cultivation, which can be turned into biofertilizer for higher reuse. Energy-efficient dewatering cuts drying energy use and mold risk. Microalgae biochar can replace graphite in lithium-ion battery anodes. Multiple technology transfers have accelerated industrialization.







Booth: FF07

FUTEX

Affiliated Ministry: NSTC

Exhibitor: National Taiwan University of Science and Technology

Contact: Tsung Han Huang e11961933@gmail.com

Exhibited Technology

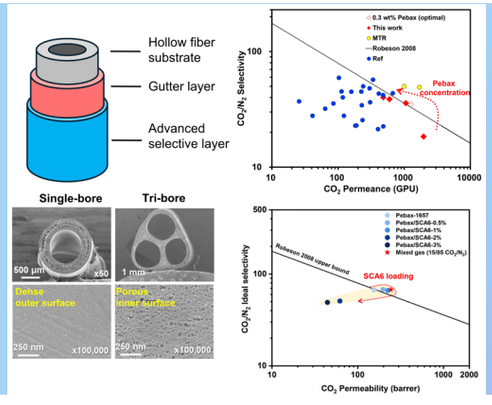
Structural engineering of hollow fiber membranes and design of novel selective layer materials for CO_2 capture

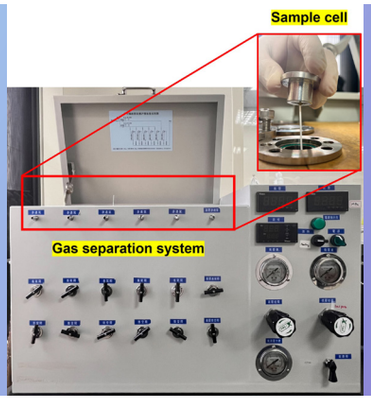
Technology Introduction

Our team focuses on developing composite hollow fiber membranes. The inner and outer layer structures were optimized to enhance the gas permeance. In parallel, we developed a continuous wetting/coating process by utilizing the immiscibility of wetting and coating solutions. A Plasma treatment was adopted to improve their interfacial compatibility, and novel selective-layer materials were synthesized and patented to overcome the permeability–selectivity trade-off relationship for CO_2 capture.

Industry Applicability

The hollow fiber membranes developed by our group provide a high surface area, modularity, and low energy requirement, making them ideal for carbon capture in coal-fired power plants and heavy industries. Their robust structure ensures long-term stability under harsh conditions. This scalable and cost-effective membrane technology can support Taiwan's transition to have sustainable industries with net-zero emissions.





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Booth: FF08

Affiliated Ministry: NSTC

Exhibitor: National Cheng Kung University

Contact: CHANG YU HAN sandra850710@gmail.com

Exhibited Technology

Using microalgae to establish a sustainable aviation fuel production platform for carbon reduction and energy production

Technology Introduction

This technology is to construct the microalgae carbon fixation and oil production system, which mainly includes a 10-ton microalgae carbon fixation system and a 100-liter algae fermentation system. After collecting the produced algae, they are hydrolyzed by biological method to produce biofuel source. This technology is based on two microalgae to create a carbon circulation platform. We will also cooperate with FORMOSA SMART ENERGY and airline industry to build the first SAF factory in Taiwan.

Industry Applicability

1. SAF is an international trend, and investment in development is imperative, and international sources are in short supply
2. CPC and FPG have also begun to develop in the direction of SAF
3. It is the first domestic academic community to work with the industry (FPG and EVA Air) to conduct commercial development of SAF sources, with a complete connection from the parts of technology, production, and customers.
4. The long-term goal is to achieve an annual production of 20,000 tons of SAF





Affiliated Ministry: AS

Exhibitor: National Taiwan University of Science and Technology

Contact: Sun-Tang Chang suntang925@gmail.com

Exhibited Technology

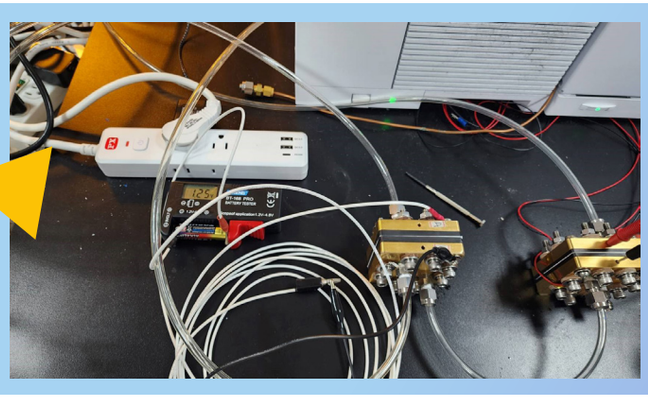
Non-precious metal catalysts driving advancements in natural gas electrolysis and fuel cell technologies

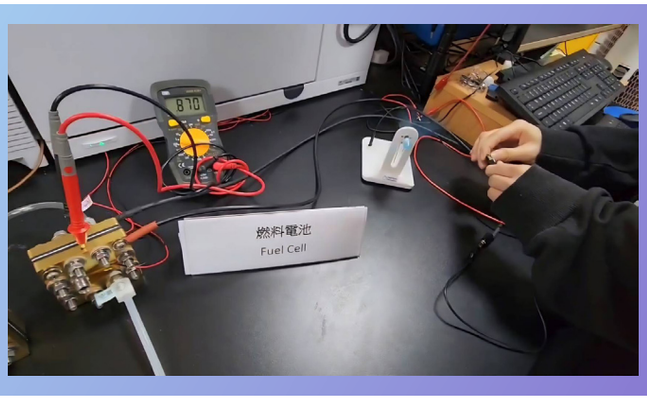
Technology Introduction

This technology enables low-voltage (~1.5 V) electrolysis of natural gas (methane) or hydrogen-enriched mixtures to produce ultra-pure hydrogen, which is directly used in fuel cells. The membrane electrode assembly (MEA), made of a non-precious metal catalyst and ion-exchange membrane, operates in both electrolysis and fuel cells. This dual-function design lowers costs and enhances scalability for real-world applications.

Industry Applicability

This technology is suitable for petrochemical, heavy, electronics, and semiconductor industries. Natural gas can be directly delivered via pipelines to facilities, where it undergoes methane electrolysis to produce high-purity hydrogen. The hydrogen can be used in industrial processes or as a power source via fuel cells. Due to its flexibility, the technology is not limited to specific sectors and can showing great potential for widespread implementation.





Affiliated Ministry: NSTC

Exhibitor: National Yang Ming Chiao Tung University

Contact: Lua Kim Boon engp4324@nycu.edu.tw

Exhibited Technology

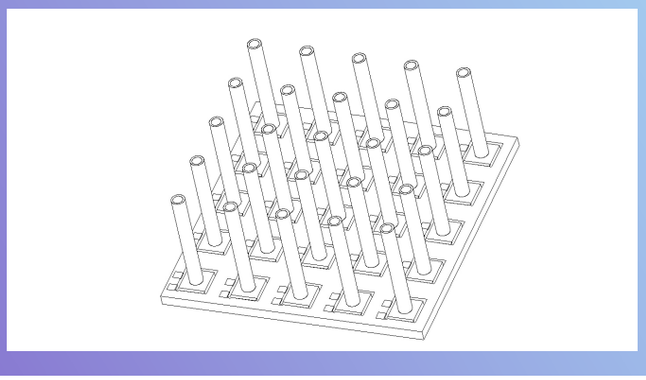
Vortex-Induced Vibration Energy Harvester Using MEMS Oscillator Array for Self-Powered Sensing Applications

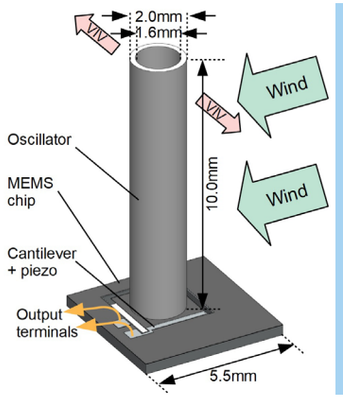
Technology Introduction

This technology is a wind energy harvester combining vortex-induced vibration (VIV) and MEMS-based piezoelectric conversion. It features low wind speed activation, modular design, and high integration. Cylindrical arrays enhance vortex interaction, boosting power output. Suitable for powering IoT sensors in off-grid areas, the device is patented in Taiwan and the U.S., and has potential for green energy modules in smart buildings and environmental monitoring.

Industry Applicability

This technology suits IoT, smart buildings, and remote monitoring, featuring low wind-speed startup, high integration, and mass production potential. Its compact size fits dense sensor networks, ideal for structural health, agriculture tracking, and environmental sensing. With low wind speed starting, it supports off-grid or hard-to-reach sites and lowers maintenance. Integration with low-power communication modules promotes sustainable, low-carbon smart cities aligned with ESG goals.





Affiliated Ministry: NSTC

Exhibitor: National Taiwan University

Contact: Ching-Wen Lo cwlo@nchu.edu.tw

Exhibited Technology

Net Zero Strategy-Research and Development of Continuous Vacuum Ice Slurry Storage Air Conditioning System

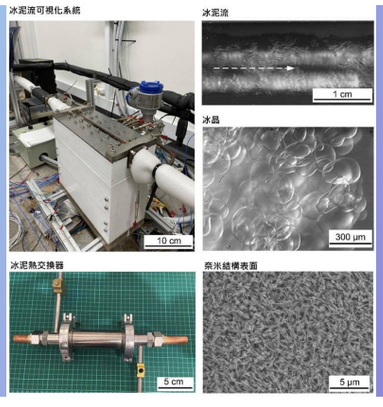
Technology Introduction

This vacuum-based ice slurry system offers high-efficiency thermal energy storage, replacing high-GWP refrigerants and traditional chilled water systems. By decoupling ice-making and melting, it enables peak load shifting and better use of renewable energy, significantly reducing building-sector emissions in line with 2050 net-zero goals. With strong industrial potential, it supports the next generation of green cooling and boosts international competitiveness.

Industry Applicability

The patented Ice Slurry Generation Device, winner of the Fusheng Cup, showcases strong innovation and application potential. With high COP, modular design, and energy-saving benefits, it is ideal for high cooling-load buildings and AC retrofits, with potential in food processing and thermal management. Industrialization will proceed through licensing and partnerships, supporting deployment across sectors in line with sustainability goals.





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Booth: FF12

Affiliated Ministry: NSTC

Exhibitor: National Cheng Kung University

Contact: Wu, Ruei-Long ray40316@gmail.com

Exhibited Technology

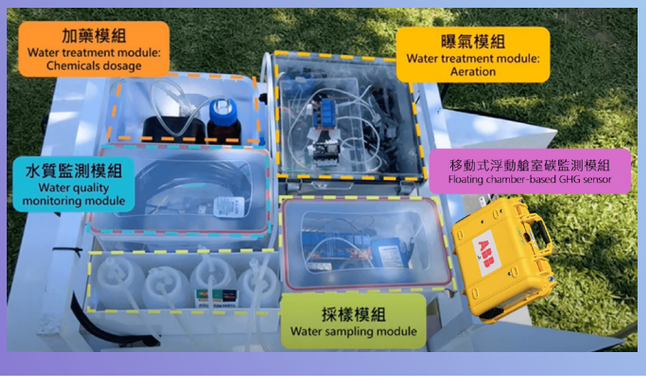
Intelligent Mobile Platform for Greenhouse Gas Monitoring in Surface Waters

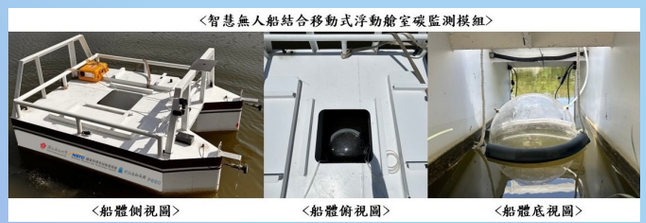
Technology Introduction

An intelligent unmanned platform was developed to autonomously monitor GHG emissions from surface waters. Integrating an autonomous vessel, floating chamber, and cloud-based flux analysis, the system enables efficient, high-resolution, multi-site GHG measurements. Compared to traditional methods, it offers fivefold efficiency, modular flexibility, and real-time data visualization. Field-tested across various water bodies, it serves as a practical tool for carbon inventory and management.

Industry Applicability

The market potential for this mobile GHG monitoring platform is strong. In Taiwan, with 95+ reservoirs, 600 flood detention basins, 3,000+ km of rivers, and numerous ponds and wetlands, demand for carbon flux monitoring is growing. Commercialization can occur via direct sales (NT$100 million for 50–100 units) or service models (NT$2 million/year-unit). With few global equivalents, it has strong export potential, especially in regions targeting carbon neutrality and nature-based inventories.





FUTEX

Evolutionary Materials & Chemical

Affiliated Ministry: NSTC

Exhibitor: National Yang Ming Chiao Tung University

Contact: Distinguished Professor & Dean of College of Science jtchen@nycu.edu.tw

Exhibited Technology

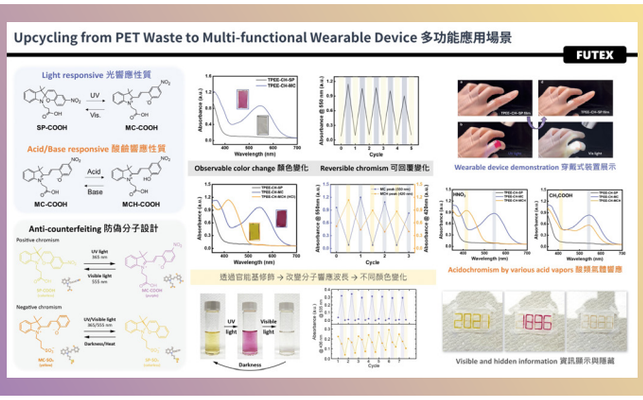
Upcycled Waste PET-Based Technologies for Conductive Self-Healing Wearables, Dynamic Environmental Monitoring, and Photochromic Anti-Counterfeiting

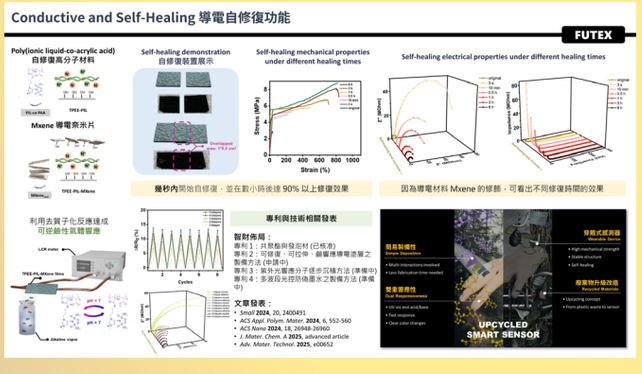
Technology Introduction

Our upcycled wearable device features intelligent environmental sensing through a simple deposition process, enabling dual responsiveness to UV light and acid/base vapors. Enhanced with a conductive, self-healing coating, it is well-suited for wearable electronics and anticounterfeiting applications. Compared to conventional sensors, it offers superior chemical resistance, adaptability, recyclability, and sustainability—significantly enhancing the value and competitiveness of recycled plastics.

Industry Applicability

Our technology applies upcycled PET combined with a self-healing coating and environmental sensing functions to develop a wearable device integrating anti-counterfeiting and intelligent monitoring. This material rapidly self-heals at room temperature, extending device lifespan, thereby supporting carbon neutrality goals. Compared to traditional sensors, it offers superior environmental resistance, demonstrating strong industrial potential in smart wearables and green electronics.





Booth: FG01

256

Affiliated Ministry: MOE

Exhibitor: National Central University

Contact: ssssss897ssssss897@gmail.com

Exhibited Technology

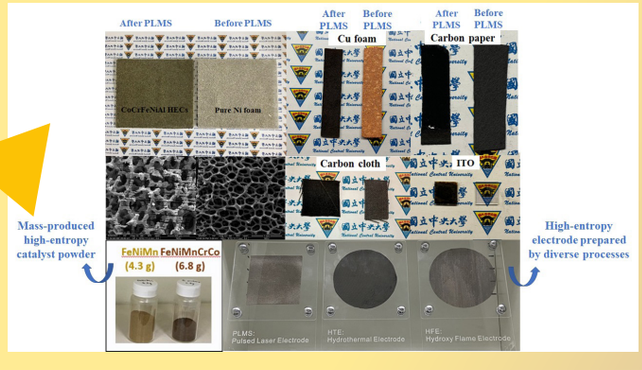
Comprehensive Research and Industrialization Development of High-Entropy Catalysts for Hydrogen Production from Seawater

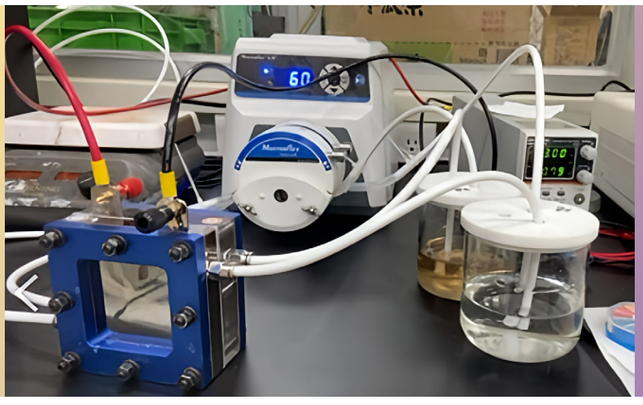
Technology Introduction

This research develops electrocatalytic seawater hydrogen production using high-entropy catalysts and membrane electrolysis for efficient, stable hydrogen energy. Materials prepared via PLMS and hydrothermal synthesis achieve low onset voltages and stability of 1500 hours (100 mA/cm²) and 1000 hours (1 A/cm²). The technology, spanning catalyst development to electrolyzer assembly, enables practical hydrogen production.

Industry Applicability

This study advances seawater hydrogen production using high-entropy catalyst anodes grown on nickel substrates via pulse laser scanning, achieving low voltage and high durability for industrial use. Optimized cathodes boost electrolysis efficiency, enabling scalable electrolyzer assembly. Extended to membrane and alkaline electrolyzers, enhanced designs improve hydrogen output and purity. It also explores wastewater purification alongside hydrogen production, supporting green energy.





257

Booth: FG02

Affiliated Ministry: NSTC
Exhibitor National Tsing Hua University
Contact: Research Assistant suwen@gapp.nthu.edu.tw

Exhibited Technology

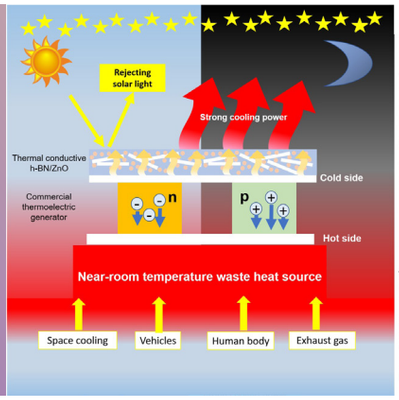
All-day radiative cooling materials for near-zero-energy thermal management

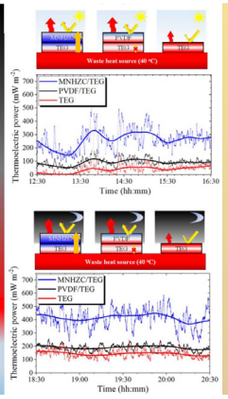
Technology Introduction

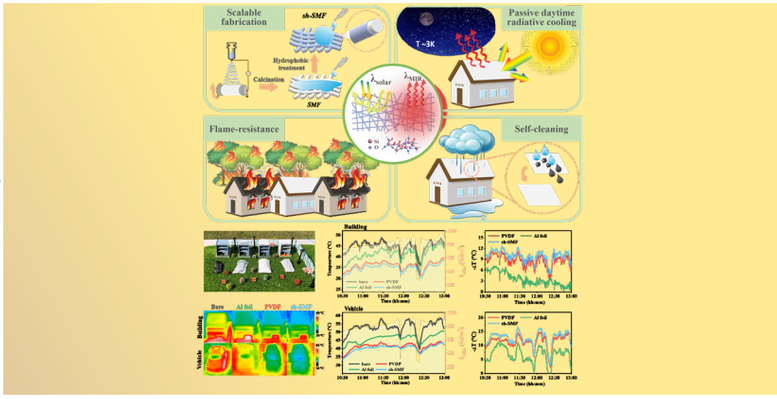
For sustainable energy-efficient applications, through advanced optical engineering, our novel passive daytime radiative cooling (PDRC) materials exhibit high average reflectivity or transparency (>95%) in the solar wavelength region and high average emissivity (>95%) in the atmosphere window wavelength region. We anticipate that these PDRC materials will effectively mitigate the urban heat island effect, improve the low-grade waste heat recovery and reduce carbon dioxide emissions.

Industry Applicability

The PDRC metamaterials can provide the great potential to accelerate the pace of net-zero emissions to limit global warming. Also, PDRC films provide a facile, eco-friendly cooling solution to dissipate trapped heat in optoelectronic devices, such as solar panels. The attractive power generation ability of the PDRC/TEG system suggests its great potential in low-grade waste heat recovery and environmental energy harvesting by consistently generating power in both the daytime and nighttime.







Booth: FG03

Affiliated Ministry: NSTC

Exhibitor: National Chung Hsing University

Contact: PhD Candidate alexlin0825@gmail.com

Exhibited Technology

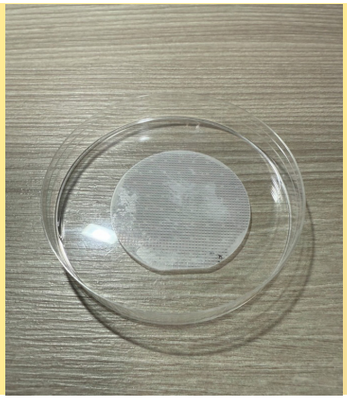
A novel high-performance Sn-doped gallium oxide thin-film nitric oxide gas sensor for applications in smart healthcare and environmental monitoring

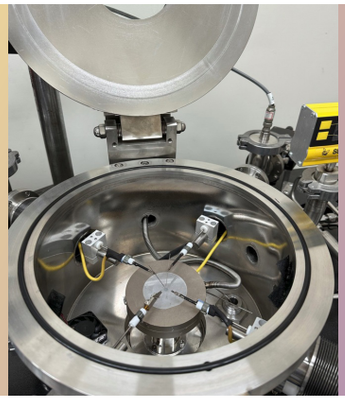
Technology Introduction

1. The β-Ga_2O_3 (Sn) nanorod thin film fabricated in this study exhibits a rapid response time of 2 seconds, an efficient recovery time of 4 seconds, and a detection limit of 30 ppb for nitric oxide (NO) gas.
2. The doping ratio of tin (Sn) causes the nanostructure of β-Ga_2O_3 to gradually transform from a rod-like to a spindle-like morphology.
3. Post-annealing under an oxygen atmosphere improves the gas sensing mechanism.

Industry Applicability

1. In modern medical diagnostics, exhaled breath analysis plays a vital role. Fractional exhaled nitric oxide (FeNO) levels typically range from 25 to 80 ppb, with levels exceeding 50 ppb considered elevated in asthma patients. This technique can be applied in asthma monitoring and smart healthcare devices.
2. It is also applicable to environmental sensing modules for use in automotive exhaust control, emission detection and the monitoring of explosive gases in various industrial fields.





Affiliated Ministry: NSTC

Exhibitor: National Ilan University (NIU)

Contact: Associate Professor jefferychen@niu.edu.tw

Exhibited Technology

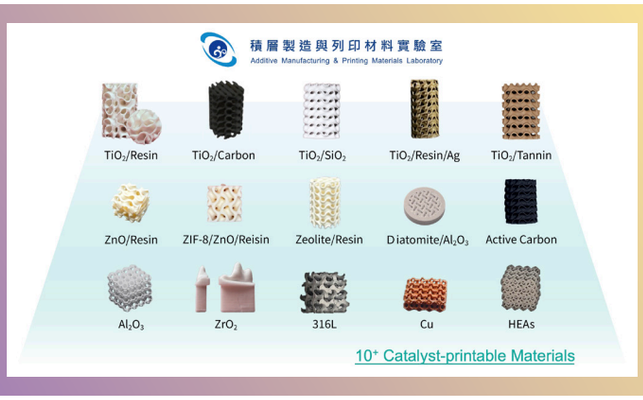
Scalable Catalytic 3D Printing Process Development: Enabling Smart Transformation in Chemical Reactor Bed Design and Manufacturing

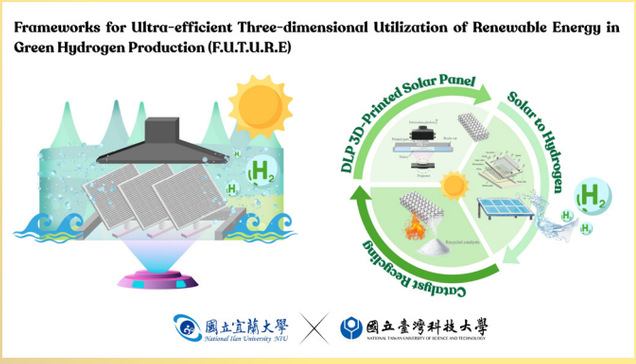
Technology Introduction

This technology enables a scalable 3D printing process for catalytic systems, featuring high solid-loading resins, topological structures, DLP printing, and post-processing to produce efficient reactor beds. Validated with TiO_2, zeolites, MOFs, metals, and ceramics, it supports hydrogen production, pollutant removal, and VOC control for net-zero applications. Integrated with AI and digital manufacturing, the process holds two invention patents and supports smart catalytic reactor deployment.

Industry Applicability

This technology offers a scalable catalytic 3D printing platform with high solid-loading resins and integrated printing and post-processing. It supports TiO_2, zeolites, MOFs, metals, and ceramics. Standard and custom materials, modules, and contract manufacturing are available for research, chemical, and equipment sectors. With flexibility, scalability, and patents, it is applied in net-zero, hydrogen energy, and carbon capture, showing strong commercialization and global potential.





Booth: FG05

Affiliated Ministry: NSTC
Exhibitor: National Yang Ming Chiao Tung University
Contact: Hung-Ming Wang alexw.ee13@nycu.edu.tw

Exhibited Technology

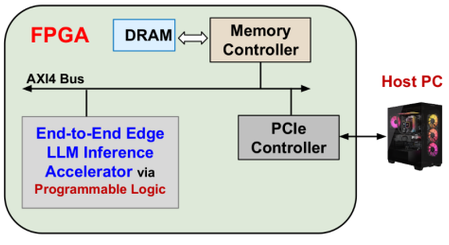
An Efficient End-to-End Large Language Model (LLM) Accelerator Chip Optimized for Edge Computing

Technology Introduction

Our team developed MMA, a high-efficiency accelerator optimized for Transformer architecture and LLM inference. Featuring low power consumption and high performance, it is currently the only solution capable of fully running LLMs on edge devices. Compared to Georgia Tech's MicroScopiQ, Seoul National University's Tender, and Korea University's OPAL, our design is the first to fully realize the vision of LLM on Edge, making secure and real-time AI possible.

Industry Applicability

LLMs like ChatGPT are widely used in daily life. Our chip design enables real-time LLM inference without relying on the cloud or GPUs, reducing energy use and protecting data privacy. Imagine a future where anyone can run an LLM directly on their smartphone, or interact with a compact personal chatbot anytime, anywhere, completely offline and without worrying about data leaks. The solution not only enhances convenience but also resolves concerns around privacy, bringing AI into everyday life.



Affiliated Ministry: NSTC

Exhibitor: National Sun Yat-sen University

Contact: Li-Min Chang book74108520@gmail.com

Exhibited Technology

Mobile Polarized Light Skin Analysis System

Technology Introduction

This system integrates skin analysis into a phone, using a liquid-crystal polarization modulator that switches polarization states in milliseconds to capture polarized images in 0.1 seconds. The app corrects any image misalignment, applies color-space conversion to enhance microvessels and pigment spots, and automatically marks acne, fine lines, and pores—calculating their counts and area. With just a smartphone and this clip-on case, users gain professional-grade, deep-layer skin insights.

Industry Applicability

This system provides deep-layer detection technology to pure-software providers via API/SDK licensing, while enabling skincare brands and beauty studios to rapidly adopt through a hardware rental plus subscription model. The dual revenue approach blends licensing fees with recurring rental and subscription income, and leverages data monetization and aftermarket support to build a sustainable growth ecosystem.





FUTEX

Semiconductors, Optoelectronics & Communication Technologies

Affiliated Ministry: NSTC

Exhibitor: National Taiwan University

Contact: Yuh-Renn Wu yrwu@ntu.edu.tw

Exhibited Technology

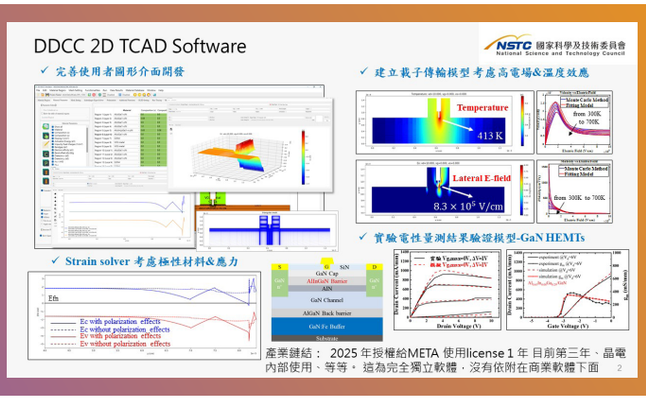
A Multi-Physics Coupled Simulation Platform for Next-Generation Wide-Bandgap Semiconductors (DDCC-TCAD)

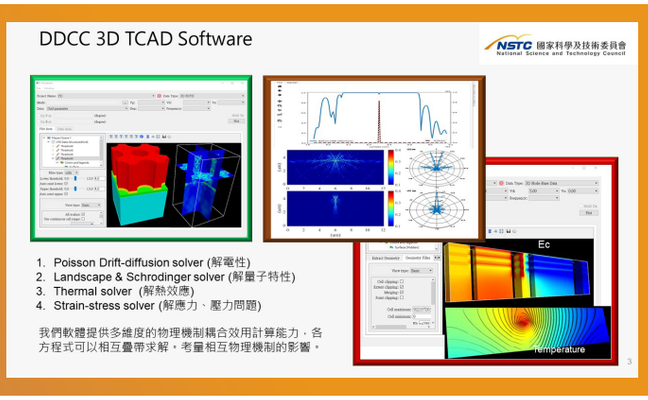
Technology Introduction

To accelerate next-gen semiconductor R&D, our team developed DDCC-TCAD, a fully autonomous multi-physics simulation platform. It pioneers the integration of the Localized Landscape (LL) theory, boosting computational efficiency by 1000x to accurately model quantum effects and solve key material disorder challenges. Commercially licensed by industry leaders like Apple and Meta device devepment department, and downloaded by over 1,000 academics worldwide, DDCC-TCAD has proven its high industrial and academic value.

Industry Applicability

Our platform offers a versatile digital twin solution rivaling commercial software. Its unique Localized Landscape (LL) model provides superior physical insights. The technology's value is proven by commercial licensing to industry leaders like Apple and Meta, generating significant royalties. Critically, this autonomous platform breaks the foreign monopoly, ensuring Taiwan's strategic security and technological sovereignty in the semiconductor industry.





Booth: FH03

Affiliated Ministry: NSTC

Exhibitor: National Tsing Hua University
Contact: Wei-Hwa Lin whlin.starlab@gapp.nthu.edu.tw

Exhibited Technology

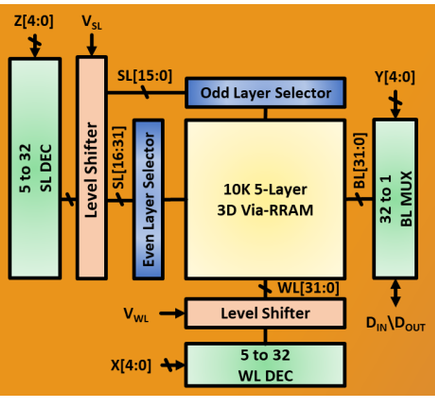
3D Stackable Embedded Ultra High-Density Via-RRAM Array in FinFET CMOS Technology

Technology Introduction

With the progress of AI and IoT, the demand for NVM in edge computing has increased. This project proposes a 3D high-density Via RRAM architecture compatible with advanced FinFET logic process. Featuring full integration to CMOS process, 3D stackability, and high density, the design demonstrates excellent stability, low power consumption, and fast operation through comprehensive device design and electrical validation, making it a promising solution for future embedded memory applications.

Industry Applicability

The 3D Via RRAM is fully compatible to TSMC standard logic process. It has been demonstrated on the 16nm FinFET platform, achieving a density of 0.4 Gb/mm², exceeding international benchmarks with scalability toward 1 Gb/mm² at 7nm node. Featuring high reliability, fast operation, and stable retention, this logic NVM IP is suitable for AI, IoT, and embedded system application. It shows strong potential for technology transfer, offering contribution to next-generation semiconductor technologies.





FUTEX

Semiconductors, Optoelectronics & Communication Technologies

Affiliated Ministry: NSTC

Exhibitor: National Yang Ming Chiao Tung University

Contact: Cecilia Chen cecilia@nycu.edu.tw

Exhibited Technology

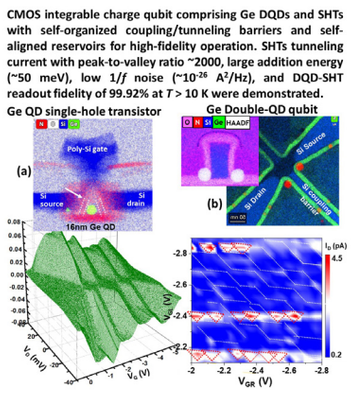
Scalable and designer germanium quantum dots technology for energy-efficiency green computing

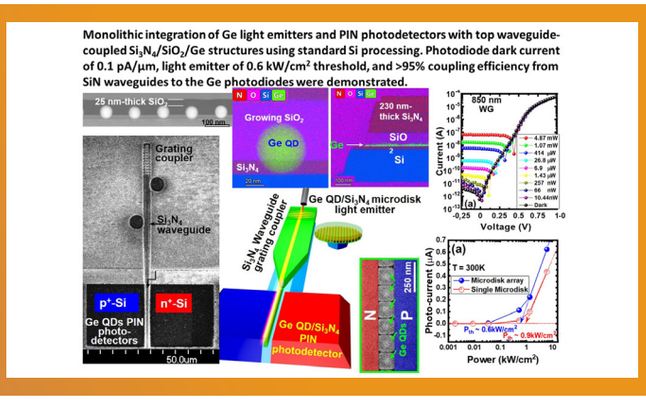
Technology Introduction

We report scalable architectures of Ge quantum-dots (QDs) using CMOS processes. Our QDs feature controllability, reproducibility, and scalability in size, morphology and position, creating a novel portfolio of quantum photonic and computing devices for manufacturing. We have demonstrated the first examples of Ge-QD SHTs operation at room temperature, double-QDs qubits operation at T > 10 K, and integration of SiN waveguided Ge photonics for on-chip optical interconnect and green computing.

Industry Applicability

From lab to fab is the driving force of our research team.
Our CMOS integrable Ge qubits technology offers great promises for manufacturable semiconductor qubits operating at high temperatures and has gained tsmc and Metak interests. Our Ge QD technology is recognized for paving a promising and seminal route to achieve a key goal of Si photonic integrated circuits. Armed with our Ge quantum-dot technology, we hope to pave the way for a quantum leap for Taiwan's ICT industry.





Booth: FH05

Affiliated Ministry: NSTC

Exhibitor: National Yang Ming Chiao Tung University

Contact: Shu Chen Lai sclai2022@nycu.edu.tw

Exhibited Technology

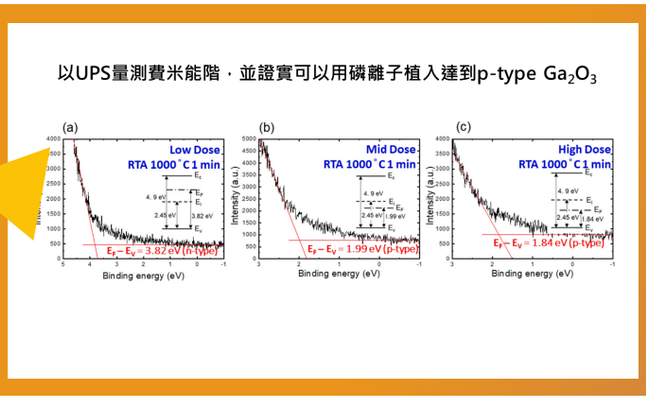
Ultra wide bandgap p-type Ga_2O_3

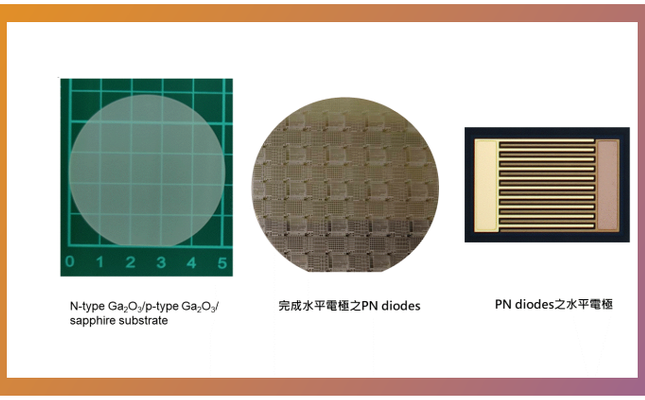
Technology Introduction

Phosphorus ion implantation into undoped Ga_2O_3 grown by MOCVD, followed by optimized annealing, yields p-type conductivity confirmed by Hall measurements. An n-type Ga_2O_3 layer is then epitaxially regrown, enabling fabrication of a lateral PN homojunction diode. These results confirm that phosphorus implantation is a reliable method for forming stable p-type Ga_2O_3, offering a viable path for future oxide semiconductor device applications.

Industry Applicability

Over the past two years, our first-principles simulations identified phosphorus as a viable dopant for p-type Ga_2O_3. We found that phosphorus-related defect formation energies are low, prompting experimental studies using ion implantation. The successful formation of p-type Ga_2O_3 was confirmed and published in Materials Today Advances (2023). Device-level validation, including in-situ doping and various structures, confirms that stable, high-quality p-Ga_2O_3 is achievable.





Affiliated Ministry: MOE

Exhibitor: National Central University

Contact: Wen-Yu Su ohpigha6048@gmail.com

Exhibited Technology

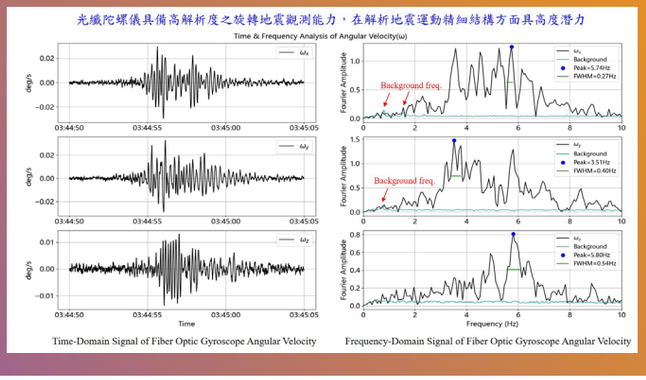
Fiber-Optic Gyroscope Seismometry- the last missing puzzle piece for high-precision multidimensional seismic sensing technology

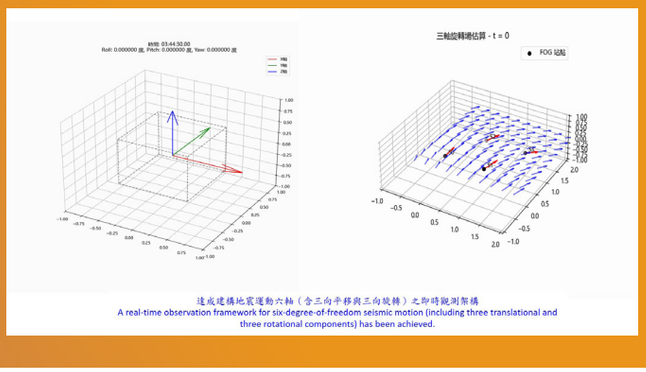
Technology Introduction

Rotational seismology is a key technology for advancing multidimensional and high-precision seismic sensing. This technology is focused on a self-developed FOG, establishing a sensing system for the rotational motions of seismic waves and enhancing both the dimensionality and accuracy of earthquake sensing. The FOG seismometer features high-precision rotational measurement, interference resistance, portability, and scalability, showing capabilities to build advanced seismic monitoring networks.

Industry Applicability

The developed FOG seismometers not only advance research in seismology but also hold significant industrial values, including earthquake monitoring, civil engineering, automation, vibration protection for such as semiconductor fabs, energy, defense, aerospace, geological exploration, and smart disaster prevention. Our team aims to promote its application in smart sensing, unmanned vehicles, and low Earth orbit satellite industries through technology transfer and academia-industry collaboration.





Affiliated Ministry: NSTC

Exhibitor: National Tsing Hua University

Contact: Pen-Jui Peng pjpeng@ee.nthu.edu.tw

Exhibited Technology

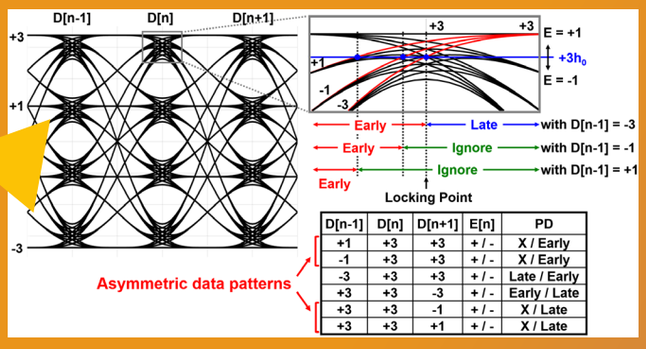
A 112Gb/s PAM-4 Extra-Short-Reach Transceiver for Co-packaged Optics Application

Technology Introduction

CPOs integrate the switch chip and modules on the same board, reducing size and distance. This achieves a Nyquist loss of <10dB at 28GHz for 112Gb/s PAM-4 signals. The focus is on a low-power 112Gb/s PAM-4 XSR RX using a 2b/3b TI-ADC. Time-interleaving removes high-speed comparators, allowing a low-speed SAR ADC to be efficient. Replacing some 2-bit ADCs with 3-bit ADCs improves signal alignment. The TX features an unsegmented FFE driver, enhancing bandwidth and reducing power consumption.

Industry Applicability

This technology has multiple patents in the U.S. and Taiwan, indicating strong industrial potential. The commercialized model licenses the TX and RX architecture to IC design houses, maximizing royalty revenue through non-exclusive agreements. Moreover, we can provide the design files and layout for the 112Gb/s PAM-4 TRX chip, validated at 28nm, as high-speed SerDes IP. Other related technologies, such as front-end circuit design, CDR and adaptive equalization algorithms, can also be licensed.



D[n-1]	D[n]	D[n+1]	E[n]	PD
+1	+3	+3	+ / -	X / Early
-1	+3	+3	+ / -	X / Early
-3	+3	+3	+ / -	Late / Early
+3	+3	-3	+ / -	Early / Late
+3	+3	-1	+ / -	X / Late
+3	+3	+1	+ / -	X / Late

	[1] [ISSCC '21]	[2] [ISSCC '21]	[3] [VLSI '21]	[4] [ISSCC '22]	[9] [ISSCC '22]	This Work
Technology	7nm	7nm	7nm	5nm	28nm	28nm
Data Rate (Gb/s)	112	106.25	112	113	112	112
Modulation	PAM-4	PAM-4	PAM-4	PAM-4	PAM-4	PAM-4
TX Architecture	5-bit DAC 5-tap FIR	5-bit DAC 3-tap FIR	Segmented 2-tap FIR	Segmented 4-tap FIR	Segmented 3-tap FIR	Unsegmented 3-tap FIR
RX Architecture	CTLE+ VGA+ CDR	CTLE+ CDR	CTLE+ CDR	CTLE+ CDR	CTLE+ VGA+ FFE	CTLE+ VGA+ CDR
CDR Type	2X Oversampling	Baud-Rate	Baud-Rate	2X Oversampling	N/A	Unbalanced Baud-Rate
Nyquist Loss (dB)	7 @ BER < 1.3E-10	10 @ BER < 1E-10	N/A	11.5 @ BER < 1E-12	20.8 @ BER < 1E-11	8.5 @ BER < 1E-12
RX JTOL @ 50 MHz (UI_{pp})	N/A	0.05 @ BER < 1E-6	N/A	0.06 @ BER < 1E-9	N/A	0.08 @ BER < 1E-7
Efficiency (pJ/b)	1.7	1.55	1.24	1.55	2.29*	2.16
Area (mm^2)	0.228	0.225	0.15	0.264	0.123	0.236

*Excluding 4-phase generator

Affiliated Ministry: NSTC
Exhibitor: National Central University
Contact: Hai-Yan Huang huang86625@gmail.com

Exhibited Technology

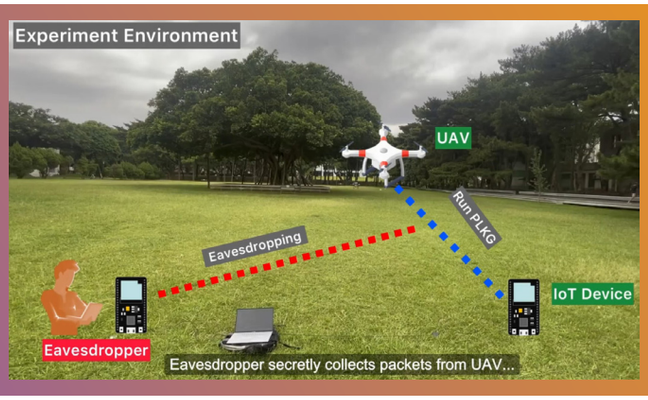
SkyCrypt: Motion-Driven Physical Layer Key Generation Technology for Smart Drone Systems

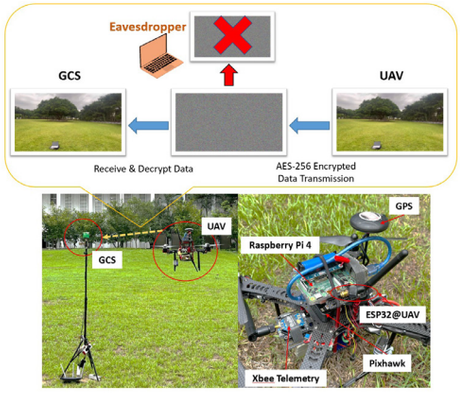
Technology Introduction

We propose a multimodal learning framework that integrates wireless channel state information with UAV flight trajectories to enhance the stability and security of physical layer key generation using deep learning models. The proposed technique effectively defends against future quantum decryption threats and is particularly suitable for environments with limited computational resources and the absence of trusted third-party authentication, thereby strengthening data protection in UAV networks.

Industry Applicability

Our team's SkyCrypt technology combines the physical characteristics of wireless channels with drone kinematic parameters to generate dynamic keys, enhancing security. In military, logistics, surveillance, and other fields, SkyCrypt can resist quantum computing attacks, prevent data tampering, and ensure stable system operation. In the future, it is expected to be widely used in smart cities and highly automated systems, providing secure communication solutions.





Affiliated MinistryNSTC

Exhibitor: National Yang Ming Chiao Tung University

Contact: Po-Tsun Liu ptliu@nycu.edu.tw

Exhibited Technology

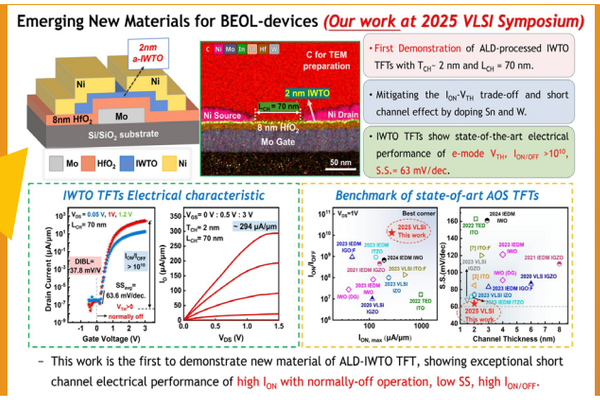
Monolithic 3D Heterogeneous Device Integration and Innovative Materials for Breaking Logic Density Limits: A Key Technology Platform for High-Density AI Computing Chips

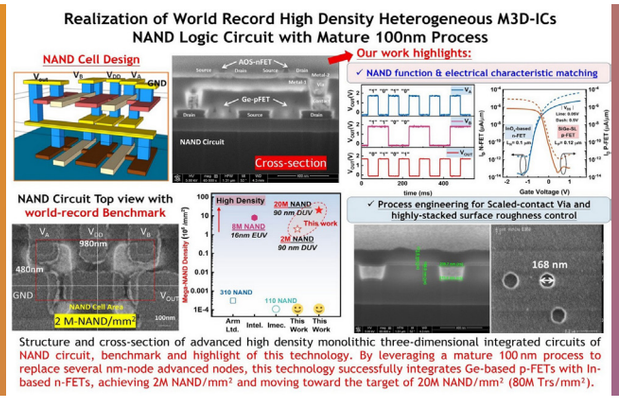
Technology Introduction

By leveraging a mature 100 nm process to replace sub-16 nm advanced nodes, this technology successfully integrates Ge-based p-FETs with In-based n-FETs featuring nanoscale channel thickness, achieving 2M NAND/mm² and moving toward the target of 20M NAND/mm² (80M Trs/mm²). In addition, this team pioneered a high-performance InWSnO transistor with an ultra-high on/off ratio and low subthreshold swing (SS), demonstrating strong potential for AI and HPC chip applications.

Industry Applicability

This proposed 3D-IC achieves a world-leading transistor density and enabling logic circuits up to 8M Trs/mm² with a mature 100 nm-node process, instead of advanced several nm-node one. The core technology has been granted a Taiwan patent and a U.S. patent, demonstrating high commercialization potential. This work also pioneered the InWSnO TFT development, featuring excellent electrical performance, forming a key foundation for advancing next-generation 3D-IC technology.





271 Booth: FH10

FUTEX

Semiconductors, Optoelectronics & Communication Technologies

Affiliated Ministry: NSTC

Exhibitor: National Chung Cheng University

Contact: TING-HAO SHIH c9361000@gmail.com

Exhibited Technology

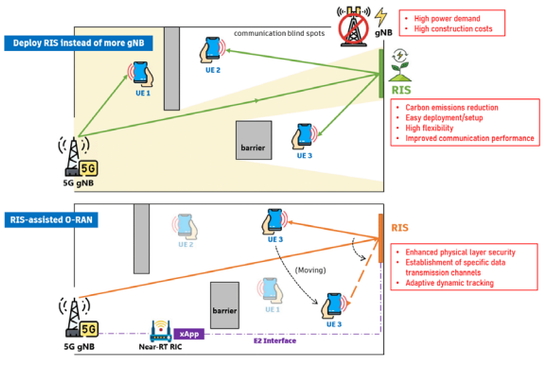
RIS-Assisted AI-Native 6G RAN Communication System: Transforming Wide-Area Connectivity in Smart Cities

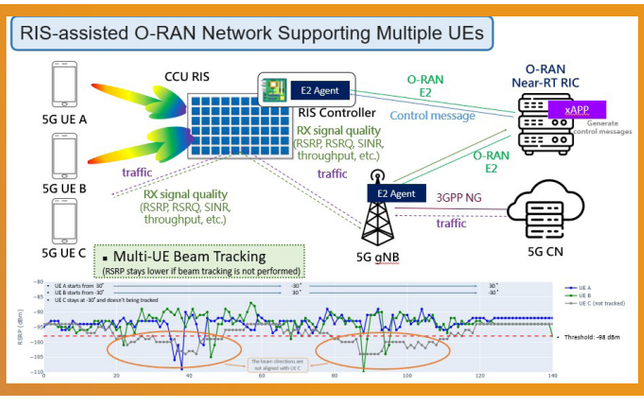
Technology Introduction

Our AI-native 6G RAN system with RIS and AI integration optimizes smart city wide-area connectivity. RIS enhances signal coverage and quality, while the 6G RAN RIC uses AI/ML for real-time network adaptation. The system improves coverage, communication quality, and energy efficiency, providing robust support for smart city development.

Industry Applicability

RIS-assisted AI-native 6G RAN technology provides an innovative, low-cost, and eco-friendly solution for 6G mobile communications, addressing high construction and maintenance costs. It reduces power consumption (30%-90%) and carbon emissions while enhancing communication quality and system capacity. This technology promotes smart city development by offering efficient, reliable, and secure wide-area connectivity support for applications such as smart transportation, healthcare, and energy.





Booth: FH11

Affiliated Ministry: NSTC

Exhibitor: National Chung Hsing University

Contact: Wei-Ting Chen ss105216033@gmail.com

Exhibited Technology

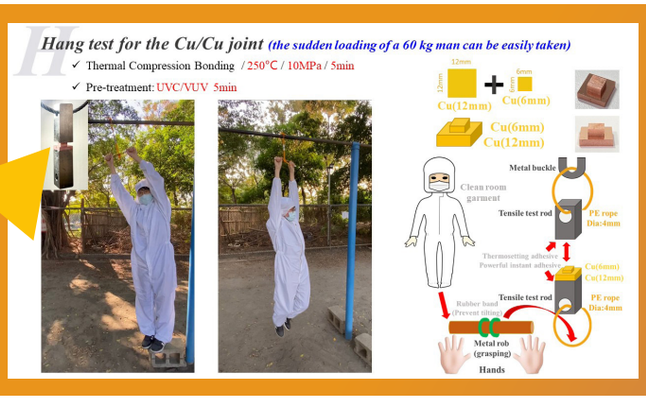
Intelligent platform of bonding/inspection/control systems for 3D packaging integration

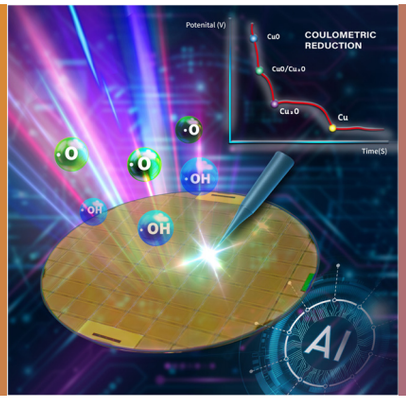
Technology Introduction

This project develops a 3D packaging bonding solution and smart platform integrating light-based surface treatment, mini electrochemical sensing, and AI prediction. It enables real-time analysis of copper oxidation and estimation of Cu–Cu bonding strength. Featuring portability, vacuum-free and non-destructive operation, and real-time feedback, it enhances yield, efficiency, and stability. The technology offers strong potential for next-generation semiconductor manufacturing.

Industry Applicability

This technology targets key 3D packaging processes such as hybrid bonding in heterogeneous integration, replacing plasma treatments by enabling copper diffusion without vacuum. With integrated mini electrochemical sensing and AI prediction, it enables real-time oxide monitoring and automated control. The approach improves bonding strength and yield, offering high compatibility, scalability, and strong potential for commercialization and production deployment.





FUTEX

Semiconductors, Optoelectronics & Communication Technologies

Affiliated Ministry: NSTC

Exhibitor: National Tsing Hua University

Contact: Mei-Yin Lin myilin@mx.nthu.edu.tw

Exhibited Technology

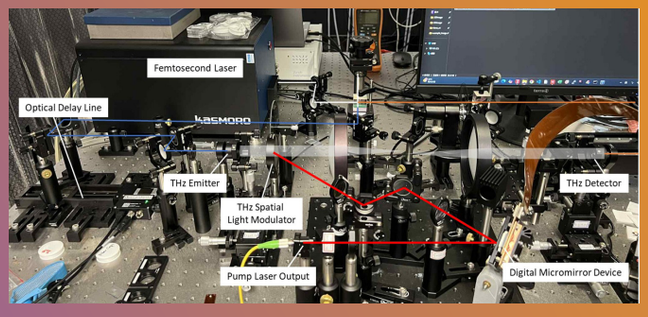
Terahertz Single-Pixel Imaging SOC System for Semiconductor Material Analysis

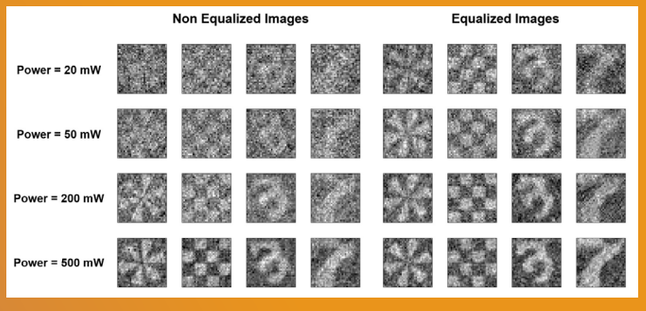
Technology Introduction

This project presents a terahertz single-pixel imaging system with high SNR and bandwidth based on a pulsed photoconductive antenna and a photoconductive spatial light modulator. A 3D tensor-based compressed sensing model compresses terahertz responses in spatial and temporal domains, preserving full waveform information for semiconductor material identification. The SOC system integrates an FPGA-based 3D imaging accelerator, enabling real-time refractive index imaging for material analysis.

Industry Applicability

The FPGA/SoC-based THz single-pixel compressive sensing system delivers a breakthrough: high-speed, high-quality spectroscopic imaging. This unlocks crucial industrial applications: precise non-destructive testing in semiconductor packaging for internal defect detection, advanced material characterization (e.g., doping levels), and rapid identification of substances via unique spectral fingerprints, significantly enhancing quality control, safety, and security across various sectors.





Booth: FH13

Affiliated Ministry: NSTC

Exhibitor: National Taiwan University

Contact: Hsi-Sheng Goan goan@phys.ntu.edu.tw

Exhibited Technology

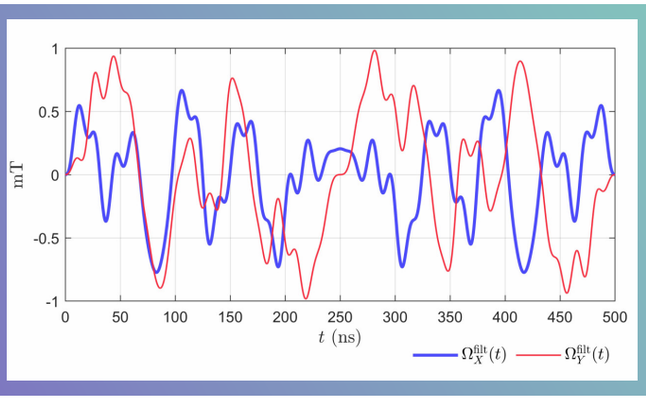
High-fidelity and robust quantum gate control for quantum-dot spin qubits

Technology Introduction

Electron spin qubits in silicon quantum dots (QDs) are a promising solid-state system for quantum computing. To achieve fault-tolerant quantum computation, constructing high-fidelity and robust quantum gates to meet the stringent requirements is an important issue. We aim to develop such technology to construct robust quantum gates with fault-tolerant gate fidelities for the QD spin-qubit system.

Industry Applicability

The techniques we developed can be applied to realistic devices to realize the high-fidelity and robust quantum gates experimentally, and to effectively increase the reliable circuit depth on noisy intermediate-scale quantum (NISQ) computing machines. Furthermore, we will also extend these techniques to multi-qubit gate control, paving the way for large-scale fault-tolerant quantum computing.



Affiliated Ministry: NSTC

Exhibitor: National Tsing Hua University

Contact: Shawn S. H. Hsu shhsu@ee.nthu.edu.tw

Exhibited Technology

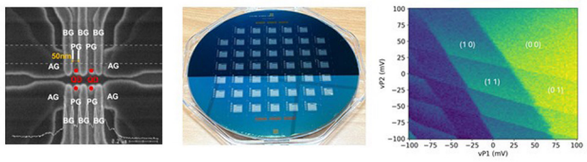
CMOS-compatible Quantum Processor with Silicon-based Spin Qubits and Cryo-CMOS Integrated System

Technology Introduction

This project, "CMOS-compatible Quantum Processor with silicon-based Spin Qubits and Cryo-CMOS Integrated System," aims to advance quantum technology by leveraging manufacturing and design technologies established within Taiwan's semiconductor industry. The project focuses on CMOS-compatible spin qubits as its core technology and seeks to develop the peripheral cryogenic CMOS system as an integrated system. Spin qubits offer long coherence times and seamless compatibility with Taiwan's semiconductor and electronic industries. The key goals include integrating these qubits with cryogenic CMOS circuits in an integrated design. Our team will utilize isotope-purified silicon (28Si) to enhance performance and optimize FinFET and Ge/SiGe heterostructures for qubit fabrication at the Taiwan Semiconductor Research Institute (TSRI). Another central part of this work involves developing low-noise, low-power cryo-CMOS circuits for both qubit control and readout. Additionally, we aim to integrate the qubits with the cryo-CMOS circuits using advanced semiconductor packaging techniques. Ultimately, this project seeks to build a vertical integrated ecosystem for a full-stack quantum processor in research, manufacturing, and characterization.

Industry Applicability

The global race to achieve quantum computing advantage represents the next frontier in computing and technological excellence. Quantum processors have shown the ability to surpass classical supercomputers and solve problems previously considered intractable, such as prime number factorization, chemical and molecular simulations, and portfolio optimization. This project, by leveraging from Taiwan's most advantageous industries, aims to develop an integrated quantum processor with spin qubits and cryocmos. Integrating these systems will eliminate the interface bottlenecks that currently hinder the scaling of quantum processors toward a universal quantum computer. Our progress already demonstrated the potential for realizing large-scale quantum computing systems based on existing semiconductor technologies through industry-academic collaborations.



FUTEX

Quantum Technology

Affiliated Ministry: NSTC

Exhibitor: National Yang Ming Chiao Tung University

Contact: Pei-Wen Li pwli@nycu.edu.tw

Exhibited Technology

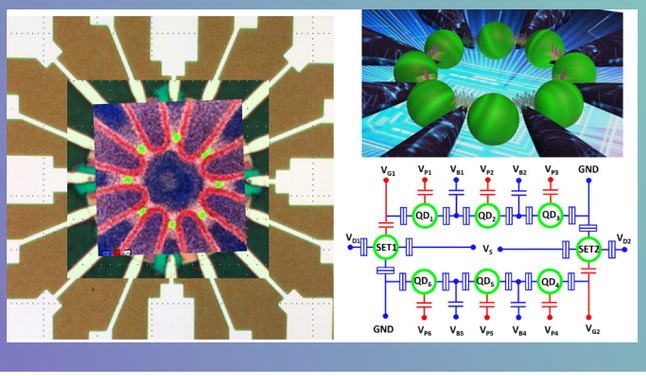
Reconfigurable Ge quantum-dot array for CMOS integrable and scalable qubit circuits (RGIQC)

Technology Introduction

Our GIQC features engineering advantages of accurate control over the spatial placement, spherical shapes and tunable sizes of Ge QDs using CMOS approach. Our proposed Ge-QDs array approach offers a multi-dimensional parameter space for engineering qubits and sensors for high-temperature operation with scalability and reconfigurability, as evidenced by characteristic gate-controlled hexagonal-shaped charge states and Coulomb blockade stability diagram.

Industry Applicability

Quantum computing is envisaged to solve certain types of data-massive problems (AI, cryptography, big data, materials, and medicine) that cannot be achieved by using classical computers alone.
A fully CMOS implementation of semiconductor qubits is an appealing solution to achieve large-scale, commercial quantum computers by leveraging robust CMOS manufacturing and advanced IC technologies.



Booth: FI03

Affiliated Ministry: NSTC

Exhibitor: Industrial Technology Research Institute

Contact: Chang-Sheng Chen aliceflute@itri.org.tw

Exhibited Technology

The low-temperature microwave driver module for superconducting qubit

Technology Introduction

The first domestic cryogenic microwave control module connected to quantum bits.

Industry Applicability

ITRI developed a cryogenic microwave control module integrating both passive and active circuits. Most materials, including cables, PCBs, and ICs, were sourced from domestic suppliers. Leveraging Taiwan's strong semiconductor foundation, this project introduces quantum-related technologies into the local industry, fostering a competitive and self-sustaining quantum ecosystem.



Affiliated Ministry: AS

Exhibitor: Academia Sinica

Contact: Ying-Cheng Chen chenyc711203@gmail.com

Exhibited Technology

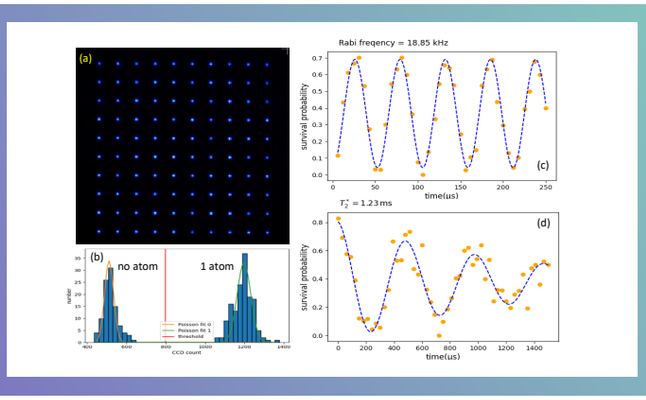
Quantum Computer: Towards Realizing Quantum Processors with Single-Atom Arrays

Technology Introduction

We use a spatial light modulator to generate two-dimensional optical tweezer arrays and trap single atoms. Qubits are encoded in hyperfine atomic states. Single qubit gates are realized by microwave or laser Raman transition. Two qubit gates are realized by laser-controlled Rydberg dipolar interactions. Quantum algorithm is realized by using mobile tweezers to transport atoms to Raman and Rydberg laser interaction zones to conduct the quantum circuit of one- and two-qubit gate sets.

Industry Applicability

Atom-based quantum processor can be used to solve the graph combinational optimization problem, e. g. it can be applied to finding the most economical solution of electric vehicle stations or public bicycle stations problem. It can be used in quantum machine learning problem, such as the identification of toxic molecules or the prediction of timeseries.



FUTEX

Affiliated Ministry: AS

Exhibitor: Academia Sinica

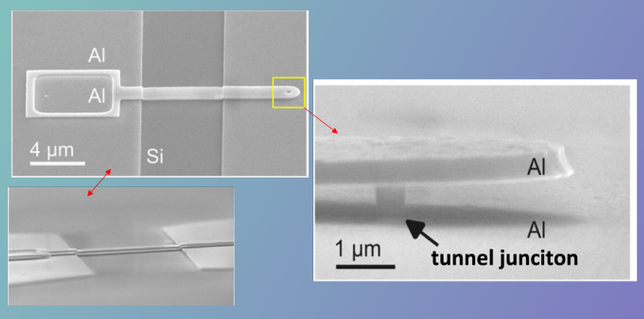
Contact: Chung-Ting Ke ctke@as.edu.tw

Exhibited Technology

Building a Scalable Superconducting Quantum Computer

Technology Introduction

We recently announced major progress in quantum chip fabrication, including the successful production of superconducting qubits on eight-inch wafers, and the launch of Taiwan's first Quantum Chip Fabrication Space (QC-Fab) and Quantum Computing Test Space (QC-Test). These two facilities are open to academic and industrial communities worldwide.



FUTEX

Quantum Technology

Affiliated Ministry: NSTC

Exhibitor: National Taiwan University

Contact: Elaine Hsueh hsuehyl@ntu.edu.tw

Exhibited Technology

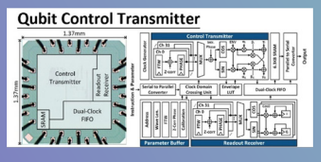
Cryo-CMOS control and readout of solid-state qubits

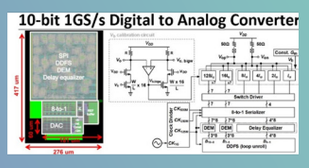
Technology Introduction

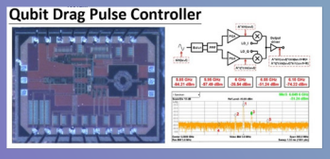
A practical quantum computer requires more than millions quantum bits (qubits) to execute error corrections, which is difficult to achieve using conventional electronic instrument to control and read out the qubits due to the signal latency, heat load, cost, and noise by the long wire distance between the room-temperature electronics and qubit processors at cryogenic temperatures. Thus, a cryo-CMOS system-on-chip (SOC) technology is proposed to replace the room-temperature electronic instrument for large-scale qubit applications. We design circuits of digital-signal generation, digital-to-analog conversion, mixers, local oscillators, radio-frequency (RF) driver/amplifiers, and low-noise amplifiers based on CMOS technology for qubit control-readout and control at cryogenic temperatures (~ -269.15 ℃) and tape out using the foundry service. The target is to demonstrate the qubit control and readout using those cryo-CMOS circuits.

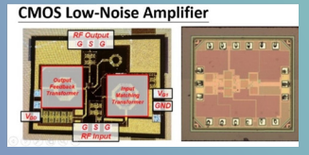
Industry Applicability

Taiwan has strong industry for integrated-circuit fabrication and design. However, local companies lack experience on fabrication of qubits and the peripheral circuits for quantum computing. Our projects aim to developed knowledge for cryo-CMOS technologies, which is crucial to enable large-scale quantum computers. On the other hand, cryo-CMOS circuits also show great potential for space electronics application since the temperature in outer space can be as low as ~ 4 K. A communication transceiver can be realized by merging the circuit modules we've developed, which is key component for low-earth orbit (LEO) satellites.Industry does not have detailed information and experience using the modern CMOS technology at cryogenic temperatures. Our work paves a way for both promising technologies of quantum computing and space electronics.









Booth: FI07

Affiliated Ministry: NSTC

Exhibitor: National Taiwan University, Chang Gung University

Contact: Shu-Yu Kuo shuyu@yuntech.edu.tw

Exhibited Technology

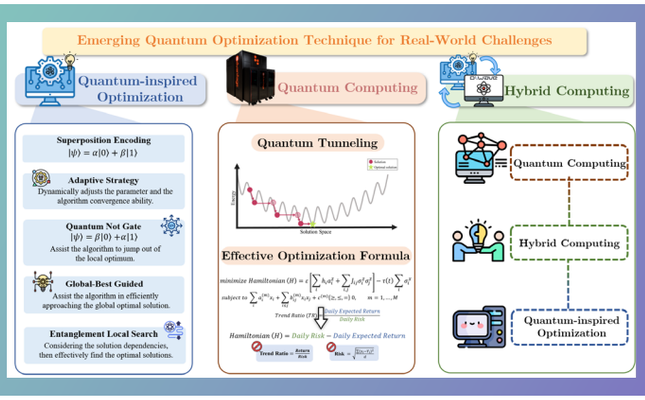
Innovative Hybrid Framework of Quantum-inspired Algorithms and Quantum Computing for Applications in Finance and Optimization Problems

Technology Introduction

We integrate novel quantum-inspired algorithms with quantum computing, leveraging classical and quantum advantages to invent efficient optimization methods for complex problems. Applications span finance, industry, and quantum technologies, significantly reducing search time, enabling multiobjective models, and introducing visualization interfaces to enhance adoption in both academia and industry.

Industry Applicability

This technology applies to fintech, Industry 4.0, and quantum areas, including portfolio optimization to balance risk and return, optimizing aluminum extrusion parameters to improve quality, accelerating quantum and reversible circuit synthesis, and developing multiobjective models for diverse needs. A visualization interface lowers expertise barriers. Overall, it delivers real industrial value.



Affiliated Ministry: AS
Exhibitor: Academia Sinica
Contact: Kai-Min Chung kmchung@iis.sinica.edu.tw

Exhibited Technology

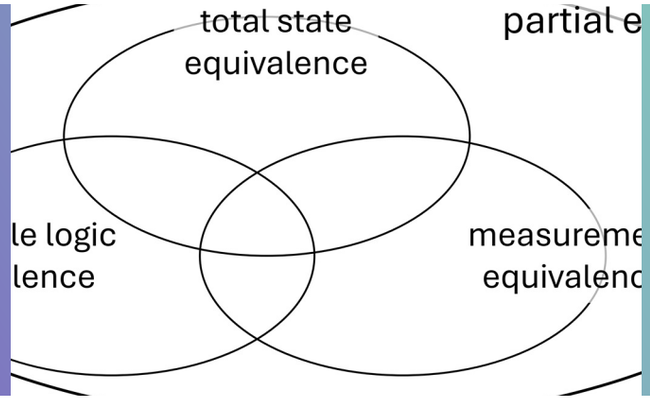
Towards the Future of Quantum Circuit Verification: A Tree Automata-Based Approach

Technology Introduction

We model quantum states as perfect binary trees and utilize tree automata to recognize large sets of such trees, allowing us to compactly represent collections of quantum states. Based on this novel approach, we design efficient algorithms for simulating quantum gates, enabling fast and scalable quantum circuit verification. Our method supports common quantum gates and control flow constructs.

Industry Applicability

Our tool can be used to verify quantum circuit correctness before deployment and check circuit equivalence before and after compiler optimizations, supporting deployment platforms like IBM Qiskit. We can also develop an interactive, visual interface for quantum state preparation and gate operations like Frama-C. It can also be used to aid education by letting students compare circuits intuitively.



Affiliated Ministry: NSTC

Exhibitor: National Tsing Hua University

Contact: Po-Chung Chen pcchen@phys.nthu.edu.tw

Exhibited Technology

Quantum Virtual Machine

Technology Introduction

The idea of quantum virtual machine is to build software stack based on the abstraction level: In application layer, we perform quantum simulation of topological dynamics and field theories. In quantum-classical hybrid architecture layer, we study the synergy between quantum circuit, tensor-network, and machine learning. At middleware layer, we explore device independent optimization and characterization of QPU and bridge it to firmware layer. Finally, we integrate the software stack with QPU.

Industry Applicability

Universal Quantum Computer Diagnostic & Recommendation System, which based on randomized measurement toolbox, has obtained patent in Taiwan. By quantum circuit compression, one maximizes the quantum advantage of NISQ devices, enabling more complex simulations. Exploring huge configuration space via quantum generative model has become an essential part in quantum-classical hybrid machine learning.

FUTEX

Quantum Technology

Affiliated Ministry: NSTC

Exhibitor: National Yang Ming Chiao Tung University

Contact: Ching-Yi Lai cylai@nycu.edu.tw

Exhibited Technology

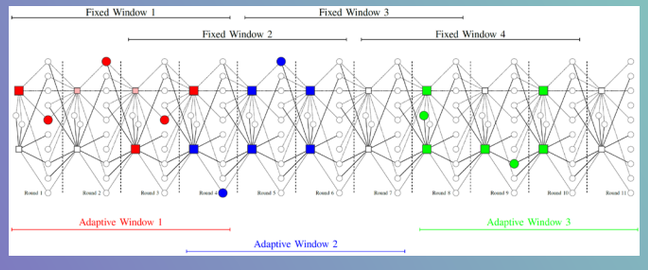
Advanced Belief Propagation Decoding Techniques for General Quantum Codes

Technology Introduction

We developed advanced decoding techniques for universal quantum codes. Our optimized Belief Propagation algorithm integrates multi-round data to boost error correction accuracy and performance, paving the way for practical fault-tolerant quantum computing.

Industry Applicability

This technology integrates high-performance decoders into quantum systems for real-time error correction, bridging theory and practical use.



Booth: FI11

Affiliated Ministry: NSTC

Exhibitor: National Taiwan University

Contact: Elaine Tsai elainetsai@ntu.edu.tw

Exhibited Technology

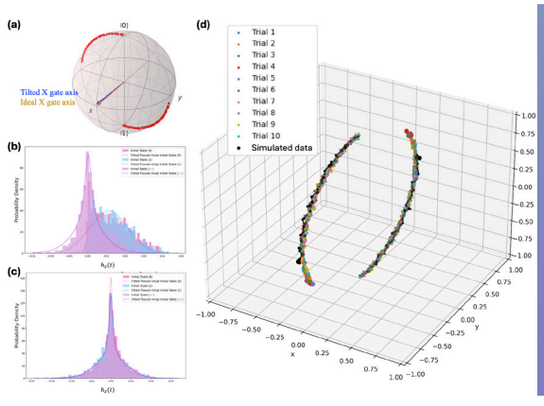
Exploring the Future of Chemistry and Materials Science through Quantum Noise Characterization and Simulation

Technology Introduction

Quantum computers aren't just powerful calculators—they reveal nature's hidden secrets. By combining chemical theory, quantum noise characterization, and noise-assisted simulation, we've developed innovative algorithms that overcome traditional limits in chemical modeling. Through our demo, we showcase how quantum noise can reproduce energy transfer in photosynthesis and drive breakthroughs in materials and drug discovery.

Industry Applicability

This technology enhances the practical utility of quantum computers in chemistry and materials modeling by improving computational accuracy and stability under noise. It holds industrial potential for applications in drug discovery, green energy materials design, and quantum software validation.



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Booth: FI12

FUTEX

Quantum Technology

Affiliated Ministry: NSTC

Exhibitor: National Taiwan University

Contact: Hsi-Sheng Goan goan@phys.ntu.edu.tw

Exhibited Technology

Introduction to NTU IBM Q Hub and IBM Quantum Platform

Technology Introduction

NTU IBM Q Hub, a collaboration between National Taiwan University and IBM, serves as a hub for quantum education, outreach, and research. By providing access to IBM's cloud-based quantum computing platform, the Hub enables students and researchers to explore algorithms, perform simulations, and gain hands-on experience with real quantum devices. The Hub delivers educational programs ranging from introductory workshops to advanced courses and organizes hackathons and outreach events, fostering awareness and skills across different levels. This integrated approach helps bridge academic learning with practical experimentation, empowering a broader community to engage with the possibilities of quantum technologies.

Industry Applicability

From an industrial perspective, NTU IBM Q Hub plays a crucial role in preparing industries for the quantum era. By leveraging IBM's quantum platform, companies can begin experimenting with quantum applications in areas such as drug discovery, materials design, supply chain optimization, and financial risk analysis. Hackathons, workshops, and training programs cultivate skilled talent while fostering collaboration between academia and industry. This dual emphasis on education and practical exploration ensures that enterprises not only understand the theoretical promise of quantum computing but also gain pathways to test and implement emerging quantum solutions, ultimately accelerating innovation and enhancing competitiveness in a rapidly evolving technological landscape.



Booth: FI14

Affiliated Ministry: NSTC

Exhibitor: National Cheng Kung University

Contact: Yi-Wen Fu etoile@phys.ncku.edu.tw

Exhibited Technology

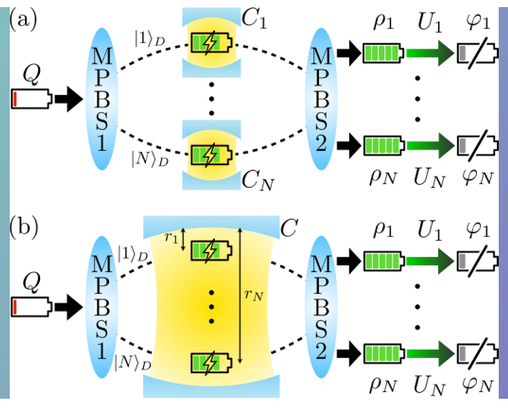
Quick charging of a quantum battery with superposed trajectories

Technology Introduction

Quantum batteries are devices that utilize quantum effects. Here, we utilize quantum information technology known as superposition of trajectories to charge the quantum battery. This results in the quantum battery being charged by multiple chargers at the same time, causing a quick charging effect that gives us more usable energy over time. We implemented this with IonQ's quantum computer.

Industry Applicability

Semiconductor, AI, green energy are energy reliant technology. As these develop further, the efficiency of batteries becomes more important. Eventually, lithium batteries would hit a limit at the quantum level. Thus, the development of quantum batteries becomes a necessity. Our technology would pave the way for a smooth transition from efficient lithium batteries to efficient quantum batteries.



Affiliated Ministry: NSTC

Exhibitor: National Cheng Kung University

Contact: Abbie Chang abbiee.chang@gs.ncku.edu.tw

Exhibited Technology

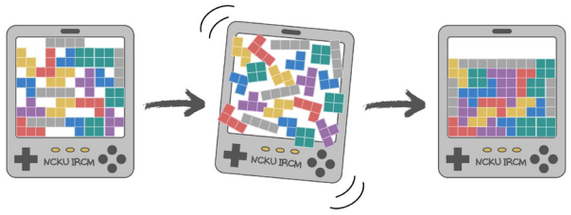
Digital Annealing Research and Development Promotion Project

Technology Introduction

This project focuses on the development and promotion of Digital Annealing (DA) and GPU-based annealing technologies, combining hardware acceleration with software innovation. On the hardware side, DA and GPU annealing are applied to combinatorial optimization, scheduling, experimental design, drug molecule discovery, photomask inverse design, and MicroLED process optimization. On the software side, the work centers on QUBO model construction and transformation, AI-enhanced solving strategies, and GPU parallel performance improvement. The project will also establish a localized annealing platform to reduce cost, enhance flexibility, and ensure privacy, thereby supporting both academic research and industrial adoption. Through this integration of hardware and software, the project aims to accelerate practical applications, strengthen domestic competitiveness, and open new opportunities for innovation across pharmaceuticals, semiconductors, advanced manufacturing, and other fields.

Industry Applicability

Digital Annealing (DA) and GPU-based Annealing accelerate drug discovery by improving molecular screening and binding energy evaluation, thus enhancing efficiency and reducing experimental costs. They are valuable tools for advancing new drug development. In combinatorial optimization, They both address key problems: solving scheduling for better workforce and resource allocation, optimizing routing for logistics and transportation, and tackling knapsack problems for portfolio and asset management. Beyond healthcare, They are applicable in semiconductors for photomask inverse design, in display technologies for optimizing MicroLED fabrication, and in manufacturing for smarter scheduling and higher capacity utilization. These diverse applications highlight annealer's broad cross-industry potential as both a scientific and industrial innovation driver.



Affiliated Ministry: NSTC

Exhibitor: National Institutes of Applied Research

Contact: Po-Chang Wu pcwu@niar.org.tw

Exhibited Technology

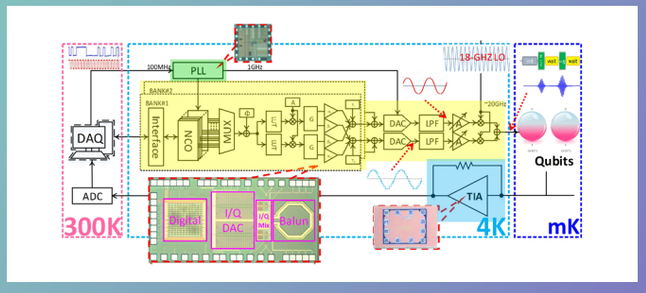
Design of cryo-CMOS qubit controller for achieving high qubit fidelity

Technology Introduction

Our cryo-CMOS qubit controller consists of a digital control circuit, an I/Q numerically controlled oscillator, a high-speed digital-to-analog converter, an 18-GHz mixer, and a balun. The architecture provides programmable control of the output signal for manipulating qubit states. This technology plays a pivotal role in replacing room-temperature electronics for a large-scale quantum computer.

Industry Applicability

Cryo-CMOS enables scalable, energy-efficient quantum control at cryogenic temperatures, reducing wiring, signal loss, and costs. It technically, economically accelerates the commercialization of quantum computers and also has applications in sensors and communication. With Taiwan's semiconductor industries, this technique can be one of the driving forces behind Taiwan quantum computing technology.



Affiliated Ministry: NSTC

Exhibitor: National Tsing Hua University, National Taiwan University, and National Yang Ming Chiao Tung University

Contact: Yen-Hsiang Lin yhlin@phys.nthu.edu.tw

Exhibited Technology

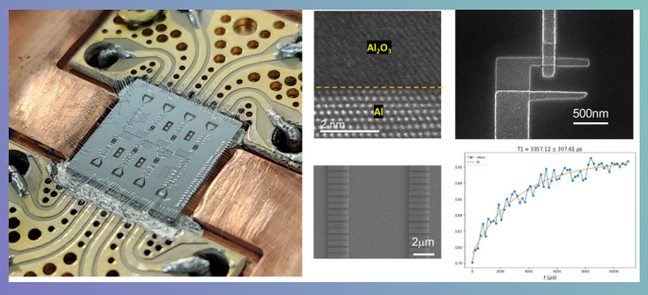
Advanced Superconducting Material Encapsulation and Qubit Fabrication

Technology Introduction

In an ultra-high vacuum environment, superconducting thin films are first grown, immediately followed by in situ high-quality encapsulation layers growth. Using photolithography and electron-beam lithography, we fabricate novel Fluxonium superconducting qubits, achieving energy relaxation times (T1) up to 3 ms, approaching the world record.

Industry Applicability

The high-quality superconducting thin films produced by this technology can fabricate highly coherent qubit chips, advancing the quantum information industry, while also offering potential applications in microwave device fabrication and wireless communication networks.



Affiliated Ministry: NSTC

Exhibitor: National Tsing Hua University

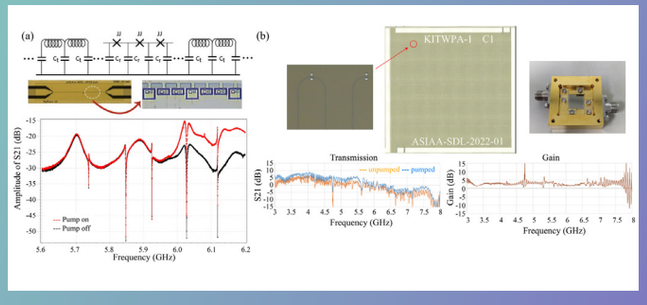
Contact: National Tsing Hua University jcchen@phys.nthu.edu.tw

Exhibited Technology

Superconducting parametric amplifier

Technology Introduction

Quantum amplifiers are vital for high-fidelity, multiplexed, single-shot qubit readout. This Taiwan-based project develops superconducting parametric amplifiers (PAs) across four subprojects: two focus on traveling-wave designs using Josephson junctions (Nb/Al) or ultrathin NbN for junction-free fabrication; one targets wafer-scale aluminum JPAs with quantum-limited noise; and one designs amplifiers for semiconductor-spin qubits. Co-developed with qubit teams, these amplifiers enhance scalability, control precision, and readout performance.



FUTEX

Quantum Technology

Affiliated Ministry: NSTC

Exhibitor: National Taiwan University

Contact: Yi Jung Niu yijungniu@ntu.edu.tw

Exhibited Technology

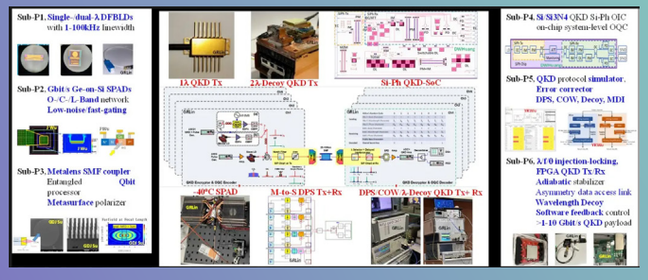
Semiconductor Single-Photon Quantum Key Distributor and Mainframe

Technology Introduction

Develops fiber-based OQC components/protocols: single-/dual-mode DFB lasers (<100kHz bandwidth, QBER <0.5%), low-noise telecom-band CMOS Ge-on-Si SPADs, polarization-selectable meta-surface SMF couplers for on-chip entangled photon processing. Si/Si3N4 QPIC enables system-level QKD/OQC. Adaptive software optimizes DPS, BB84, COW, Decoy, MDI protocols, supporting device/algorithm development for stable QKD data transmission and decoding.

Industry Applicability

The DFBLD-based DPSK-QKD-OQC protocol distributor and transceiver for DWDM-PON, featuring injection-locked DPSK carriers, software-controlled self-feedback delay interferometers, pulsed-gated SPADs, Si-photonic QKD system-on-chip, and protocol simulation tools, ushers a new industrial era addressing urgent needs for enhanced quantum encryption in e-commerce, defense, and medical data streaming.



Booth: FI20 294

Affiliated Ministry: NSTC

Exhibitor: National Tsing Hua University

Contact: Chih-Sung Chuu cschuu@phys.nthu.edu.tw

Exhibited Technology

Prototypes of Quantum-Encrypted Network and All-Optical Quantum Computer

Technology Introduction

Prototypes of quantum-encrypted networks and all-optical quantum computers have been developed. The quantum network prototype, aiming for multiple users, uses a star topology to connect all nodes via an untrusted relay. Secret keys can be established between users through the quantum state projection at the relay. The quantum computer prototype exploits a novel technique to encode and manipulate information in high dimensions, which enables the implementation of quantum algorithms using only one photon.

Industry Applicability

The quantum-encrypted network enables secret key distribution and increases the security of data transmission on the Internet. It is also beneficial for developing accurate time synchronization and high-resolution telescopes. The all-optical quantum computer reduces the required number of physical qubits, quantum gates, and possible computing errors. It is useful for developing new drugs and materials, improving batteries, weather broadcasting, and financial investment.





FUTEX

Quantum Technology

Affiliated Ministry: NSTC Exhibitor: National Taiwan University

Contact: TIAN-FU CHEN d11k42001@ntu.edu.tw

Exhibited Technology

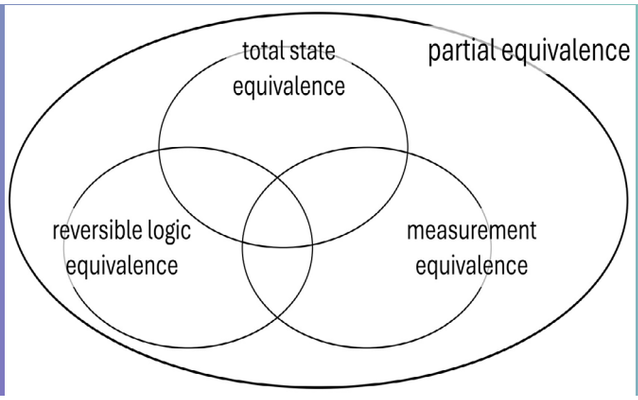
Quantum Circuit Verification: Static Partial Equivalence Checking and Dynamic Runtime Assertion Checking

Technology Introduction

We propose quantum circuit verification approaches, containing partial equivalence checking and a vanishing-state-based assertion framework. The former extends equivalence definitions to improve synthesis and simplification flexibility; the latter automatically generates assertion circuits to monitor states during execution and detect errors early, enhancing reliability and operational efficiency.

Industry Applicability

We propose partial equivalence, relaxing quantum circuit equivalence and enhancing synthesis flexibility. From definitions to algorithms, our framework fills development gaps. The dynamic assertion framework is the first and only method to systematically and automatically generate quantum assertion circuits, playing a key role in reducing costs and improving efficiency in quantum computation.



Booth: FI22 296

FUTEX

Affiliated Ministry: NSTC

Exhibitor: National Tsing Hua University

Contact: Alice Chung alice_chung@gapp.nthu.edu.tw

Exhibited Technology

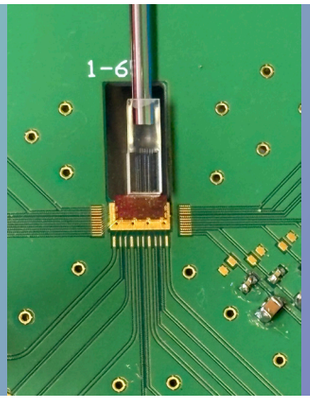
Integrated Silicon Photonic Quantum Chip Platform and Readout System

Technology Introduction

We have developed a novel Si2N3-Si quantum photonic platform for continuous-variable (CV) quantum optics operations, which will also be used to implement a quantum random number generation (QRNG) chip. The platform is packaged with a low-noise, high-speed transimpedance amplifier (TIA) circuit board in an enclosure to form a portable readout module for on-board homodyne detection of quantum noise.

Industry Applicability

CV quantum optics enables room-temperature and deterministic quantum operations, making them ideal for quantum communication, computing, and sensing. Yet, most current systems are bulky and unsuitable for real applications. Our project's integrated quantum photonics platform addresses this challenge by implementing quantum optics on a chip, delivering a compact, practical, and scalable solution.



FUTEX

Quantum Technology

Affiliated Ministry: NSTC Exhibitor: National Central University

Contact: T. C. Yang tcyang@gapp.nthu.edu.tw

Exhibited Technology

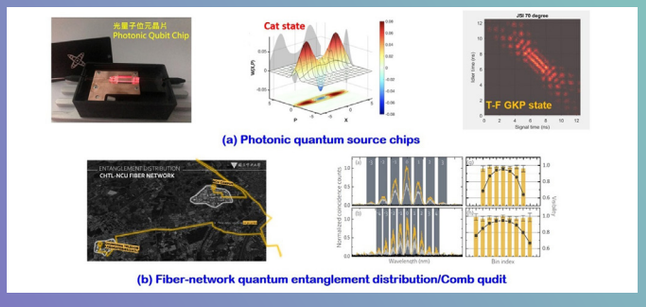
Optical Quantum Computing on Integrated Photonic Chips

Technology Introduction

Among all the existing quantum computing technologies, photonic quantum computers (PQC) are the only chip-scale solution possible to work at room temperature and readily compatible with nowadays semiconductor and optical communication network systems. In this technique, we aim to develop fault-tolerant non-Gaussian state photonic integrated quantum computing chips by combining core technologies of integrated quantum light sources, quantum metrology, silicon photonics, quantum state validation, quantum error code correction, and photon number resolving detectors, a critical step toward a cutting-edge practical PQC.

Industry Applicability

Three key hardware components have been developed for realizing our proposed photonic quantum computing technology, including photonic qubit sources, linear optical quantum circuits, and single-photon detectors. These components can all be highly integrated using advanced integrated photonic (silicon photonics) chip technology. This technology has broad applications not only in quantum computing, quantum communications, and quantum sensing, but also in next-generation optical communications, lidar, medicine, defense, and aerospace industries. Furthermore, the quantum state reconstruction and error-correction schemes developed by our team can also accelerate the commercialization of optical quantum computing and promote the development the quantum technology ecosystem.



Booth: FI24 298

Affiliated Ministry: NSTC

Exhibitor: National Yang Ming Chiao Tung University

Contact: Peichen Yu peichen.yu@nycu.edu.tw

Exhibited Technology

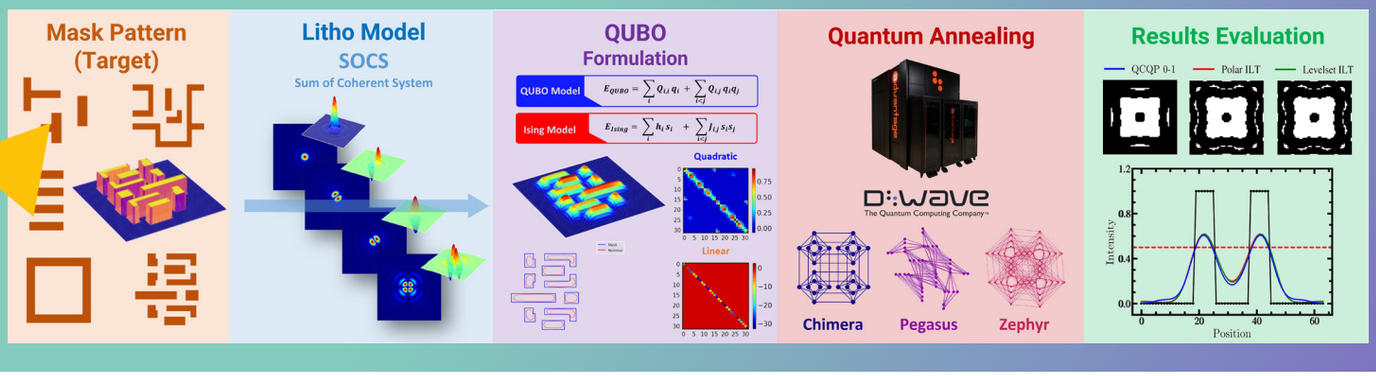
Quantum Annealing-based Framework for Reticle Optimization

Technology Introduction

This project develops a Quantum Annealing-based Framework for Reticle Optimization using D-Wave quantum annealers to solve mask optimization challenges in semiconductor lithography. Traditional Inverse Lithography Technology (ILT) suffers from convergence issues, local minimum traps, and excessive computation time. We formulate ILT as Quadratic Unconstrained Binary Optimization (QUBO) problems, leveraging quantum properties for rapid global minimum search. The framework demonstrates quantum annealing's potential in semiconductor manufacturing optimization.

Industry Applicability

The integration of quantum annealing into computational lithography can reduce the design cycle time and substantially lower the computational overhead associated with full-chip mask correction. This is particularly important as the semiconductor industry faces escalating costs in design, verification, and mask writing for complex layouts. By achieving higher accuracy in reticle optimization, manufacturers can minimize the number of process iterations and improve pattern transfer robustness, ultimately reducing wafer production costs.



FUTEX

AI Applications and Industry–Academia Collaboration

Affiliated Ministry: NSTC

Exhibitor: Changbin Show Chwan Memorial Hospital

Contact: Charlene Charlenechu0615@gmail.com

Exhibited Technology

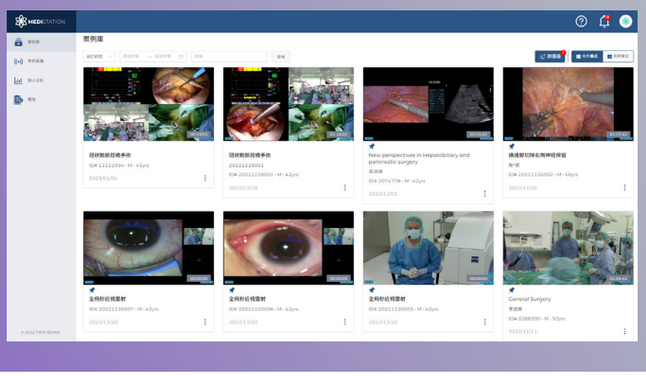
Smart OR Medical Video Integrated & Synchronized recording system and Management Platform

Technology Introduction

The system transforms surgical imaging by unifying multiple sources into one seamless system. Physicians save time with faster reporting, while rare cases are preserved as teaching treasures. Beyond efficiency, it fuels clinical databases, empowers research, and drives precision medicine, shaping the future of smarter, connected surgical care.

Industry Applicability

The system synchronizes and records 2 to 8 video sources in real time, while preserving each individual source in full. This capture not only streamlines clinical image management but also enables tailored storage solutions according to institutional needs. It creates structured datasets that support surgical education, research databases, AI-driven analytics and the precision medicine.





Booth: FJ01 300

Affiliated Ministry: NSTC

Exhibitor: Changbin Show Chwan Memorial Hospital

Contact: Charlene Charlenechu0615@gmail.com

Exhibited Technology

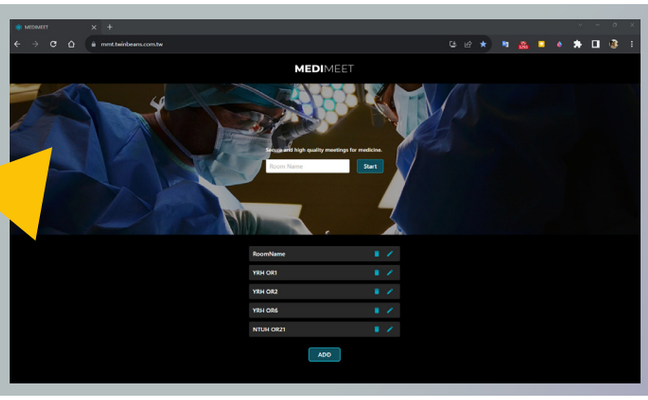
Smart OR Remote Surgical Collaboration system

Technology Introduction

This technology combines surgical imaging integration with remote collaboration. With simple steps, it enables real-time screen sharing and two-way communication across computers, tablets, and smartphones. Secure access control and multi-level encryption protect privacy. Its HA architecture ensures stable live demonstrations, allowing surgical education and collaboration without broundary.

Industry Applicability

This technology is designed for remote surgical collaboration and clinical education. With real-time two-way communication, cross-device connectivity, and secure access control, it ensures safety and privacy. Operating in stable high-bandwidth environments, it expands surgical training opportunities, enhances patient safety, and strengthens team collaboration and efficiency in the OR.





Affiliated Ministry: NSTC
Exhibitor: Changbin Show Chwan Memorial Hospital
Contact: Charlene Charlenechu0615@gmail.com

Exhibited Technology

AIRMOD System ™ (AccurSound 101 Electronic Stethoscope & Airmod Display)

Technology Introduction

Heroic Faith Medical is dedicated to technological innovation in the fields of anesthesia and sleep apnea monitoring.

• Continuous respiratory sound monitoring in ICUs, operating rooms, and anesthesia settings to enhance safety in high-risk environments.

• Home screening for airway collapse and potential sleep apnea to support early detection and monitoring.

Industry Applicability

Heroic Faith Medical is dedicated to technological innovation in the fields of anesthesia and sleep apnea monitoring.

• Continuous respiratory sound monitoring in ICUs, operating rooms, and anesthesia settings to enhance safety in high-risk environments.

• Home screening for airway collapse and potential sleep apnea to support early detection and monitoring.

FUTEX

Affiliated Ministry: NSTC

Exhibitor: China Medical University Hospital
Contact: Digital Transformation Technology Office
dtto-service@tool.caaumed.org.tw

Exhibited Technology

HiThings Tele-ICU

Technology Introduction

HiThings Tele-ICU transforms ICU care by integrating AI, IoT, digital twin, and teleconsultation into one platform. It connects thousands of medical devices and consolidates diverse streams of clinical data—such as vital signs, imaging, and laboratory results—into a single, intuitive digital twin interface. AI modules for sepsis, STEMI, ARDS, stroke, and nutrition cut ICU mortality rates 4% and reduce diagnosis, assessment, and documentation time.

Industry Applicability

. Obtained 6 medical FDA/TFDA licenses, filed 6 patents, and registered 4 trademarks
. Successfully deployed in 6 ICUs; modular, highly scalable design enables expansion to general wards, long-term care, and regional collaboration platforms
. Outperforms international products in all benchmarks; reduces costs by 87%. Strong potential for commercialization, licensing, and strategic partnerships





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Booth: FJ04

Affiliated Ministry: NSTC
Exhibitor: Kaohsiung Municipal Kai-Syuan Psychiatric Hospital
Contact: Li Chia Hsin alan@i-ambition.com

Exhibited Technology

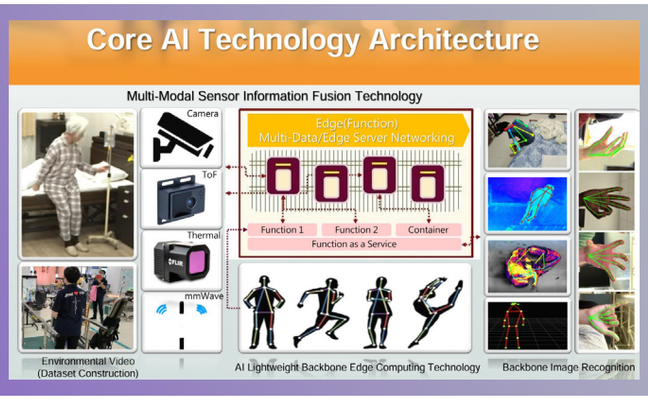
A Personalized Interactive Digital Platform for Health Promotion and Supportive Care

Technology Introduction

The system integrates patented technologies for cognitive assessment games, muscle strength assessment and training games, image recognition, non-contact physiological signal measurement, and AI algorithms to establish an interactive digital health promotion and assisted care platform. It collects multimodal data such as blood pressure, heart rate, muscle strength, body composition, functional fitness tests, cognitive assessment scores, and gait analysis. Through AI analysis, the system provides users with information about their health status, including physical function, cognitive ability, and muscle strength.

Industry Applicability

The technology can be applied in long-term care centers, communities, and home care settings, offering commercial flexibility. Users can perform self-assessments at home or in care facilities using a tablet or computer. The system records the data and uploads it to a cloud database for long-term tracking, helping to detect functional decline at an early stage and providing valuable reference for physicians.





Booth: FJ05

Affiliated Ministry: NSTC

Exhibitor: National Cheng Kung University National Cheng Kung University Hospital

Contact: Tzu-Hui Yu hui163656@gmail.com

Exhibited Technology

Smart Home-Based Stroke Care Platform – AI Protection, Uninterrupted Care

Technology Introduction

The QOCA apc AI Patient Care Platform is a private cloud solution for remote care, ideal for home health and aging-in-place services. With simple setup and intuitive use, it supports post-acute care, chronic illness, hospital-at-home patients, and seniors. Integrating IoT devices and real-time communication, it extends hospital care to the patient's home, enabling care teams to support more people through efficient, high-quality remote healthcare.

Industry Applicability

Application Scenarios: Home care, post-discharge and high-risk management, in-home emergencies, elderly health promotion, community outreach, and hospital monitoring.
Target Users: Patients needing physiological monitoring (e.g., stroke, diabetes, hypertension).
System Support: QOCA apc + AI alerts for real-time remote case management.
Industry Value: Meets aging population needs, aligns with health policies and business models, supports public-private collaboration, and enables global expansion.





FUTEX

AI Applications and Industry–Academia Collaboration

Affiliated Ministry: NSTC

Exhibitor: National Yang Ming Chiao Tung University

Contact: Peggie Chen peggiechen@nycu.edu.tw

Exhibited Technology

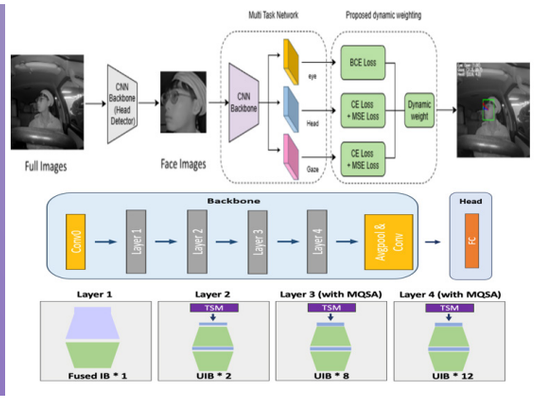
Intelligent system technologies and applications combining edge AI and LLM

Technology Introduction

This study proposes the development of a driver monitoring and interactive AI agent system on edge devices. The system utilizes lightweight large language models for decision-making and operations, as well as a driving behavior recognition system to monitor driving safety. Among these, the ADAS Buddy intelligent vehicle agent system provides an intuitive human-machine interaction interface, while TSM-MobileNetV4 effectively identifies distracted driving and mobile phone usage behaviors. The Multi-Task Model (DMTM) can estimate eye state, head posture, and gaze direction simultaneously, providing comprehensive monitoring and guidance for driver behavior safety.

Industry Applicability

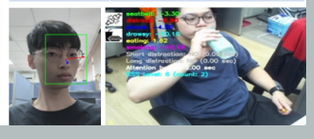
This system offers the following advantages: high performance, low computational load, and minimal parameters. These features make it particularly suitable for deployment on embedded platforms. It can maintain complete service stability even when network services are unstable, effectively enhancing driving safety. This technology serves a dual purpose: it can be used as a driver assistance system in vehicles and as a tool for fleet management and the logistics industry. It can monitor driver status and prevent accidents.



Method : Multilabel Input size : 256 X 256 Segment : 8	Parameters	FLOPS	F1 score
TSM-ResNet50	24.3M	43.3G	81.1%
TSM-MobileNetV2	3.4M	3.48G	82.5%
TSM-MobileNetV4 Conv-S	3.8M	**2.65G**	**82.6%**
TSM-MobileNetV4 Hybrid-M	10.5M	11.1G	**83.7%**

	ETH Gaze MAE(°)	ETH Head MAE(°)	FLOPS(G)	Params(M)
ETH-XGaze	6.74	N/A	4.13	23.51
L2CS	5.37	N/A	4.13	23.88
6DRepNet	N/A	6.88	9.84	43.75
DMTM(ours)	4.86	4.38	0.94	9.14

KSS Level	Driver State
Under Level 5	Awake
Level 6	Yawn <= 3 / 1 minute
Level 7	Yawn > 3 / 1 minute
Level 8	Nap <= 2 / minute (Microsleep)
Level 9	Level 9 : Nap > 2 / minute (Sleep)



Booth: FJ07

Affiliated Ministry: NSTC

Exhibitor: National Yang Ming Chiao Tung University

Contact: Peggie Chen peggiechen@nycu.edu.tw

Exhibited Technology

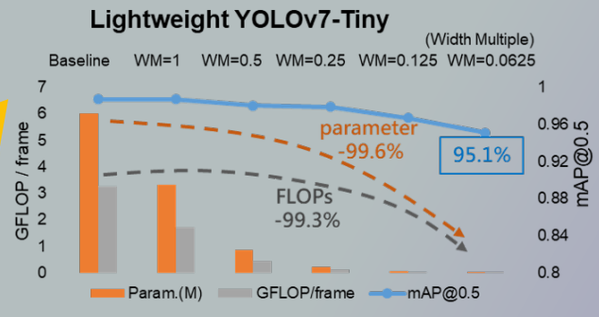
Lightweight AI inference engine for smart LiDAR

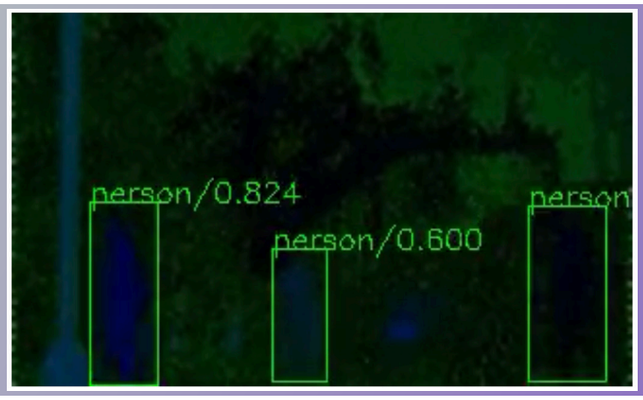
Technology Introduction

This technology specializes in low-latency, low-power smart LiDAR and edge AI systems. By employing advanced lightweight model training and model caching techniques, it effectively reduces bandwidth requirements during AI inference. Notably, when processing the lightweight YOLOv7-Tiny model, it achieves an impressive 4500 FPS while consuming only 38mW of power.

Industry Applicability

This technology delivers key advantages, including low latency and low power consumption, making it an optimal choice for integration into edge AI systems. It is particularly well-suited for applications demanding rapid response, such as high-speed aerial vehicles and automobiles, as well as for systems requiring prolonged operation, such as surveillance and monitoring solutions.





Affiliated Ministry: NSTC
Exhibitor: National Taiwan University
Contact: Tsai, Ya-Chih yachihtsai@ntu.edu.tw

Exhibited Technology

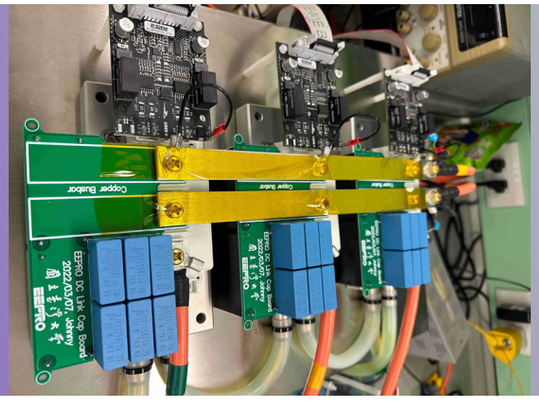
Electric Motor Emulator

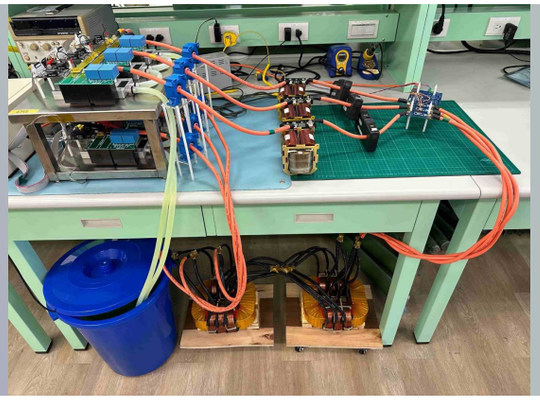
Technology Introduction

Using the EME instead of a real motor for the motor driver testing offers many advantages such as simple operation, rapid specification adjustments, the ability to simulate motor fault conditions, absence of rotating components, shorter R&D cycles, and energy recovery. The key aspects of EME technology include: motor modeling, numerical computation, delay compensation, current control, harmonic suppression, speed signal feedback, and more. This work is a 30 kW prototype, which can be directly interfaced with motor drivers to complete testing under different torque and speed conditions.

Industry Applicability

The EME can replace traditional motor drive testing, offering advantages such as low energy consumption, noiseless operation, safety, and stability, thereby boosting R&D efficiency and product reliability. It can reduce development costs by 50–80% and shorten timelines by 50%, while meeting multi-scenario verification requirements. The technology is highly scalable and applicable to diverse industries such as electric vehicles, energy storage, and renewable energy. It is expected to become a key technology in the power electronics industry chain, enhancing competitiveness and creating high added value.





Booth: FJ09

Affiliated Ministry: NSTC

Exhibitor: National Taiwan University

Contact: Chang, Sin-Hang r13942142@ntu.edu.tw

Exhibited Technology

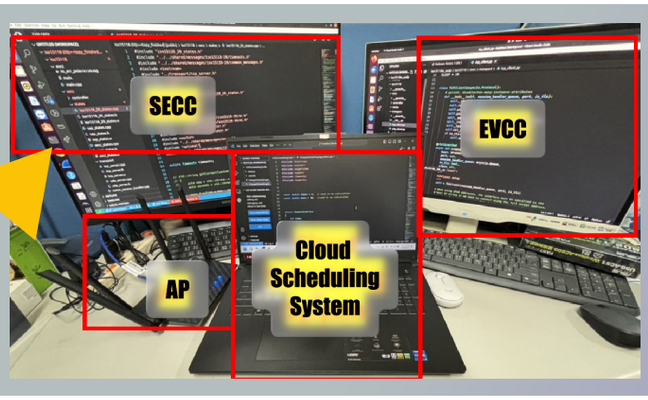
An Examination of Communication Standards for Electric Vehicle Charging Control

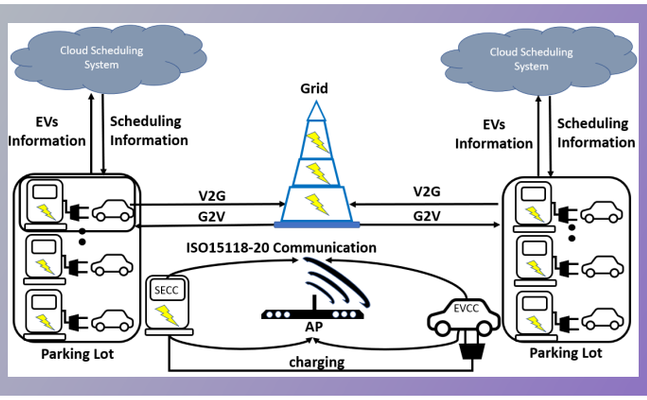
Technology Introduction

This technology implements ISO 15118-20 AC-BPT protocol via WiFi TCP connection, with EVCC as the client and SECC as the server, using three-way handshake. It covers session setup, authorization, service scheduling, and power transfer, ensuring secure, efficient charging with multi-certificate and scheduling algorithm support.

Industry Applicability

This technology applies to EV charging and Vehicle-to-Grid systems, using battery wear-based scheduling to cut costs by 30% and CO_2 by 1.8%. Without hardware upgrades, it suits public chargers and smart homes, driving green transport and energy management upgrades.





Affiliated Ministry: NSTC
Exhibitor: National Taiwan University
Contact: Yeh, Chun-Wei r13525085@ntu.edu.tw

Exhibited Technology

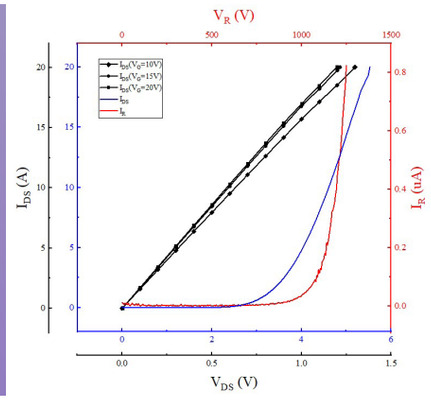
High-Power Device Testing System

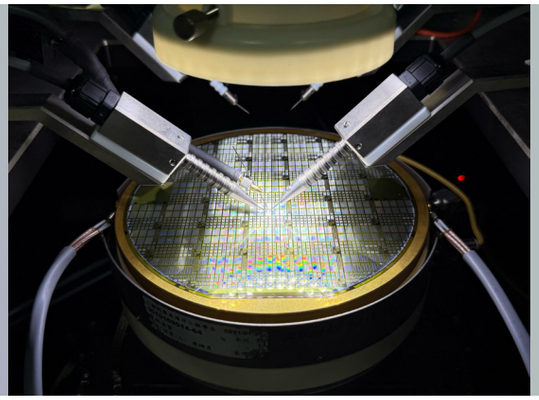
Technology Introduction

A single-die testing system using the B1505A evaluated probe landing position, repeated contacts, scratch length, and triboelectric charging, improving measurement accuracy and efficiency. Devices underwent short-circuit tests, with LTSPICE and TCAD simulations analyzing temperature-induced failure mechanisms, followed by optical and SEM failure analysis.

Industry Applicability

The High-Power Device Testing System maps electrical characteristics across a bare die to determine the optimal probe position. LTSPICE models predict short-circuit I-V behavior and internal temperatures to identify device limits. Industrial adoption can improve bare-die testing accuracy and efficiency and anticipate packaged device performance, preventing damage.





Affiliated Ministry: NSTC

Exhibitor: National Taiwan University

Contact: WEN XIN, WU m95302hw@gmail.com

Exhibited Technology

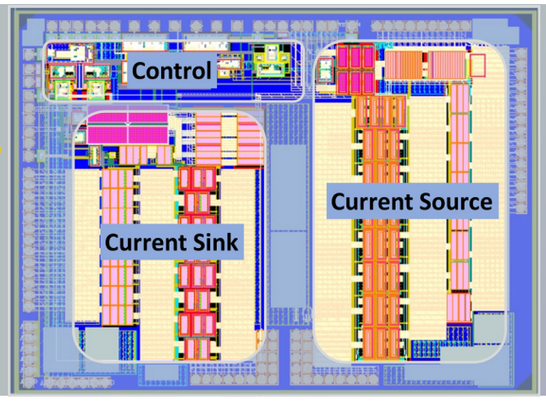
Design of Gate Driver IC for SiC Power Devices

Technology Introduction

This technology is a closed-loop SiC driver IC designed for high-speed switching applications. It features slope detection and active compensation to precisely control di/dt and dv/dt, reducing EMI and overshoot. The integrated current source and sink enable accurate gate current regulation. A memory-based control mechanism further enhances switching stability by iteratively adjusting to the target slew rate. The solution is ideal for high-efficiency, high-power-density power conversion systems.

Industry Applicability

This technology is suitable for EVs, power modules, and renewable energy systems. It features dynamic slew rate control to suppress EMI and improve switching quality. The design addresses SiC parameter variation and parasitic effects with precision gate control. It reduces system design complexity and sorting costs. Overall, it enhances power conversion efficiency and reliability.





Affiliated Ministry: NSTC
Exhibitor: National Kaohsiung University of Science and Technology
Contact: Gamma Chang chingyun@nkust.edu.tw

Exhibited Technology

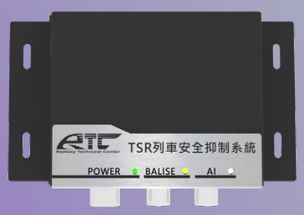
Operation event recording device for automatic train protection system

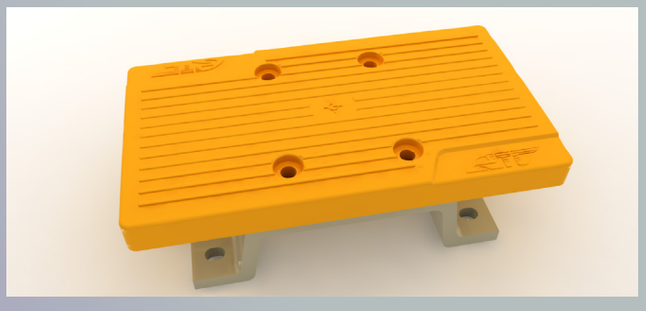
Technology Introduction

Temporary Speed Restriction (TSR) system consists of a wayside cabinet and balise. The cabinet verifies incoming warning signals and activates the balise to send automatic train protection commands, forcing deceleration or braking. A handshake-based safety mechanism cross-checks signals from the Disaster Warning System, Centralized Traffic Control, and AI video surveillance to ensure accuracy and reliability.

Industry Applicability

On April 2, 2021, Taiwan Railways' Taroko train No. 408 derailed after hitting a construction vehicle on the tracks, causing heavy casualties and highlighting railway safety risks. In response, Taiwan Railway and NKUST's Railway Technology Research Center developed the nation's first indigenous Temporary Speed Restriction (TSR) system. Now deployed on 20 high-risk sections, TSR monitors track anomalies in real time, alerts drivers and control centers, and enables prompt countermeasures, significantly reducing collision risks and enhancing railway safety.





Affiliated Ministry: NSTC

Exhibitor: National Sun Yat-sen University

Contact: Wei-Xuan Chen d123090002@student.nsysu.edu.tw

Exhibited Technology

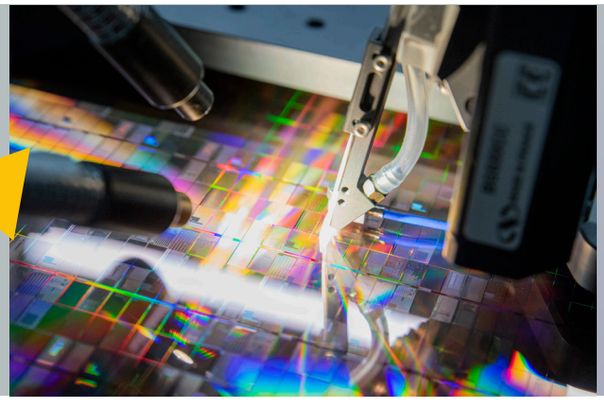
Silicon photonics in communications, computing, and sensing applications

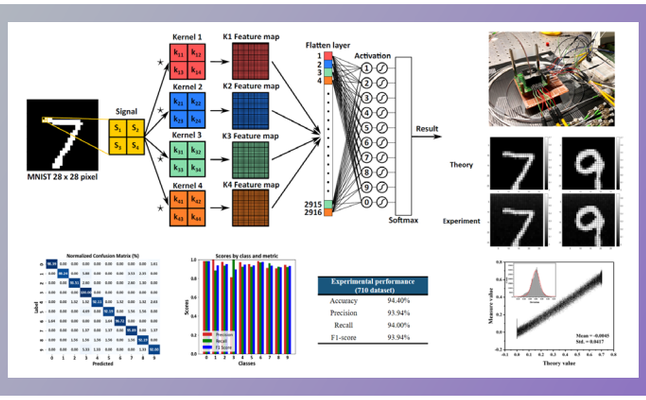
Technology Introduction

Our team develops silicon photonics technologies in communications, computing, and sensing. In communications, we improve bandwidth and yield with wavelength division multiplexing and demultiplexing. In computing, we enhance parallel optical processing through broadband convolutional computing, demonstrating flexible multiply–accumulate operations. In sensing, we create a compact, low-cost silicon photonic fiber-optic gyroscope with tactical-grade performance.

Industry Applicability

WDMs and demultiplexers support high-speed communications and data center interconnects, improving bandwidth efficiency. Broadband light–enabled convolution accelerates low-power edge AI tasks such as image recognition and sensing. The miniaturized silicon photonic gyroscope provides precise navigation for UAVs, autonomous vehicles, and satellites, with strong potential for commercialization.





Affiliated Ministry: NSTC
Exhibitor: National Taiwan University
Contact: Min-Hung Lee minhunglee@ntu.edu.tw

Exhibited Technology

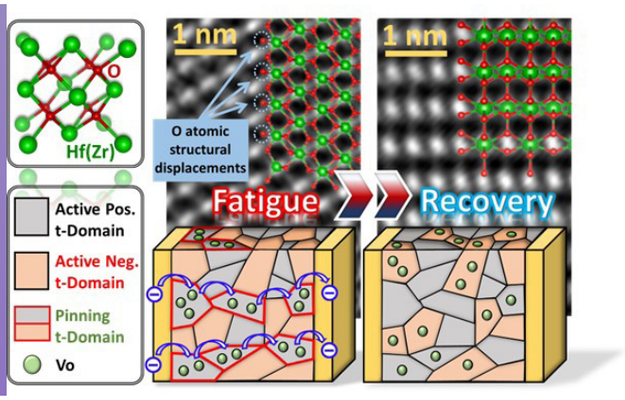
Pyroelectric Energy Recycle of Fluorite Hafnium Zirconium Oxide for 3D IC Package, Stacked Chip and BSPDN Application

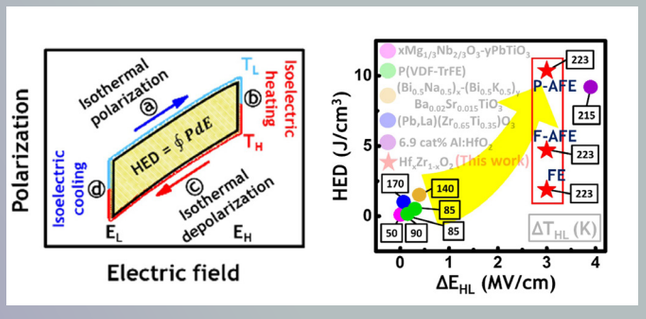
Technology Introduction

This technology is based on fluorite-structured hafnium–zirconium oxide ($HfZrO_2$) for pyroelectric energy harvesting (PEH). Under thermal gradients, it enables efficient energy recovery through entropy conversion. Leveraging both ferroelectric (FE) and antiferroelectric (AFE) properties, the material also exhibits piezoelectric and pyroelectric effects. Through opposite-polarity electric field cycling, complete fatigue recovery is achieved, significantly extending device lifetime. The goal is to advance its potential applications in 3D packaging, 3D-stacked chips, and backside power delivery network (BSPDN) technologies.

Industry Applicability

This technology solves the growing heat dissipation challenges caused by continuous scaling in advanced semiconductor processes by developing fluorite-structured hafnium–zirconium oxide ($HfZrO_2$) devices for thermoelectric energy harvesting applications. The material exhibits both ferroelectric and antiferroelectric properties, ensuring high compatibility with advanced process technologies, and demonstrates strong potential for applications with severe heat concentration issues, such as 3D packaging, 3D-stacked chips, and backside power delivery network (BSPDN).





Affiliated Ministry: NSTC

Exhibitor: National Taiwan University

Contact: Vita Pi-Ho Hu vitahu@ntu.edu.tw

Exhibited Technology

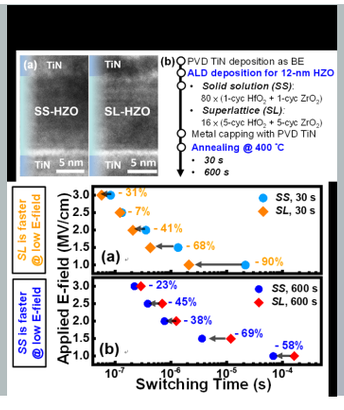
Next-Generation Ferroelectric Memory: System-Level Optimization and BEOL Film Development

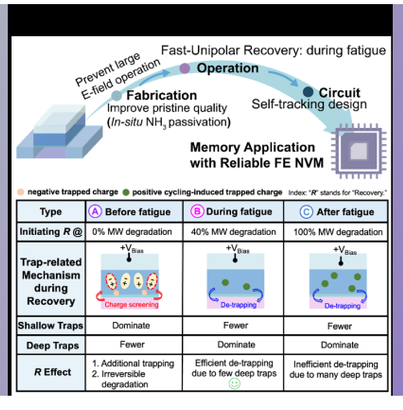
Technology Introduction

This technology focuses on enhancing ferroelectric memory by improving device interfaces, optimizing operation timing, and incorporating self-tracking circuits. These strategies extend device endurance and reduce performance loss. At the same time, various thin film structures compatible with back-end processes are developed to improve thermal stability, enabling faster and more reliable write operations. Together, these advancements address both manufacturing challenges and future application needs.

Industry Applicability

This technology addresses the growing demand for low-power, high-reliability non-volatile memory, making it particularly valuable for emerging Edge-AI applications. By integrating solutions for both front-end and back-end processes and introducing innovative materials, the approach demonstrates strong scalability and mass-production potential. It offers a practical pathway to accelerate the deployment of next-generation semiconductor applications across logic, memory, and heterogeneous integration.





Affiliated Ministry: NSTC
Exhibitor: National Tsing Hua University
Contact: Rai-Shung Liu rsliu@mx.nthu.edu.tw

Exhibited Technology

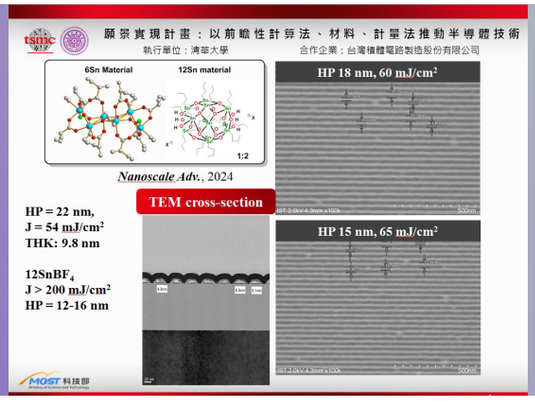
Visionary materials for EUV lithography and the material testing platforms

Technology Introduction

1. Develop novel air-stable hexameric tin oxide inorganic photoresists and establish a patent platform.
2. New EUV resists meet goals in pitch, energy, and line edge, nearing commercial standards.
3. Create hybrid methods to enhance film thickness and edge resistance.
4. Fabricate 20-nm resolution interference masks for EUV lithography.

Industry Applicability

Inorganic photoresists are superior materials in EUV-lithography when IC-manufactire is moving toward 1.4 nm. or even smaller. Relative small thickness (20-30 nm) of inorganic The edge resistance of inorganic photoresists are larger than orhanic materials by 2-3 folds. This thickness feature ensures a secure development of lithography patterns.



Affiliated Ministry: NSTC

Exhibitor: National Tsing Hua University

Contact: Wei Chang wchang.starlab@gapp.nthu.edu.tw

Exhibited Technology

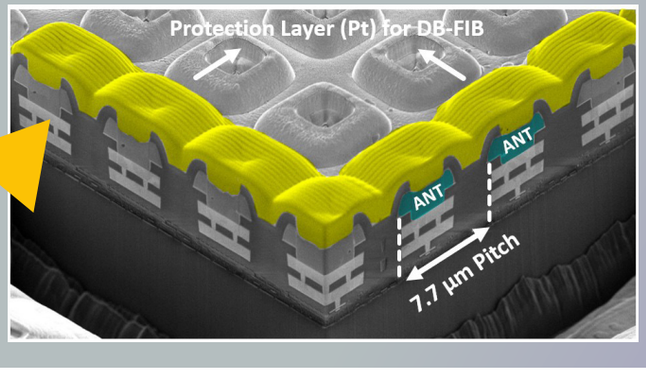
EUV Micro Detector Array (MDA) Mechanism and Development

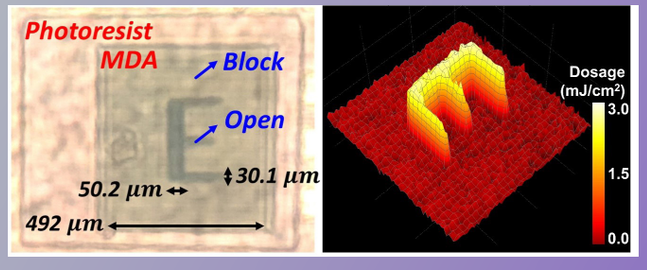
Technology Introduction

The Micro-Detector Array (MDA) aims to monitor the uniformity of dosage in various processes, including EUV, DUV, e-Beam, and Ion-Beam. The MDA is capable to measure critical dimensions, image log slope, and pattern edge location. Meanwhile, MDA is fully compatible with logic process, which provides advantages of high contrast in intensity, wide dynamic range, built-in calibration, and instant WAT analysis. These features enable the MDA to monitor process parameter variation.

Industry Applicability

The MDA is able to measure critical information for optimizing FinFET lithography beyond 5nm. It is expected to be integrated into the detection modules of EUV scanner equipment, such as ASML, and enhance the accuracy and reliability of lithography processes. The real-time monitoring of EUV intensity inside vacuum chambers and wireless signal transmission allow corrective measures to be taken immediately.





Affiliated Ministry: NSTC
Exhibitor: National Tsing Hua University
Contact: Chao-Tsung Huang chaotsung@ee.nthu.edu.tw

Exhibited Technology

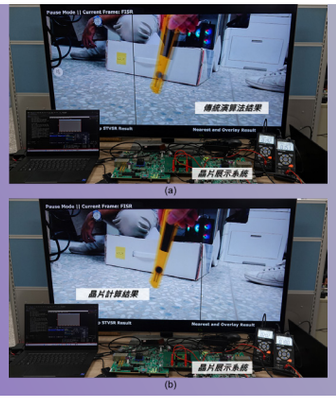
Space and Time Resolution Enhancement System for Next Generation Display and Streaming

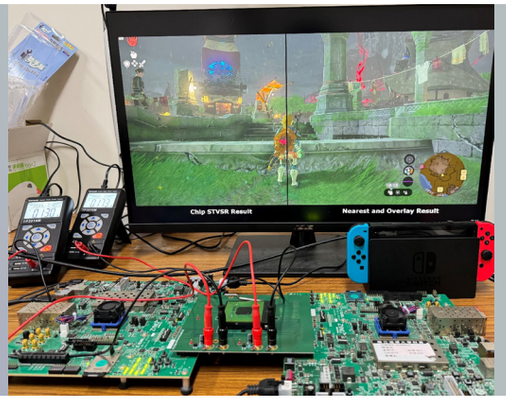
Technology Introduction

People seek high-spec TVs for immersive viewing, but high-spec content is scarce. For example, Netflix streams only up to 4K, and most platforms cannot keep pace with advanced displays. To close this gap, we present the world's first high-performance AI accelerator that enhances both spatial and temporal resolution, integrated into premium TVs and monitors to deliver a superior visual experience.

Industry Applicability

The spatial and temporal resolution enhancement system can be integrated into commercial high-spec displays, highlighting its potential for next-generation display technology. With custom PCB and FPGA boards, we built a real-time demo platform that upscales Quarter HD 30 FPS video to 4K-UHD 60 FPS, enabling interactive and prototype demonstrations.





FUTEX

Affiliated Ministry: NSTC

Exhibitor: Caigong Management Consulting Inc.

Contact: Liu Harry wincase.ai@gmail.com

Exhibited Technology

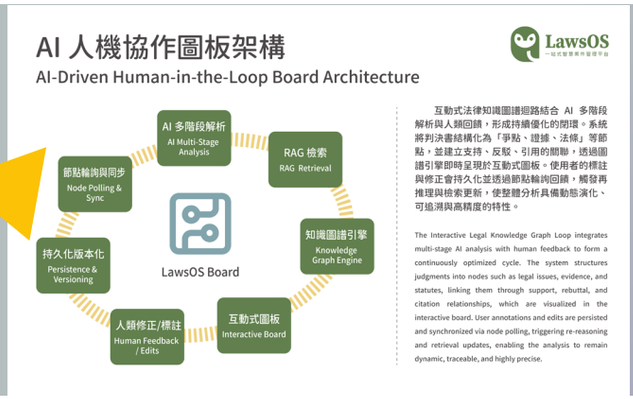
LawsOS: An AI-Powered Unified Case Management Platform

Technology Introduction

AI Legal Engine: Leveraging NLP, ML, DL & vector retrieval for precise pleading, case similarity & statute recommendation.
Visual Case Board – Graph-based workflow design replacing chat, empowering lawyer-driven decisions.
End-to-End Solution – Case summarization, precedent recommendation & record management for real-time accuracy.

Industry Applicability

LawsOS frees lawyers from time-consuming searches, letting them focus on judgment and strategy. With NLP, ML, DL, and vector retrieval, the platform provides intelligent pleading analysis, case similarity, and statute recommendations. Its visual case board gives a clear case overview, helping lawyers of all levels discover key legal arguments, assess strategies, and act with greater accuracy and speed.





Affiliated Ministry: NSTC

Exhibitor: Fortune AI Technologies CO., LTD.

Contact: Venessa service@safeswim.io

Exhibited Technology

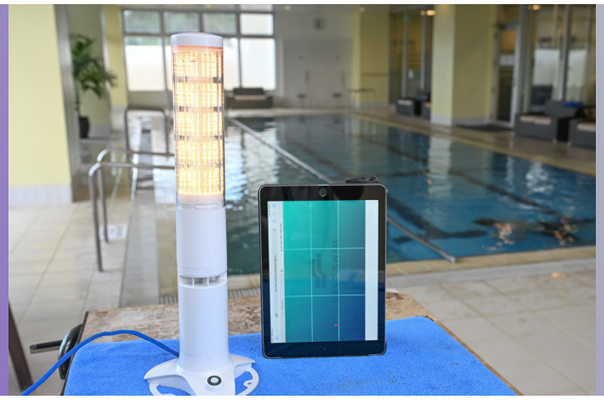
SAFE SWIM

Technology Introduction

An AI drowning detection system designed for water safety, combining computer vision with generative AI to overcome data scarcity and slow deployment. It generates synthetic data, achieving 98% accuracy. Supporting edge computing for privacy compliance, it's deployed in Japan with real rescues and now expanding to parks, rivers, and ports—offering a scalable, global solution.

Industry Applicability

AI-powered drowning detection for water safety. Uses computer vision + generative AI to overcome limited training data, achieving 98% accuracy. Edge-computing ensures privacy and compliance. Deployed in Japan with real rescues, now expanding to parks, rivers, and ports—delivering scalable, real-time protection worldwide.





Affiliated Ministry: NSTC

Exhibitor: Tri-Service General Hospital/ National Defense Medical University

Contact: Feng-Cheng Liu lfc10399@gmail.com

Exhibited Technology

Medical Education Metaverse: AI-Enhanced Virtual-Physical Integrated Healthcare Training Ecosystem

Technology Introduction

Developed with Tri-Service General Hospital and NDMU, this platform integrates NLP-powered virtual patients, semantic QA with clinical predictive models, comprehensive learning analytics, and patent-protected scalable architecture. It enables natural diagnostic conversations, real-time personalized feedback, data-driven progress tracking, and rapid creation of reusable high-fidelity clinical scenarios across disciplines.

Industry Applicability

The AI Medical Education Metaverse delivers transformative applications across healthcare training. Medical schools gain standardized, scalable clinical exposure through risk-free virtual environments, ensuring consistent high-quality education while protecting patient safety and optimizing faculty resources. Residency programs and hospital staff access advanced scenario-based training for rare, high-risk cases—enhancing clinical judgment without patient endangerment. Remote connectivity enables distributed training across multiple sites, reducing costs while maintaining uniform care standards. Emergency medicine benefits profoundly through realistic mass-casualty and crisis simulations, improving multidisciplinary team coordination and response efficiency. Globally, the platform's remote delivery model and standardized content enable worldwide institutional licensing regardless of geographical or resource constraints, positioning it as a scalable leader in medical education's digital transformation.





FUTEX

AI Applications and Industry–Academia Collaboration

Affiliated Ministry: NSTC

Exhibitor: The One AITech Co., Ltd.

Contact: Wen-Ya Chuang Secretary@theoneai.com.tw

Exhibited Technology

TaiOne Care GPT

Technology Introduction

Human-centered AI-enabled reshaping healthcare.
Building an AI application ecosystem
TaiOne Care GPT is purpose-built to meet the real-world demands of Taiwan's healthcare environment. By integrating large language models with the international FHIR standard, it tackles key challenges such as excessive documentation, fragmented systems, and difficulties in cross-functional collaboration.
Localized Clinical Intelligence: Tailored to the local clinical context, generating outputs that reflect the nuances of real-world medical language and workflows.
Multimodal Integration: Effortlessly processes voice, images, and structured data to support both in-clinic and at-home care environments.
Human-AI Co-Creation: Co-designed with frontline medical professionals, actively involving users as co-developers to ensure practical and intuitive tools.
Smart Wearable Assistant Integration: Paired with BodyCam—a wearable device capturing voice and video in real time—it delivers a seamless workflow: just say it, it's recorded, saving time and effort with a single tap.

Industry Applicability

TaiOne Care GPT breaks down healthcare data silos and transforms AI into a smart assistant for seamless, cross-disciplinary collaboration.
Built for modern healthcare and eldercare, it supports regional hospitals, long-term care facilities, and home nursing services. It lightens administrative burden, enhances clinical decisions, and streamlines information flow.
Nurses can complete home visit records by voice using BodyCam and the app, with auto-generated reports cutting paperwork by 70%. In hospitals, care teams share case data in real time to accelerate decision-making. In care facilities, it standardizes operations, optimizes staffing, and supports AI-driven family communication.
As Asia faces a regional aging crisis, TaiOne delivers a scalable, commercial-ready, and regionally adaptable solution f smart long-term and remote care.





Booth: FJ23

Affiliated Ministry: NSTC

Exhibitor: National Yang Ming Chiao Tung University

Contact: Maize Wang a0927681827@gmail.com

Exhibited Technology

intelligent-Optical Bone Densitometer (i-OBD)

Technology Introduction

Intelligent-Optical Bone Densitometer is the only device to measure bone density by safe light. It key challenges such as the difficulty of early osteoporosis diagnosis and high cost of current diagnostic methods. I-OBD are

1. Easy operation
2. Radiation-free
3. High reliability

It will replace quantitative ultrasound as the most useful technology for preliminary screening of osteoporosis.

Industry Applicability

I-OBD has significant anticipated benefits in improving the diagnosis and treatment quality of osteoporosis and in reducing the risk of fractures. Preliminary screening can prevent fractures and reduce the burden on healthcare system.

1. Accessibility limitations: DXA all are costly.
2. Healthcare system limitations: Inadequate insurance coverage.
3. Aging population: Increasing the demand.





Affiliated Ministry: NSTC
Exhibitor: Taipei Medical University/Shuang Ho Hospital
Contact: Yung-Chun Chang changyc@tmu.edu.tw

Exhibited Technology

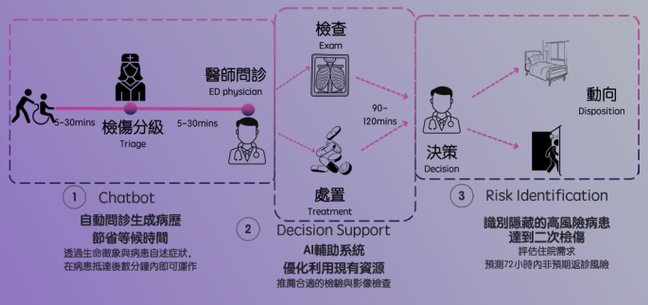
AIDE (AI-Driven Emergency Care)

Technology Introduction

AIDE leverages large language models and generative AI to integrate early vital signs and chief complaints of emergency patients. It enables early risk detection and real-time recommendations, improving care efficiency, reducing misdiagnosis and delays, and ensuring timely, accurate treatment while lowering unnecessary costs. Recognized with the 2025 AI Innovation Award, AIDE demonstrates strong potential for clinical decision support.

Industry Applicability

AIDE help hospitals reduce patient wait times, ensure care quality, address workforce shortages, enhance reputation and competitiveness, and strengthen system advantages. It adopts a revenue-sharing model with hospitals, requiring no high upfront investment and payment is based on actual returns, lowering adoption barriers and aligning stakeholder interests. Protected by strong intellectual property rights, AIDE offers immediate clinical utility and long-term commercial potential.





Affiliated Ministry: NSTC

Exhibitor: Lumi Good CO., LTD.

Contact: Jesse Chu official@splab.ai

Exhibited Technology

AI-based System and Method for Counting Aquaculture Larvae

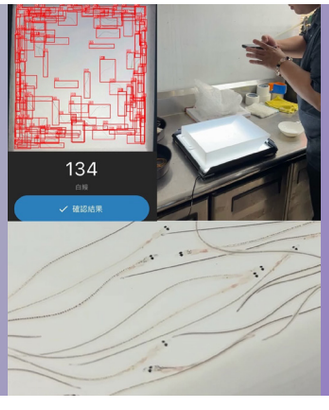
Technology Introduction

Our technology turns smartphone into a powerful analysis tool with our AI software. Supporting both cloud and edge computing for real-time analysis, it also features a modular design for rapid deployment. The core AI, using YOLO v10/v11, dynamically counts over 30 species with 97% accuracy. All data is synced to the cloud, ensuring complete production traceability.

Industry Applicability

Count 40+ commercial fish fry species with 97% accuracy using your smartphone—10x faster than manual labor. Our pioneering AI platform integrates smart inventory, cloud data, and QR Code traceability to solve transaction opacity and poor inventory control. Patented in Taiwan & China (U.S. pending), verified in 30+ farms, and now listed for government subsidies in Taiwan.





Affiliated Ministry: NSTC
Exhibitor: Arcly.ai
Contact: Ric ricchen@arcly.ai

Exhibited Technology

AI Child Development Assessment System

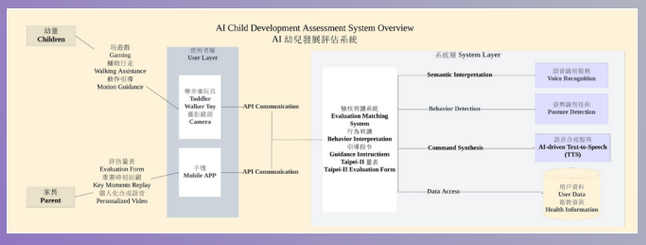
Technology Introduction

Our interactive toddler gear utilizes AI technology to transform the professional evaluation items in the Taipei City Pre-School Children Development Progress Evaluation Form, Taipei-II into AI-interpretable, quantifiable digital metrics. This allows children to engage in both play and learning while enabling parents and professionals to fully monitor their physical and psychological developmental progress.
The three core AI technologies include:
*Whisper STT model: Precisely analyzes children's language development capabilities.
*MediaPipe pose recognition model: Identifies gross motor development in infants.
*Child-action-recognition model: Detects specific developmental milestone behaviors.

Industry Applicability

The system is applied across retail, healthcare, finance, culture, and entertainment. It supports multilingual interaction, demographic analytics, and offers high scalability.

- Retail: Smart guide, product recommendation
- Healthcare: Virtual consult, booking, education
- Finance: AI service, consultation, promotion
- Culture: Exhibition guide, ticketing, interpretation
- Entertainment: Virtual idols, 3D MV, AI hosts





Affiliated Ministry: NSTC

Exhibitor: BEARVFX Co., Ltd.

Contact: Sharon Wang sharon.wang@bearvfx.com

Exhibited Technology

3D AI Virtual Human

Technology Introduction

• Technological Innovation: Holds patents for Multimodal Human-AI Interaction Technology, specializing in creating 3D AI virtual humans that can ""hear, speak, and see."" These virtual humans can be integrated with devices such as smart vending machines, fitness equipment, blood pressure monitors, robotic arms, and AR glasses, providing rich human-machine interaction services that effectively address labor shortages and enhance customer experience.
• Competitive Advantage: Establishing formal collaborations with international major companies like Microsoft and NVIDIA to gain technical and commercial support, complemented by a patent moat in multimodal AI human-computer interaction technology, gradually forming a global competitive advantage.
• Key Achievements: Successfully implemented in major venues including Weiwuying, Computex, LEECO Outlet, Taoyuan International Airport, and the Osaka Expo Taiwan Tech Week.

Industry Applicability

The system is applied across retail, healthcare, finance, culture, and entertainment. It supports multilingual interaction, demographic analytics, and offers high scalability.

· Retail: Smart guide, product recommendation
· Healthcare: Virtual consult, booking, education
· Finance: AI service, consultation, promotion
· Culture: Exhibition guide, ticketing, interpretation
· Entertainment: Virtual idols, 3D MV, AI hosts





Booth: FK01

Affiliated Ministry: NSTC

Exhibitor: ASPEED Technology
Contact: Cupola360 Sales Team sales@cupola360.com

Exhibited Technology

Cupola360 Smart Patrol

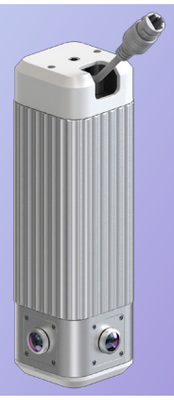
Technology Introduction

Cupola360 Smart Patrol Solution integrates 4K/8K panoramic imaging with AI edge computing, powered by ASPEED's patented panoramic image stitching SoC. It provides a scalable AI platform and, with the Cupola360° System, delivers 360° zero-blind-spot patrol. Supporting fire and smoke detection, people flow monitoring, and behavior analysis, it enables real-time anomaly prevention and enhances safety and efficiency across smart factories, cities, and retail, accelerating digital transformation.

Industry Applicability

Cupola360 Smart Patrol Solution, just like Eyes of AI, combines 360° live videos with AI for smart factories, smart cities, smart retail, etc. It enables real-time detection of fire, smoke, people flow, and abnormal behavior to prevent risks and reduce accidents. Managers can remotely oversee sites without being on-site, improving efficiency and reducing labor costs. The solution strengthens safety, streamlines operations, and accelerates digital transformation across manufacturing, public facilities, transportation, and retail environments.





Affiliated Ministry: NSTC
Exhibitor: Industrial Technology Research Institute
Contact: Jones Lo JonesLo@itri.org.tw

Exhibited Technology

Genraemon Ad Generation System

Technology Introduction

•Demonstrate the Genraemon system's video generation process, where a video can be created with one click after entering a prompt.
•Showcase video generation incorporating Taiwanese local elements, with simultaneous addition of sound effects and voice-over, volume adjustment, and content integration.
•Identified infringement risks in generative AI models and initiated a preliminary risk control framework.
Capture untapped market potential, reducing marketing costs, boosting competitiveness, and creating new AI-driven job opportunities.

Industry Applicability

Capture untapped market potential, reducing marketing costs, boosting competitiveness, and creating new AI-driven job opportunities.

Affiliated Ministry: NSTC

Exhibitor: Phison Electronics Corp.

Contact: Steven Hung steven_hung@phison.com

Exhibited Technology

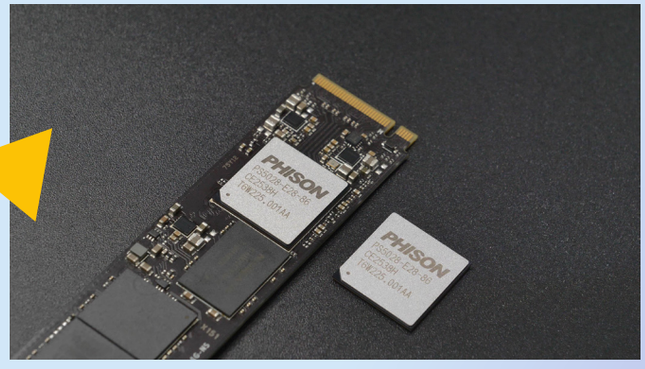
Advanced GenAI Fine-tuning 6nm AI SSD Solution

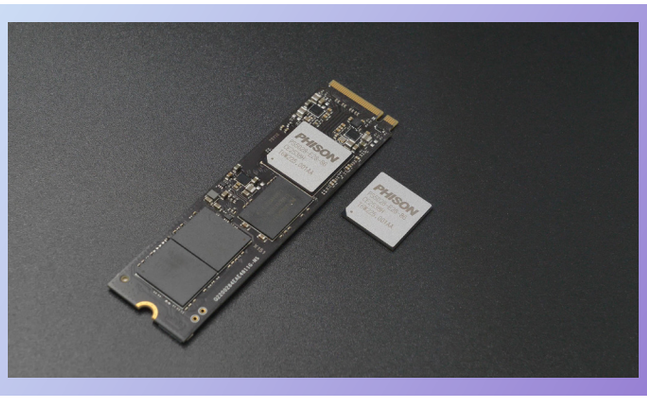
Technology Introduction

1. This solution ransforms traditional SSDs from passive storage devices into AI computational storage modules.
2. Increasing overall computing capability by 50% and shortens the hours of GenAI model training up to 90%.
3. Driving the rapid global adoption of generative AI applications across all industries.

Industry Applicability

E28 is built on leading TSMC 6nm process and Phison's exclusive patent for NAND flash serving as AI cache memory. This solution transforms traditional SSDs from passive storage devices into computational storage modules. It is provided with basic computational power to offload GPU tasks for greatly reduceing HBM and DRAM usage. E28 is a more cost-effective solution compare to the current high AI hardware costs.





Affiliated Ministry: NSTC
Exhibitor: Phison Electronics Corp.
Contact: Steven Hung steven_hung@phison.com

Exhibited Technology

GenAI Inference 6nm AI CSD Controller and Microservice Platform

Technology Introduction

1. Enable SSDs with GenAI inference while retaining native storage functions—AI inference becomes possible with a simple SSD replacement.
2. Distribute workload from the main GPU to maximize AI computing power utilization and efficiency.
3. Accelerate the widespread adoption of edge AI applications across all industries.

Industry Applicability

GenAI adoption has been limited by high deployment costs and cloud security risks. This project will develop the world's first integrated 6nm PCIe 6.0 AI computational storage controller and GenAI inference platform. With a simple SSD replacement, enterprises will be able to perform inference on the edge with beyond 30B parameters LLMs. This solution is designed to meet the future demand for edge inference across all industries.

Affiliated Ministry: NSTC

Exhibitor: Upbeat Technology

Contact: Melony Chiou melony.chiou@upbeattechtw.com

Exhibited Technology

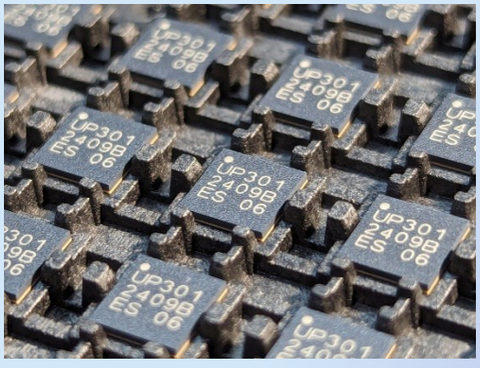
Ultra-Low Power AI SOC with Always-On Sensor Fusion and Full Auditory MEMS Noise-Resistant voice vibration sensor

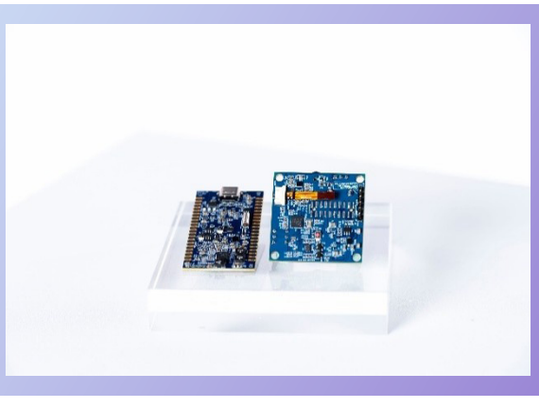
Technology Introduction

Ultra-Low Power AI SOC with Always-On Sensor Fusion
The Upbeat Technology UP301 is an ultra-low power AI SoC with always-on sensor fusion, enabling AI-AHRS modules for unmanned vehicles and edge AI applications. It delivers continuous, high-precision orientation and perception at microwatt-level power, combining innovation, sensor fusion, and award-winning recognition for next-generation intelligent sensing.
Full Auditory MEMS Noise-Resistant voice vibration sensor
The Full Auditory MEMS noise-resistant voice vibration sensor covers the entire human hearing range. It not only captures speech but also detects environmental sounds and structural vibrations. With built-in noise reduction and high sensitivity, it ensures clear recognition even in noisy settings, ideal for wearables, unmanned vehicles, and smart city applications.

Industry Applicability

The UP301 ultra-low power AI SoC with always-on sensor fusion enables broad applications in unmanned vehicles, smart wearables, and smart cities. It delivers precise orientation and extended endurance for autonomous platforms, continuous monitoring and natural interaction for wearables, and efficient edge sensing for traffic, safety, and sustainable urban management.





Affiliated Ministry: NSTC
Exhibitor: Upbeat Technology
Contact: Melony Chiou melony.chiou@upbeattechtw.com

Exhibited Technology

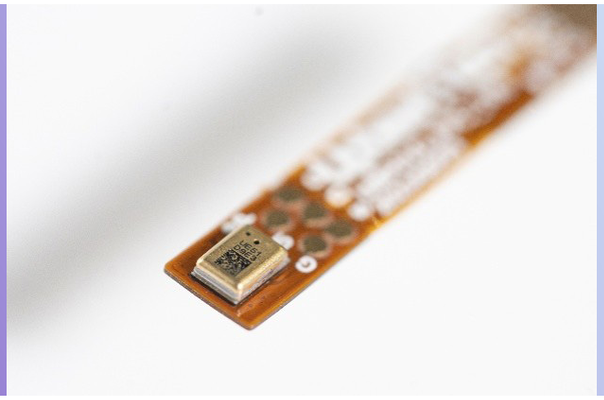
Full Auditory MEMS Noise-Resistant voice vibration sensor

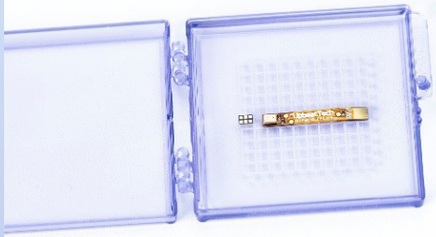
Technology Introduction

The Full Auditory MEMS noise-resistant voice vibration sensor covers the entire human hearing range. It not only captures speech but also detects environmental sounds and structural vibrations. With built-in noise reduction and high sensitivity, it ensures clear recognition even in noisy settings, ideal for wearables, unmanned vehicles, and smart city applications.

Industry Applicability

The Full Auditory MEMS noise-resistant voice vibration sensor offers wide bandwidth for diverse smart applications. In unmanned vehicles, it enhances environmental awareness and safety; in wearables, it supports clear voice interaction and health tracking; in smart cities, it aids traffic and safety monitoring; and in smart factories, it enables abnormal sound detection for predictive maintenance.





Affiliated Ministry: NSTC

Exhibitor: National Yang Ming Chiao Tung University

Contact: Liu, Chien-Nan Jimmy jimmyliu@nycu.edu.tw

Exhibited Technology

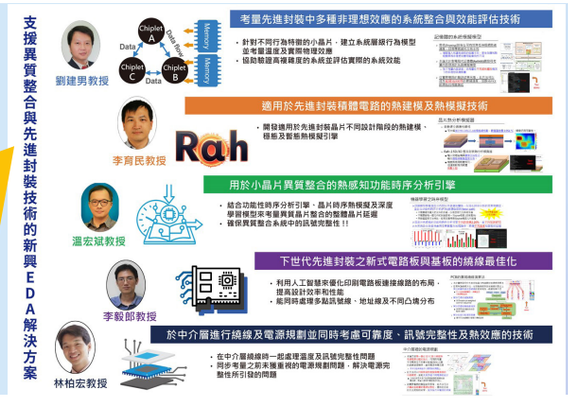
EDA solutions for Heterogeneous Integration and Advanced Packaging Technologies

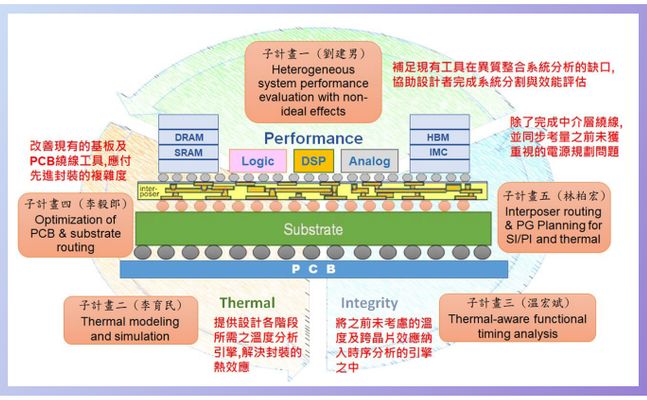
Technology Introduction

This project develops an EDA tool chain for advanced packaging designs. From the system performance evaluation, full-chip thermal simulation and timing analysis, to the physical design for chip-package co-optimization, we all have plans to solve the design bottleneck. Finally, those solutions will be integrated to ITRI's open EDA platform to help local industry deal with advanced packaging issues.

Industry Applicability

Advanced packaging is key to boosting chip performance, but EDA tools are dominated by global companies, limiting local innovation. To address new design challenges, we integrate academic EDA research to develop tool chain for next-gen chip design, build local EDA design flow, and use ITRI's open EDA platform to help companies adopt these tools and successfully develop advanced packaging products.





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Booth: FK08

Affiliated Ministry: NSTC
Exhibitor: Industrial Technology Research Institute
Contact: Lin, Chung-Wei linchungwei@itri.org.tw

Exhibited Technology

Generative AI for PLC Program Generation and Intelligent Automation Control

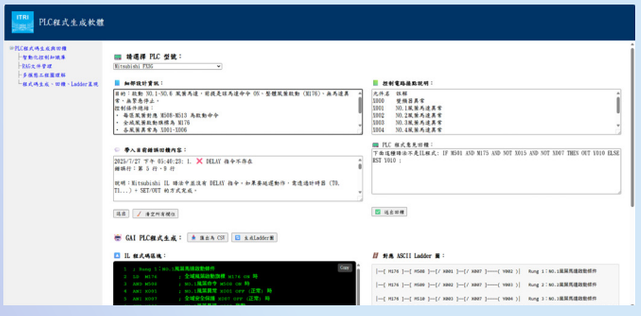
Technology Introduction

The GAI PLC Program Generation Software leverages Multi-Style Prompting to strengthen Retrieval-Augmented Generation (RAG) in domain-specific knowledge applications. By employing in-context learning, it integrates engineer feedback seamlessly into subsequent prompt iterations, ensuring the generation of comprehensive and highly accurate PLC control programs, encompassing both control logic design and I/O point configuration.

Industry Applicability

As smart manufacturing advances, demand for flexible PLC control grows, especially in multi-model and complex settings where traditional programming is slow and error-prone. Using generative AI, the system auto-generates PLC programs with control logic and I/O design. Tests show 90%+ accuracy, improving SI efficiency and quality in metal, heat treatment, and semiconductor industries.





Affiliated Ministry: FK10

Exhibitor: Institute for Information Industry

Contact: Jian Wei Liao jianweiliao@iii.org.tw

Exhibited Technology

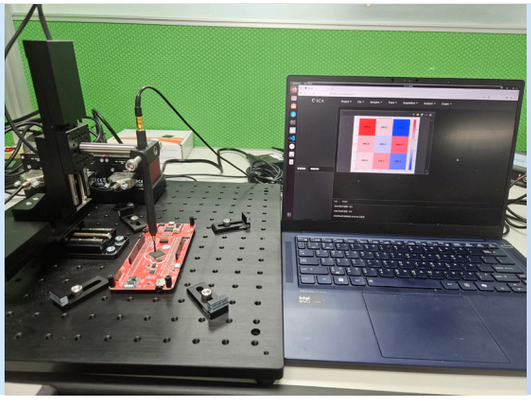
Post Quantum Side-Channel Analysis & Leakage Evaluation System (PQ- SCALES)

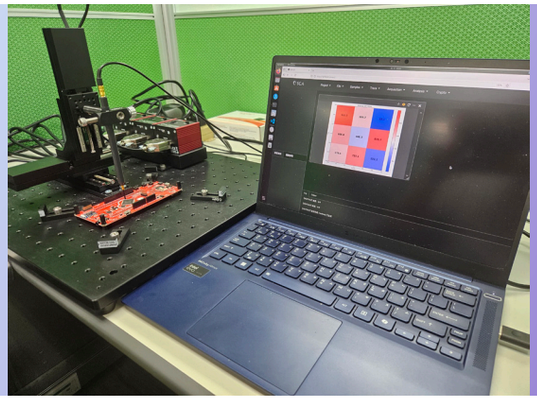
Technology Introduction

Technological Innovation – Supports PQC (FIPS 203/204/205) and classic algorithms with a modular workflow for efficient, standardized side-channel testing.
Competitive/IP Advantages – International patents, full PQC compliance, local innovation, lower cost.
Important Achievements – Used for PQC chip pre-assessment at semiconductor firms; aligned with global standards.

Industry Applicability

This system enables semiconductor and cybersecurity industries to test post-quantum and traditional algorithms in chips, finding weaknesses early. It supports pre-assessment before launch, lowering certification risks and costs. With low cost and high efficiency, it suits R&D and can extend to finance, telecom, and government security.





Affiliated Ministry: NSTC
Exhibitor: Industrial Technology Research Institute
Contact: Yu-Ju Chuang yujuchuang@itri.org.tw

Exhibited Technology

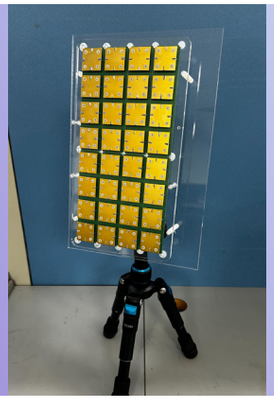
6G RF chip and antenna array technology

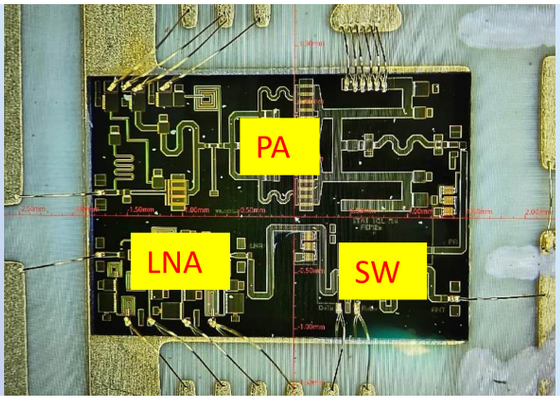
Technology Introduction

ITRI has developed innovative, patented four port integrated antenna technology. This technology successfully doubles the number of antennas within the same array area. The independently developed 6G FR3 band RF front-end chip shows high linearity and efficiency. The close integration of the chip and antenna module further reduces connection losses and improves module efficiency.

Industry Applicability

As 5G progresses to 6G technology, demand for RF chips is expected to increase tenfold. The cost of RF front-end chip will be significant for 6G base station RU equipment. Therefore, the development of 6G FR3 RF chipset and antenna array technology will enhance the competitiveness of Taiwan's base station industry and help Taiwan's supply chain create 6G business opportunities.





Affiliated Ministry: NSTC

Exhibitor: Industrial Technology Research Institute

Contact: Berra Chang BerraCJChang@itri.org.tw

Exhibited Technology

Ultra-thin Camera Module

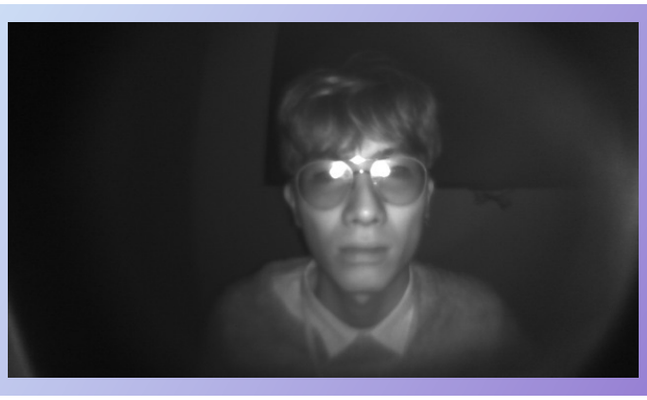
Technology Introduction

Establishing a comprehensive domestic core technology for METAOPTICS product prototype development, covering the entire process from design, fabrication, and validation to final mass production. This initiative aims to assist manufacturers in developing miniaturized visual lens solutions. By integrating chip-based fabrication techniques with three-dimensional nanopillar structures, the optical phase distribution can be precisely controlled, enabling the planarization and chip integration of traditional lens functions. This significantly reduces the overall size and weight of camera systems while simplifying the complex assembly process required for stacking multiple lenses. The technology allows a single metalens to replace multiple conventional plastic lenses, helping manufacturers enter application markets such as ultra-thin laptops, AR/VR glasses, and portable devices, and providing high-performance, lightweight visual sensing solutions.

Industry Applicability

The scope of this technology includes optical module manufacturers for portable devices. For vision-sensing camera applications, it enables the lightweight and thin design of traditional lenses while reducing sensitivity to vibration caused by multi-element stacking. In addition to lightweight camera use cases, it is also applicable to robotic vision and environmental sensing applications.





Affiliated Ministry: NSTC
Exhibitor: The Artificial Intelligence Evaluation Center(AIEC)
Contact: SUYU TSAI AIECService@aiec.org.tw

Exhibited Technology

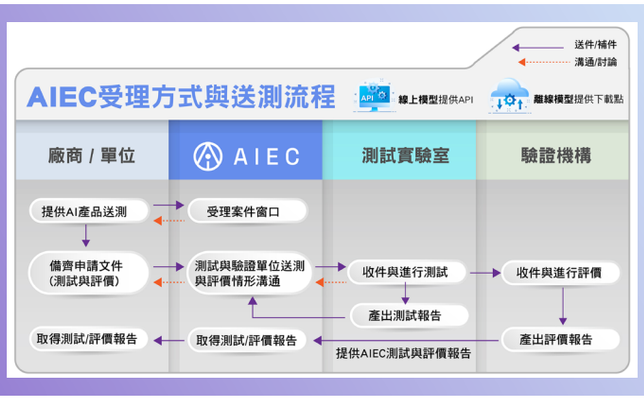
Build Trust in AI, Start with the Artificial Intelligence Evaluation Center(AIEC)

Technology Introduction

To meet national and industrial needs for AI system evaluation, the Ministry of Digital Affairs (MODA) established the Artificial Intelligence Evaluation Center (AIEC) in December 2023. Focusing on evaluation infrastructure and global alignment, AIEC aims to build Taiwan's independent AI assessment system and internationally recognized testing frameworks.

Industry Applicability

Taiwan is building a trusted AI evaluation framework that blends global standards (NIST, ISO) with local strengths like Traditional Chinese. The nation's first AI testing lab and certification body will provide internationally recognized third-party reports for government and industry adoption. Initial focus is on five areas for language models—fairness, accuracy, reliability, privacy, and security—with expansion into image and multimodal AI to drive innovation with trust.





Booth: FK16

Affiliated Ministry: NSTC

Exhibitor: Blumind Inc.

Contact: Niraj Mathur niraj.mathur@blumind.ai

Exhibited Technology

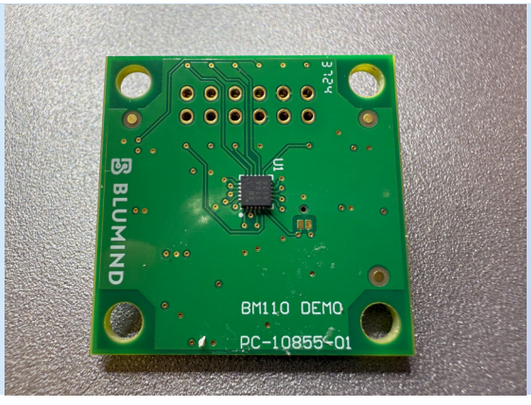
Ultra-low power analog processor for AI inferencing

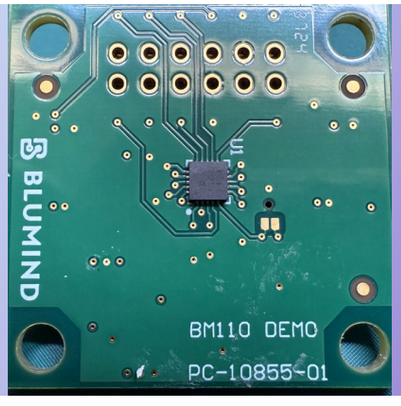
Technology Introduction

Blumind's proprietary all-analog semiconductor architecture mimics the human brain and delivers the most efficient power profile possible for AI inferencing applications. Blumind's IP implements a relative ratiometric quantized approach to critical AI operations i.e MAC, activation, decision and propagation operations, completely in the analog domain and with a single transistor!
Blumind's IP solves process, voltage temperature and drift challenges, inherent in analog AI solutions, while maximizing performance and reliability. Blumind can reduce power consumption for most inferencing applications by 100-1000+ times compared with today's digital chips.
Blumind has received several global awards and recognitions for its disruptive approach to AI processing. Blumind was the recipient of the 2023 best startup at Computex Taiwan, MWC top 50 award 2024 Spain, EEtimes 100 top startups 2024 USA, SWITCH top 10 startup 2024 Singapore, Techradar top 10 AI hardware companies 2025 USA.

Industry Applicability

We are targeting edge AI applications that require expreme performance and energy effeciency. The market segments include automotive, consumer wearables, medical devices, IoT, AR/VR and robotics.





Affiliated Ministry: NSTC
Exhibitor: EndoSemio Co., Ltd.
Contact: Ruby Hung info@endosemio.com

Exhibited Technology

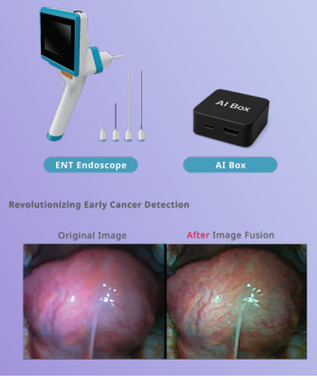
NBI Fusion AI-Powered ENT Endoscope: Next-Gen Nasopharyngeal Cancer Early Detection

Technology Introduction

EndoSemio's AI-powered ENT endoscope fuses narrow-band and white light imaging to highlight vascular changes linked to early nasopharyngeal cancer. Using a CNN+LSTM AI model trained on a large clinical database, it enables rapid, real-time identification of high-risk lesions—bringing advanced cancer screening to ENT clinics and reducing diagnostic delays.

Industry Applicability

This technology enables ENT clinics to adopt AI-driven cancer screening without relying on expensive imaging infrastructure. By integrating real-time vascular analysis into standard ENT endoscopy, it lowers diagnostic barriers in high-risk regions. It supports early detection, reduces specialist workload, and accelerates industry adoption of intelligent diagnostic tools.





Affiliated Ministry: NSTC

Exhibitor: GalaVerse Ltd Corp

Contact: Jackson Ou jackson.Ou@galaverse-solutions.com

Exhibited Technology

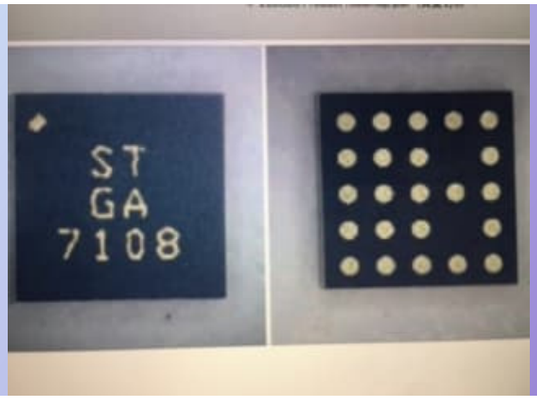
RF AI Sensing and Space Connectivity

Technology Introduction

We combine artificial intelligence with sensor hardware to enable smarter, more context-aware systems. These technologies are revolutionizing sectors like autonomous vehicles, drones, robotics, healthcare, security, and consumer electronics by turning raw sensor data into actionable intelligence.

Industry Applicability

AI-driven sensing refers to the integration of machine learning or deep learning algorithms into systems that collect data from the physical world—using sensors and RF transceivers.



Affiliated Ministry: NSTC
Exhibitor: AlixLabs AB
Contact: Amin Karimi amin@alixlabs.com

Exhibited Technology

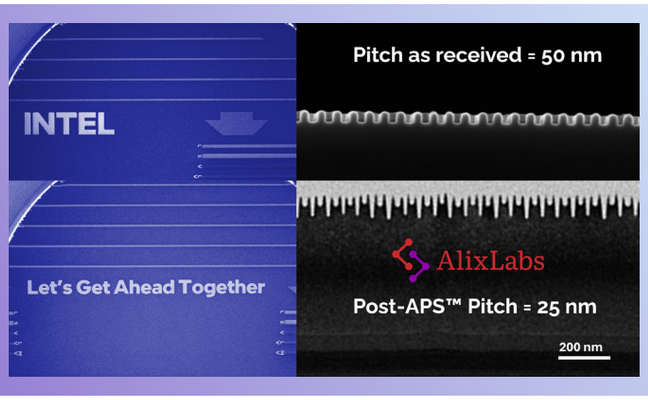
Atomic Layer Pitch Splitting: a breakthrough equipment solution for advanced semiconductor manufacturing.

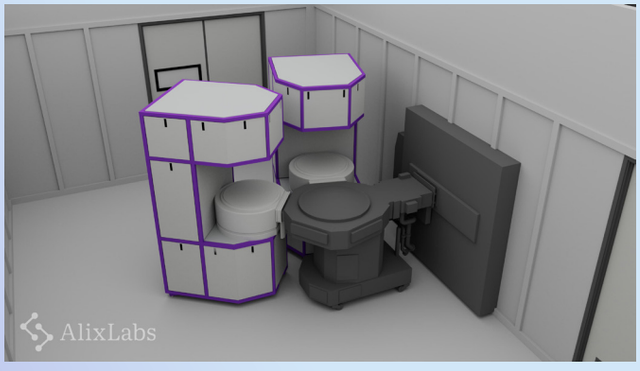
Technology Introduction

AlixLabs' unique and patented Atomic Layer Pitch Splitting (APS) is a novel plasma-based etching method that selectively targets surface topology. This breakthrough technology eliminates several complex steps in chip manufacturing, enabling more efficient, cost-effective, and sustainable semiconductor production.

Industry Applicability

APS enables cost-efficient scaling of semiconductor devices by doubling pattern density. It reduces manufacturing costs, lowers energy use, and supports sustainable, high-volume production. Applicable in logic, memory, and power devices, APS accelerates industrial adoption with scalable chip manufacturing.





Booth: FK20

Affiliated Ministry: NSTC

Exhibitor: Polaris Electro-Optics, Inc.

Contact: Li-Yuan Chiang liyuan.chiang@polariseo.com

Exhibited Technology

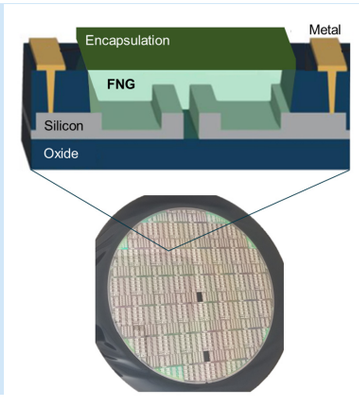
Silicon Photonic High-Speed Modulators for 400Gbps+/ Lane Enabled by Ferroelectric Nematic Glass

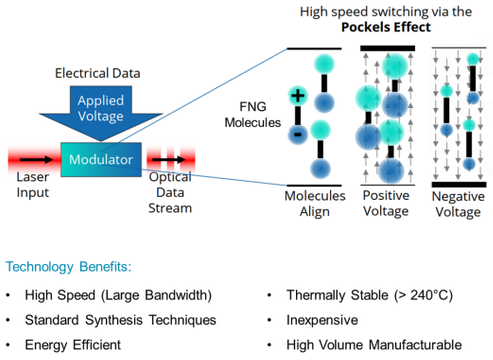
Technology Introduction

Polaris Electro-Optics is pioneering high-speed silicon-organic modulators to overcome data rate bottlenecks in conventional silicon photonics. Our proprietary Ferroelectric Nematic Glass (FNG) material exploits the Pockels effect and unique silicon photonic modulator design to enable fast, energy-efficient optical modulation.

Industry Applicability

Our technology is developed to address the surging demand for high-speed data transfer across data centers, telecommunications, AI infrastructure, and optical computing. FNG is integrated onto silicon photonic ICs post-foundry, without modifying standard fabrication processes, delivering superior performance, manufacturability, and scalability.





Affiliated Ministry: NSTC
Exhibitor: PurCity ApS
Contact: Morteza G. Eftekhar mge@purcity.com

Exhibited Technology

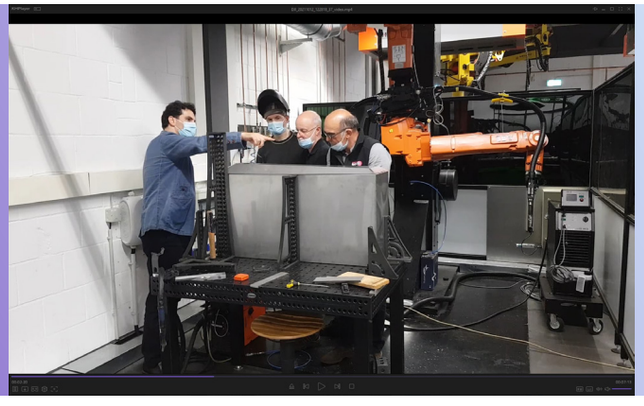
GapS panels

Technology Introduction

PurCity's patented GapS facade panels revolutionize buildings.
They act as substitutes for traditional exteriors, drawing in polluted air via natural ventilation, and purified via a harmless chemical process, trapping PM2.5 (+50%), PM10 (+90%) & VOCs. Integrated with HVAC, GapS provides cleaner, colder air (-5 to -10° C, proven at Toyota pilot), cutting HVAC energy use by up to 60%.
It is integrated with AI/ML to ensure peak performance.

Industry Applicability

PurCity's technology applies to various industries, including construction, HVAC, and manufacturing. It's implemented in new builds and retrofits to improve energy efficiency and air quality. Benefits include significant energy savings, reduced carbon footprint for ESG compliance, and enhanced brand value through verifiable sustainability. It's a key solution for companies facing carbon taxes and seeking to create smarter, healthier buildings.
In order to ensure the peak performance, GapS incorporates (Air2Pure.com) an AI-Driven Sustainability & Carbon Footprint Optimization (HaaS & SaaS) for Industrial Applications Real-Time Tracking, Predictive Control, & Automation





Affiliated Ministry: NSTC

Exhibitor: HyperAccel Co., Ltd.

Contact: Seungjae Moon sj.moon@hyperaccel.ai

Exhibited Technology

Bertha

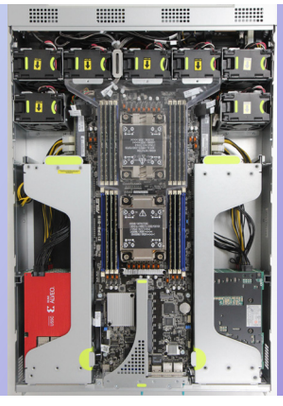
Technology Introduction

Bertha is a 4nm AI prcocessor with LPDDR5x, designed for efficient Generative AI inference. Since infernece is bottlenecked by memory, Bertha has streamlined memory access and LLM-optimized compute dataflow to achieve 90% bandwidth utilization compared to GPU's 50%. It features highly scalable chip-to-chip networking to accelerate models of any scale. Bertha delivers 2x higher performance, 3x lower power consumption, and 10x better cost than GPUs.

Industry Applicability

Bertha significantly reduces the total cost of ownership of cloud service providers when running Generative AI services and encourages wider adoption of AI in more diverse industries. Bertha is expected to replace the expensive GPUs from the datacenters for greater sustainability. Since Bertha is scalable, we also apply Bertha in edge computing to enable personalized AI in IoT devices and home appliances.





Affiliated Ministry: NSTC
Exhibitor: 3D Architech, Inc.
Contact: Kai Narita knarita@3d-architech.com

Exhibited Technology

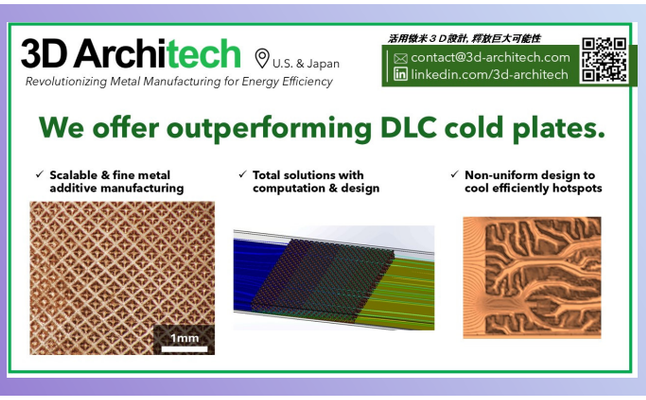
Metal manufacturing for energy efficiency improvement

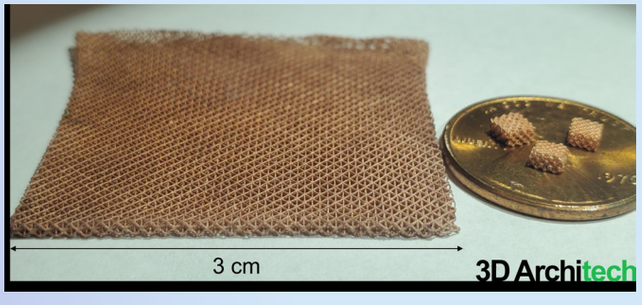
Technology Introduction

3D Architech's core technology is a gel-based metal 3D printing process that achieves 10-micron resolution—10× finer than conventional methods—enabling custom, high-performance cooling and energy components at a fraction of the cost.

Industry Applicability

Our gel-based metal manufacturing technology enables micro-architected copper cold plates tailored for AI chip cooling. It achieves custom micro-architected design with 10-micron precision, reduces electricity costs for data center cooling by up to 60%, and supports rapid customization for new chip designs, driving efficiency and scalability in the AI industry.





Booth: FK24

Affiliated Ministry: NSTC

Exhibitor: DeepMentor Inc.

Contact: Johnny johnny.chiu@deepmentor.ai

Exhibited Technology

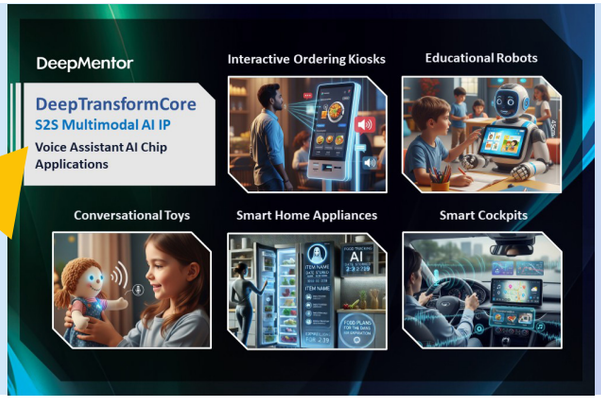
Hi-Hi: Realtime Edge AI Speech-to-Speech Multimodal Interactive Module

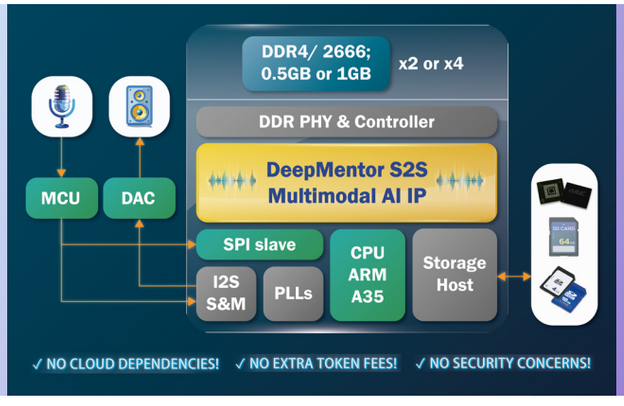
Technology Introduction

- <0.5s Instant Response — Ultra-low latency interaction
'- On-Premise AI — Works without internet connection, ensuring data privacy
'- Multimodal Interaction — Speech-to-Speech and Vision integration
'- Complete Edge AI Toolchain — Developers can easily create tailored experiences by our labeling and finetuning tools to train and build domain-specific knowledge
'- Built-in Echo and Noise Reduction IP

Industry Applicability

DeepMentor's latest innovations are transforming human-machine interactions by moving away from button-based interfaces to seamless, natural conversations. This voice-first approach provides a hands-free, intuitive, and accessible UI/UX for people of all ages and abilities. It is expected to be integrated into applications such as smart cockpits, smart home appliances, companion robots, and interactive kiosks.





Affiliated Ministry: NSTC
Exhibitor: Brilliant Silicon Technology Co., Ltd.
Contact: Ming-Fong Lei mf.lei@bsisemi.com

Exhibited Technology

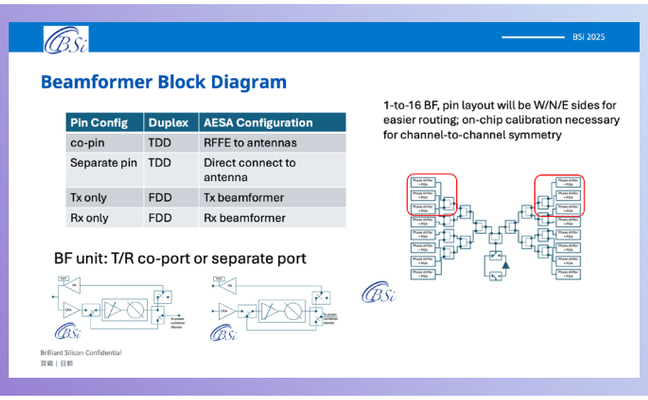
RF Chipset for Low Earth Orbit(LEO) user terminal

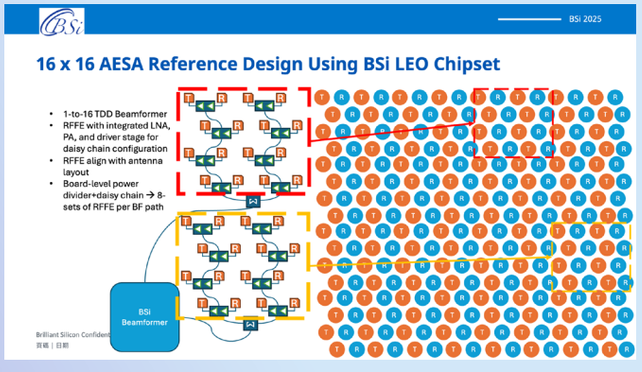
Technology Introduction

- Power-efficient, high performance RF chips on silicon CMOS including beamformer (BF), power amplifier (PA), low-noise amplifier (LNA), frequency converter and controller chip for AESA system
'- Separate sets for different frequencies: Ku-band, Ka-band, and higher frequency bands
'- Modular CMOS RF blocks allow mix-and-match, reuse, and integration (BF+PA, LNA+PA, etc.)

Industry Applicability

AESA controls phase and amplitude of individual component in an antenna phase array electronically, eliminating need for mechanical parts and extremely fast response time (<100nS). Beamformers and RF front end ICs are the most important components in an AESA. AESA can be used in LEO communication system (UT & satellite), and also for radars.





Booth: FK26

Affiliated Ministry: NSTC

Exhibitor: femtoAI

Contact: Sam Fok sam@femto.ai

Exhibited Technology

Sparse Processing Unit 001 (SPU-001)

Technology Introduction

femtoAI's core technology is an Embedded AI Platform that uses sparsity to achieve ultra-efficient neural network inference—skipping unnecessary computations and storage. This results in up to 10x space and 100x energy efficiency gains. Our full-stack solution spans custom AI accelerator silicon and production-ready algorithms, co-designed to bring real-time intelligence to everyday devices.

Industry Applicability

femtoAI's ultra-efficient Embedded AI Platform powers intelligence in devices across industries—from audio and wearables to smart appliances. Our custom accelerator, SPU-001, together with AI models for speech enhancement and voice commands, delivers real-time, low-power intelligence that makes products smarter, smaller, and more sustainable.





FUTEX

Smart Healthcare

Affiliated Ministry: MOHW

Exhibitor: National Health Research Institutes

Contact: Li-Wei Kuo lwkuo@nhri.edu.tw

Exhibited Technology

MRI Compatibility Testing and Evaluation Platform for Medical Device and Implants

Technology Introduction

Within the MRI environment, strong magnetic fields and radiofrequency pulses may introduce potential safety risks for medical devices. Consequently, the evaluation of MRI compatibility for medical devices and implants have become a critical focus in recent medical device development. Our laboratory has established a comprehensive platform for MRI compatibility testing and evaluation. The testing procedures are conducted in accordance with ASTM standards, and we are able to provide test reports that comply with ISO 17025 requirements. This enables manufacturers to rigorously assess both the MRI compatibility and safety of their products.

Industry Applicability

We have successfully established this testing platform, thereby strengthening the MRI compatibility of medical devices and implants. The platform markedly improves the safety of such devices in MRI environments, while simultaneously facilitating domestic academic, industrial, and research institutions in obtaining regulatory approvals from international authorities. Consequently, it enhances both the global competitiveness and the intrinsic value of these medical device products.



Booth: FL01 352

Affiliated Ministry: MOHW

Exhibitor: National Health Research Institutes

Contact: Hsiu-Jung Lo hjlo@nhri.edu.tw

Exhibited Technology

METHOD AND KIT FOR IDENTIFYING DRUG-RESISTANT FUNGAL PATHOGEN

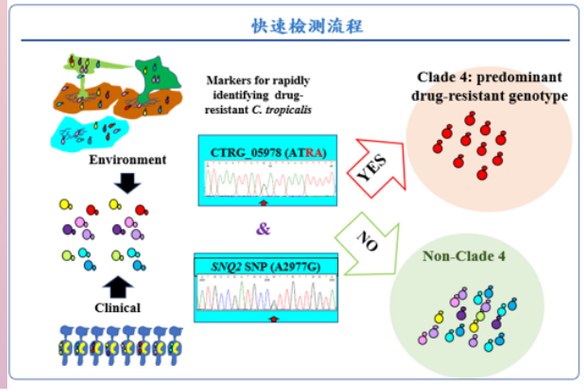
Technology Introduction

Fungal infections claim millions of lives each year. This technology focuses on the rapid and accurate detection of drug-resistant pathogenic fungi, enabling frontline clinical teams to perform timely diagnostics and enhancing the effectiveness of medicine. It is also applicable to large-scale screening, providing appropriate treatment guidance for fungal infections and thereby reducing their threat to public health.

Industry Applicability

This technology offers two rapid, convenient, and accurate approaches for detecting the drug-resistant clade 4 genotype of Candida tropicalis. One method is designed for large-scale screening and can be flexibly expanded. The other is tailored for frontline settings such as hospitals, clinics, and diagnostic laboratories to enable timely and efficient detection.





Affiliated Ministry: MOHW

Exhibitor: National Health Research Institutes

Contact: Dr. Chiou-Hwa Yuh chyuh@nhri.edu.tw

Exhibited Technology

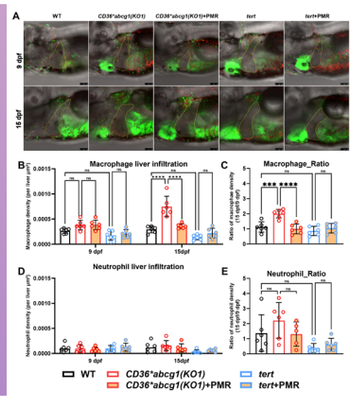
AI-PRS Assisted Integrative Medicine Decision-Making Platform: Focus on Liver Cancer and Zebrafish Models

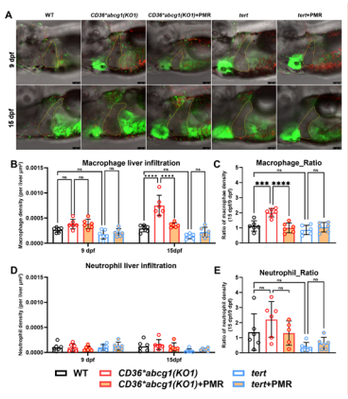
Technology Introduction

This technology integrates AI-PRS (Artificial Intelligence-guided Phenotypic Response Surface) with zebrafish liver cancer models to establish a visualized and quantifiable decision-making platform for integrative therapies. It rapidly identifies the optimal combinations of natural compounds and targeted drugs, achieving enhanced efficacy with minimized toxicity. The platform demonstrates strong translational potential, offering a novel tool for personalized therapy design and exhibition-ready applications.

Industry Applicability

Integrating AI computation with zebrafish in vivo modeling and an East-West integrative medical perspective, the platform rapidly evaluates the efficacy and toxicity of drug combinations in physiological contexts. Compared with conventional cell-based assays, it offers superior accuracy and efficiency. Potential applications include natural product drug development, personalized dosing optimization, and AI-powered clinical decision support systems, with significant commercialization and international collaboration prospects.





Affiliated Ministry: MOHW

Exhibitor: National Health Research Institutes

Contact: Dr. Chia-Chyi Liu 010113@nhri.edu.tw

Exhibited Technology

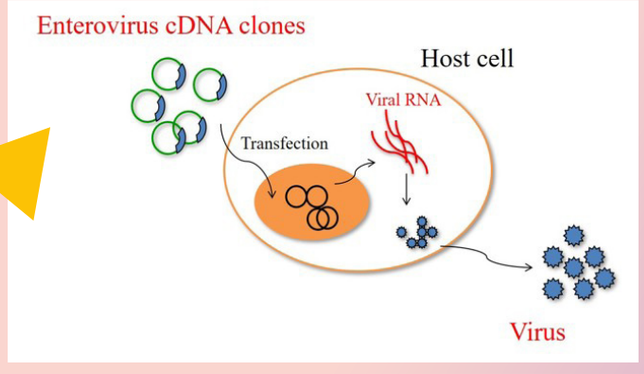
Construction of enterovirus strains using reverse genetic platform

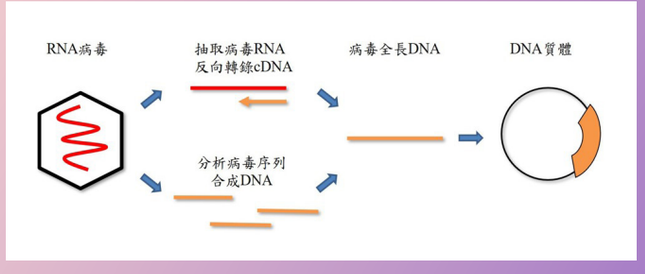
Technology Introduction

Reverse genetics is an important recombinant DNA technology used to study the function of RNA viral genes. This technology can be used to create full-length, infectious cDNA clones of enteroviruses, generating pure enterovirus strains and avoiding the quasispecies resulting from errors in RNA virus replication. Alternatively, mutant strains can be generated through point mutations to study the characteristics caused by enterovirus gene mutations.

Industry Applicability

This project develops a technology platform for bioeconomy to assist and support the local bio-industry in developing the emerging enterovirus vaccines, thereby promoting the development of the local pharmaceutical and biotechnology industry.





355 Booth: FL04

Affiliated Ministry: MOHW

Exhibitor: National Health Research Institutes

Contact: YANG,PEY-YEA peyyea@nhri.edu.tw

Exhibited Technology

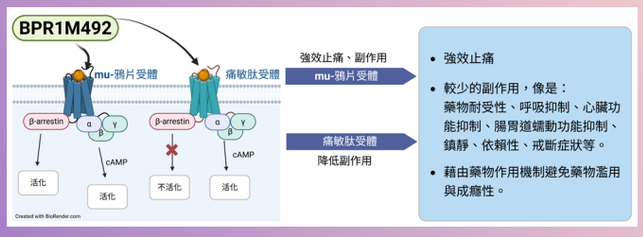
BPR1M492 – Novel and Fast Acting Opioid Analgesic

Technology Introduction

This technology is a fast-acting dual-agonist that simultaneously activates □-opioid receptor and nociceptin receptor, exhibiting high safety. It rapidly activates □-opioid receptor to effectively relief pain. Additionally, it can reduce drug tolerance, enhance safety, and alleviate constipation by activating nociceptin receptor. The promotion of this technology will be facilitated through the postoperative pain market.

Industry Applicability

- Innovation: Novel small molecule MOR/NOP dual agonist providing rapid pain relief.
- Safety Advantage: No hematological or biochemical toxicity, minimal gastrointestinal effects, and absence of tolerance development.
- Market Positioning: Best-in-class small molecule MOR/NOP dual agonist analgesic.
- IP Protection: Robust global patent protection for compound composition.



	Olinvyk	BPR1M492 (新結構新藥)	嗎啡
	於 2020 年上市的新穎鴉片類止痛藥，用於術後痛。		
熱源止痛效果	強效 (嗎啡 4 倍)	強效 (嗎啡 40 倍)	
止痛起始時間	速效 10 分鐘	速效< 5 分鐘	較慢 20 分鐘
術後痛止痛 (10 分鐘)	強效	強效	無效
便祕副作用	強	中等	強
止痛耐受性	無	無	有
最大耐受劑量	安全 (嗎啡 21 倍)	安全 (嗎啡 205 倍)	
戒斷症狀	中等	輕微	強
生產成本	需經過不對稱管柱分離，成本高	原料較便宜，合成步驟短，成本較低	天然物純化，成本極低
給藥途徑	靜脈注射	微針貼片、皮下注射	口服、靜脈注射

Affiliated Ministry: MOHW

Exhibitor: National Health Research Institutes

Contact: Yu-Jung Yeh yjyeh@nhri.edu.tw

Exhibited Technology

NHRI Laboratory Animal Center: Animal Care, Technical, and Research Support

Technology Introduction

The Laboratory Animal Center: Enabling Excellence in Animal Research
1.Globally Accredited: Four consecutive full accreditations from AAALAC international
2.State-of-the-Art Facilities: Specialized zones for rodent housing, infectious studies, experiments, surgeries, and centralized cleaning & sterilization
3.Expert teams: Comprehensive animal care, technical and veterinary support
4.Education and Ethics: Foundational training programs in animal experimental techniques, promoting the 3Rs principle and animal welfare
5.Advanced Service Platforms: Husbandry, health monitoring, drug administration, biosampling, behavioral phenotyping and transgenic technologies
6. Innovative Technology: RodentWatch AI system leveraging deep learning for automated behavioral and neuroscience research

Affiliated Ministry: MOHW

Exhibitor: National Health Research Institutes

Contact: Liu, Shu Chih sandyliu@nhri.edu.tw

Exhibited Technology

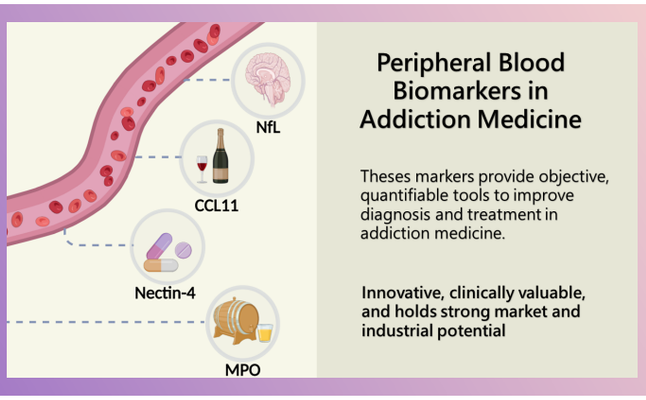
METHODS FOR PREDICTION, DETECTION AND MONITORING OF SUBSTANCE USE DISORDERS AND/OR AN INFECTION

Technology Introduction

This technology uses peripheral blood biomarkers—NfL for brain injury, CCL11 for stress-induced alcohol use, Nectin-4 for opioid/ketamine addiction, and MPO for alcohol relapse. These markers provide objective, quantifiable tools to improve diagnosis and treatment in addiction medicine. The approach is innovative, clinically valuable, and holds strong market and industrial potential.

Industry Applicability

This technology supports clinical diagnostics, precision medicine, and telehealth by enabling objective assessment of addiction and brain injury. Biomarkers can be integrated into platforms like SIMOA and ELLA to develop new tools. It aids personalized care and offers value in public health and clinical training.




用於預測、檢測和監測物質使用障礙症及/或感染的方法

國家衛生研究院神經及精神醫學研究中心,劉玉麗, 林彥鋒,以及群體健康科學研究所, 鍾仁華, 鄒小蕙

蛋白質(全名)	臨床用途	適應症
NFL (Neurofilament light chain)	檢測腦神經受損嚴重程度，以及關於腦損傷的嚴重症 Evaluation of the extent of neurological damage and the presence of depression related to brain injury	神經受損，神經退化性疾病，嚴重症 Neuronal damage, neurodegeneration and depression
Eotaxin-1 (CCL11) (C-C motif chemokine 11)	1.應用於因慢性壓力導致神經退化，包含失智症風險 Applicable to neurodegenerative processes induced by chronic stress, including an increased risk of dementia 2.與菸鹼依賴和尼古丁依賴的嚴重程度有關 Associated with the severity of alcohol and nicotine dependence	年齡性神經退化及慢性壓力 Age-associated neurodegenerative changes and chronic stress
Nectin-4 (Nectin cell adhesion molecule 4)	檢測經過使用類 K、K色命或濫用的依賴嚴重程度 Evaluating the severity of substance dependence associated with prolonged use of opioids, ketamine, or alcohol	經過使用類 K 或K色命藥物 Chronic use of opioids or ketamine
MPO (Myeloperoxidase)	酒精濫用，其與濫用年齡、酒精依賴、與嗜中性球(neutrophil)相關病變 Alcohol abuse, its association with age of onset, alcohol dependence, and neutrophil-related pathologies	判斷是否酒精成癮 Evaluate for alcohol use disorder (AUD)
IP-10 (C-X-C motif chemokine 10)	檢測感染愛滋病或C型肝炎 Screening for Human Immunodeficiency Virus (HIV) or Hepatitis C Virus (HCV) Infection	心臟反應及HIV和HCV感染 Cardiovascular reactivity associated with HIV and hepatitis C virus (HCV) infections
CDH2 (Cadherin-2, N-cadherin)	HIV感染與美沙冬療效預估 HIV infection and prediction of methadone treatment efficacy	HIV感染及美沙冬療效 HIV infection and the therapeutic efficacy of methadone maintenance treatment (MMT)
CASP-10 (CASPASE 10)	檢測HBV感染篩 Screening for Hepatitis B Virus (HBV) Infection	海洛因過量及HBV感染 Heroin overdose and hepatitis B virus (HBV) infection
ADAM-10 (Disintegrin and metalloproteinase domain-containing protein 10)	檢測物質使用後的突觸病變(synaptopathy) Evaluation of synaptic pathology (synaptopathy) induced by substance use	檢測物質使用後的突觸病變(synaptopathy) Evaluation of synaptic pathology (synaptopathy) induced by substance use
IL-7 (Interleukin-7)	HIV感染 HIV Infection	HIV感染 HIV Infection

FUTEX

Affiliated Ministry: MOHW

Exhibitor: National Health Research Institutes

Contact: Shie-Liang Hsieh slhsieh@nhri.edu.tw

Exhibited Technology

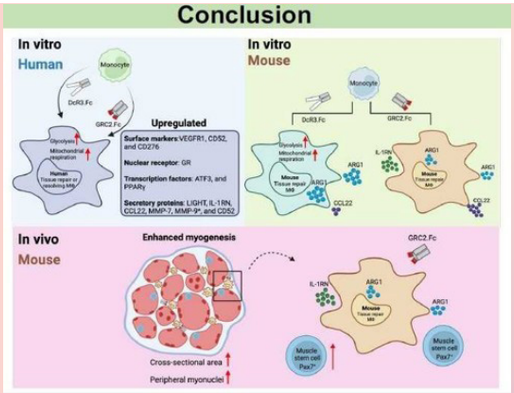
FUSION PROTEIN FOR INDUCING TISSUE REPAIR MACROPHAGES AND USES THEREOF

Technology Introduction

The present disclosure relates to a fusion protein comprising a peptide binding to heparan sulfate binding activity and an IgG Fc region. The present disclosure also relates to a method for promoting macrophage and/or megakaryocyte differentiation and/or maturation.

Industry Applicability

The present disclosure is a novel strategy for treating wounds and/or tissue damage, which can be applied to regenerative medicine.



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Booth: FL08

Affiliated Ministry: MOHW

Exhibitor: National Health Research Institutes

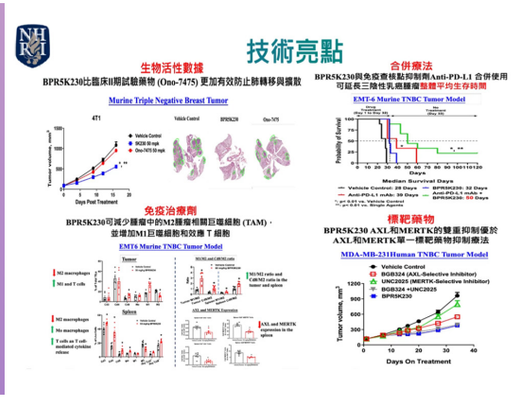
Contact: Pey-Yea Yang peyyea@nhri.edu.tw

Exhibited Technology

Novel cancer immunotherapeutic agent targeting tumor and tumor immune microenvironment for the treatment of triple negative breast cancer

Technology Introduction

This invention describes the discovery and development of BPR5K230, a potent, orally bioavailable AXL and MERTK selective kinase inhibitor targeting tumor and tumor immune microenvironment for the treatment of triple negative breast cancer patients who fail current therapies and whose tumors and immune cells overexpress AXL and MERTK. The current invention represents a novel target-driven, patient-stratified precision cancer medicine for tough-to-treat cancers.





Affiliated Ministry: MOHW

Exhibitor: National Health Research Institutes

Contact: Yeh Hsin Ling hsinlingyeh@nhri.edu.tw

Exhibited Technology

The Long-Term Care Service Institution Resource Integration Platform

Technology Introduction

The Long-Term Care Service Institution Resource Integration Platform consolidates information from long-term care institutions nationwide. The platform is designed to enhance information transparency while reducing the administrative burden on service providers. It offers personalized service options and care consultation tailored to the needs of older adults. By providing an intuitive system for resource search and navigation, the platform increases the accessibility and convenience of obtaining care resources. Furthermore, it enables the public to share their experiences with service institutions, thereby fostering continuous improvement in the quality of long-term care services.

Industry Applicability

The Long-Term Care Service Institution Resource Integration Platform consolidates information from long-term care institutions nationwide. The platform is designed to enhance information transparency while reducing the administrative burden on service providers. It offers personalized service options and care consultation tailored to the needs of older adults. By providing an intuitive system for resource search and navigation, the platform increases the accessibility and convenience of obtaining care resources. Furthermore, it enables the public to share their experiences with service institutions, thereby fostering continuous improvement in the quality of long-term care services.

Affiliated Ministry: NSTC
Exhibitor: Academia Sinica
Contact: Chih-Cheng Chen chih@ibms.sinica.edu.tw

Exhibited Technology

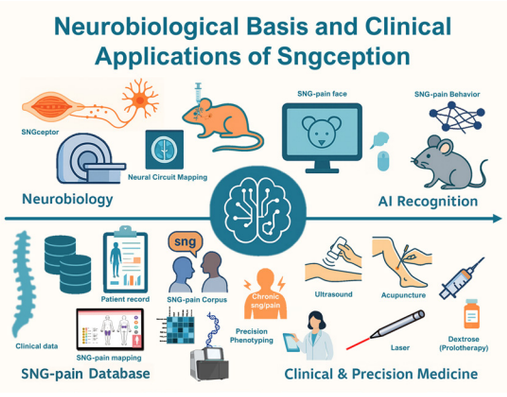
Neurobiological Basis and Clinical Applications of Sngception

Technology Introduction

This project defines "Sng" as a novel somatosensory modality distinct from pain. By integrating molecular neurobiology, clinical diagnosis, linguistic corpus studies, AI behavioral analysis, and precision therapies, the project develops dedicated diagnostic scales and multimodal interventions, improving identification and treatment of chronic sng-pain while also enhancing intercultural medical communication and advancing outcomes in global healthcare.

Industry Applicability

This technology integrates clinical and fundamental research, enabling widespread adoption of the sng assessment scale across healthcare institutions and advancing personalized care and precision medicine. AI systems support both patient diagnostics and animal model evaluations, improving accuracy and accelerating therapeutic validation. In parallel, linguistic corpus analysis enhances intercultural medical communication by clarifying how pain descriptors vary across languages, thereby fostering international collaboration in biomedical practice. This dual focus—scientific rigor in neurobiology and cultural insight in linguistics—strengthens Taiwan's competitive advantage, expanding industry-academia cooperation and setting a global benchmark in the research, diagnosis, and treatment of chronic sng-pain.





Booth: FM01

Affiliated Ministry: NSTC

Exhibitor: National Tsing Hua University

Contact: Zhi-Yong Chen zhiyongc@gapp.nthu.edu.tw

Exhibited Technology

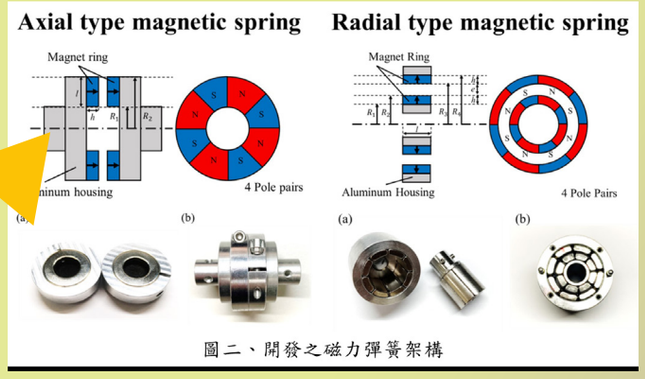
Development of a stiffness-variable robot for wrist rehabilitation using magnetic series elastic actuator

Technology Introduction

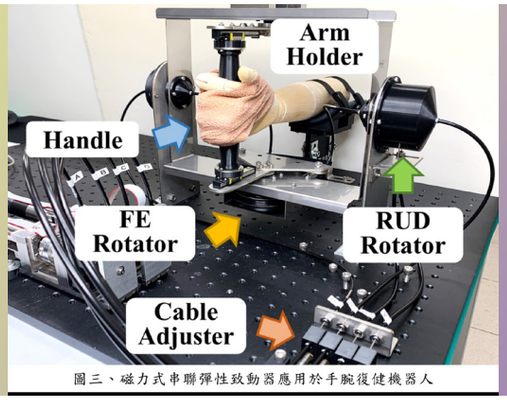
This technology develops an intelligent wrist rehabilitation robot to address wrist disorder challenges. It features a magnetic series elastic actuator for non-contact force transmission and adjustable stiffness to improve safety. A self-alignment mechanism and cable-driven design enable adaptation to various users and 2-DOF control. The device quantifies joint stiffness using torque and angle data and supports multiple rehabilitation strategies aligned with stroke recovery stages.

Industry Applicability

The magnetic series elastic actuator offers high safety and control stability, already applied in rehabilitation devices. Its adjustable parameters make it suitable for various industry needs. Applications include: 1. Humanoid robot hands, reducing contact force and weight; 2. Finger exoskeletons, meeting the stiffness adjustment needs of patients; 3. VR haptic devices, enhancing interaction with virtual environments. MSEA is versatile and holds great potential for industrial applications.



圖二、開發之磁力彈簧架構



圖三、磁力式串聯彈性致動器應用於手腕復健機器人

FUTEX

Bio-tech, New Drugs & Medical Devices

Affiliated Ministry: NSTC

Exhibitor: China Medical University

Contact: Yun-Hsuan Lee leeiumbiu8217@gmail.com

Exhibited Technology

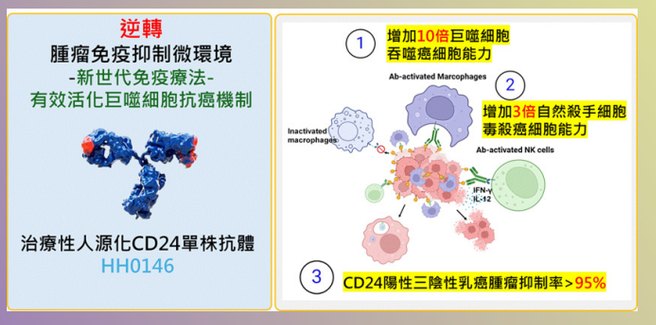
Therapeutic Humanized Anti-CD24 Monoclonal Antibody for Precision Targeted Therapy of Triple-Negative Breast Cancer

Technology Introduction

Triple-negative breast cancer lacks effective targeted therapies, posing a significant clinical challenge and unmet medical need. HH0146, a first-in-class humanized CD24 mAb developed in Taiwan, holds a Taiwan invention patent and has completed PCT filing. It specifically activates macrophages, promoting cancer cell phagocytosis and reshaping the tumor immune microenvironment. As a novel immune checkpoint inhibitor, HH0146 demonstrates exceptional anti-tumor efficacy.

Industry Applicability

HH0146, a first-in-class humanized CD24 mAb for triple-negative breast cancer, targets a global market projected to reach $1.5 billion by 2030 (10% CAGR). Its CD24-positive applicability extends to 14 solid cancers, including pancreatic and liver cancer. HH0146 will collaborate with CDMO partners for GMP production to accelerate IND applications. Plans include entering the U.S., China, and EU markets, attracting investment, and advancing Taiwan's biotech industry.





Booth: FM03

Affiliated Ministry: NSTC

Exhibitor: Chang Gung Medical Foundation

Contact: Shihhsien Wang wss8352@gmail.com

Exhibited Technology

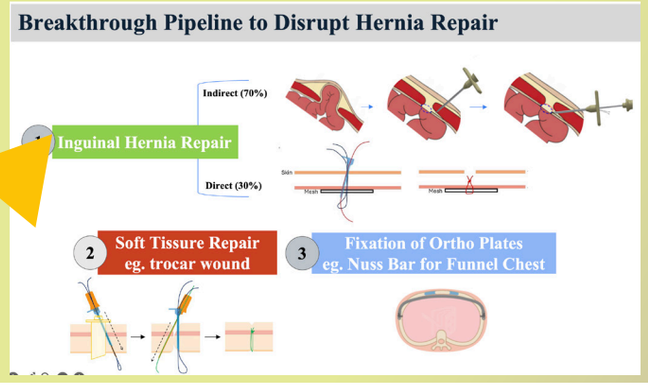
Advanced Percutaneous Internal Repair System

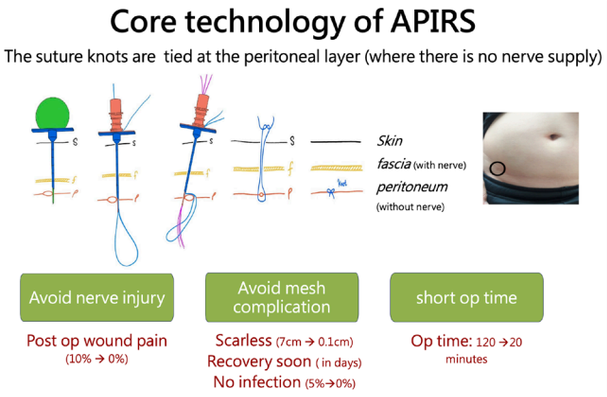
Technology Introduction

After identifying the hernia type under laparoscopy, the indirect hernia, comprising 70% of inguinal hernia, is closed using the APIRS. As the procedure is proceeded at the peritoneal level where no nerve supply. Patient will not feel pain after the operation and resume to daily activities quickly. For the rest 30% of direct hernia, we use the APIRS needles to fix the mesh. This needle set can also be used to close of trocar wounds and to fix the Nuss bar.

Industry Applicability

The APIRS could be widely used in many surgical fields, including 1. closure of indirect hernia (comprising 70% of inguinal hernia), 2. mesh fixation of direct hernia (comprising 30% of inguinal hernia). 3. fixation of Nuss bar during the funnel chest surgery. 4. Closure of trocar wounds in minimally invasive surgeries. The operation is simple, effective , and easy to learn.





Affiliated Ministry: NSTC

Exhibitor: Academia Sinica

Contact: Yin-Ru Chiang yinru915@gate.sinica.edu.tw

Exhibited Technology

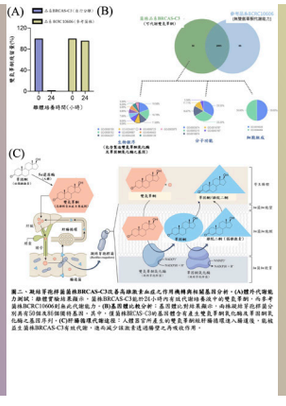
Innovative Development of Androgen-Metabolizing Probiotics: Functional Gut Microbiome Therapy for Hyperandrogenism Treatment

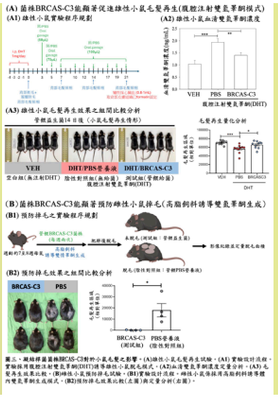
Technology Introduction

Our team discovered that probiotic Bacillus coagulans specifically metabolizes dihydrotestosterone, treating hyperandrogenism-related diseases like androgenic alopecia, prostate disorders, and polycystic ovary syndrome (PCOS). Mouse studies confirmed significant serum dihydrotestosterone reduction and hair loss prevention. We are developing functional gut bacteria through interdisciplinary microbiota-hormone research to address excessive androgen levels regulated by enterohepatic circulation.

Industry Applicability

We isolated Bacillus coagulans that specifically metabolize dihydrotestosterone, effectively reducing serum androgen equivalent. This technology creates new therapeutic pathways for hyperandrogenism conditions. Industrial applications include: (1) functional probiotic health foods for Taiwan's health market; (2) therapeutic microbial preparations; (3) postbiotic natural product development. We have completed patent applications and signed technology transfer agreements with 2 domestic companies.





Affiliated Ministry: NSTC

Exhibitor: Taipei Medical University

Contact: Alexander ra0234@tmu.edu.tw

Exhibited Technology

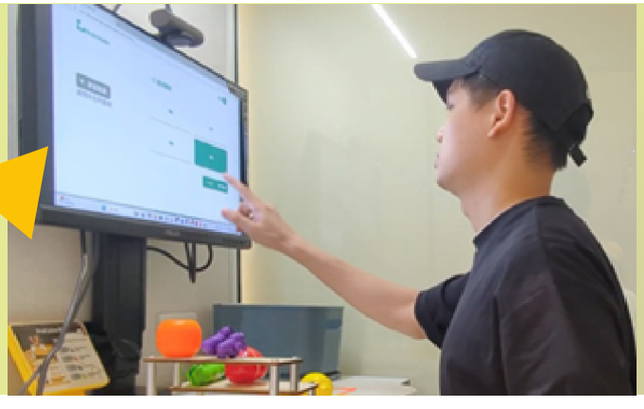
AI Cognition Assessment & Therapy Platform

Technology Introduction

The "AI Cognition Assessment & Therapy Platform" targets long assessment times, cognitive decline, and mood disturbances by deploying AI-automated cognitive assessment and personalized digital therapy modules. Combining computer vision AI and generative AI, it quickly generates a Brainmate Score and offers 15-minute interactive treatments, slowing cognitive decline, reducing depression/agitation by 20%, and cutting caregiving costs by 90%.

Industry Applicability

Our team partners with Wanfang Hospital and Rai Factory Daycare to run clinical trials and set up demo site, validating 15-minute automated cognitive assessments and digital therapy that cut labor by 90% and agitation by 20%. Combining Vision AI and generative AI to quantify multidimensional movement metrics and auto-generate reports, it boosts patient engagement and family satisfaction.





Affiliated Ministry: NSTC

Exhibitor: National Cheng Kung University

Contact: Yi-Chen Li ryichenli@gmail.com

Exhibited Technology

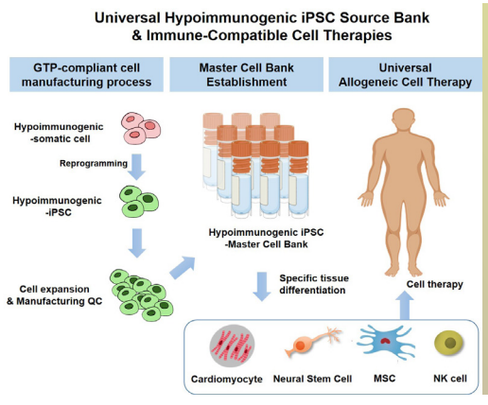
Universal Hypoimmunogenic Allogeneic iPSC Source Bank: Driving Industrialization and Clinical Breakthroughs in Regenerative Medicine

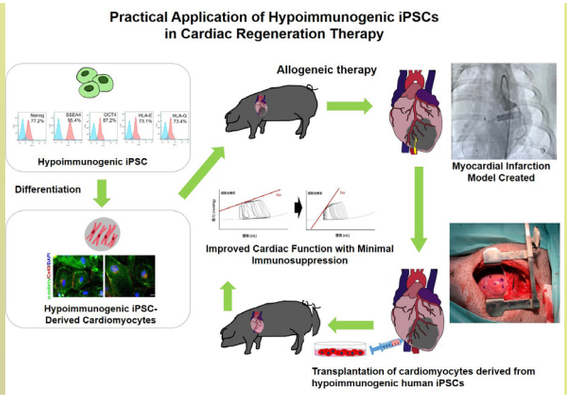
Technology Introduction

A universal, low-immunogenic hiPSC platform was developed using non-genetically modified human stem cells with natural HLA-E and HLA-G expressions. This enables safe, scalable, off-the-shelf therapies with broad population coverage. The hiPSCs demonstrate stable immune evasion in large animal models and can differentiate into multiple somatic lineages. Compliant with GTP standards, this platform supports Taiwan's regenerative medicine innovation.

Industry Applicability

We developed a gene-editing–free, immune-tolerant universal hiPSC bank with robust safety, low immunogenicity, and scalable production capacity. This platform addresses key barriers in allogeneic cell therapy—immune rejection, regulatory complexity, and manufacturing inconsistency. GTP-compliant and capable of generating diverse therapeutic cell types, it offers a standardized, high-value solution that enhances clinical outcomes and reinforces Taiwan's global role in regenerative medicine.





Affiliated Ministry: NSTC

Exhibitor: National Yang Ming Chiao Tung University

Contact: Yu-Chen Hung channing.hung@gmail.com

Exhibited Technology

ProDEP: An Automated Platform for Precise Single-Cell Manipulation

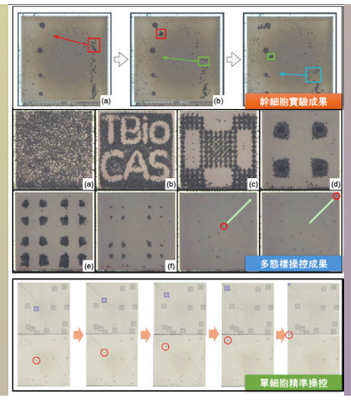
Technology Introduction

ProDEP is the world's first programmable single-cell manipulation platform that integrates Taiwan's standard CMOS process with AI-based control for precision biomedical applications. By overcoming traditional limitations in standardization and automation, it enables high-precision, label-free, and contactless cell sorting and transport. With patents filed in Taiwan, the US, and Japan, and multiple IEEE publications, ProDEP provides a concrete foundation for next-generation smart medical devices.

Industry Applicability

ProDEP is a single-cell automated platform built on Taiwan's semiconductor technology to address biomedical needs. Using proprietary chips and devices, it enables non-contact, label-free cell handling and sorting with traceable cell trajectories and replicable workflows features. It can be applied to cell therapy development, drug testing, regenerative medicine, and training. The goal is to enable decentralized cell preparation and help Taiwan export core smart medical technologies.





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Booth: FM08

Affiliated Ministry: NSTC

Exhibitor: National Tsing Hua University

Contact: Linyi Chen linyic@gmail.com

Exhibited Technology

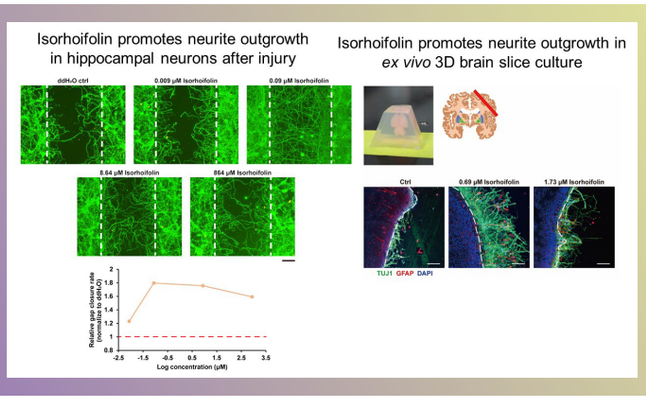
Use Of Isorhoifolin Derivatives On Regeneration Of Injured Neurons

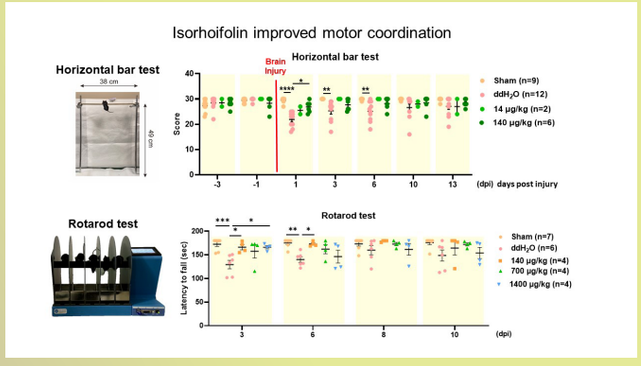
Technology Introduction

Patients with traumatic brain injuries often develop brain lesions over time, which may lead to degenerative neurological diseases in the future. Therefore, early administration of medications that promote neural regeneration following brain injury is the solution for treatment. The invention provides uses of the Isorhoifolin derivatives for promoting regeneration of injured brain neurons and retinal neurons. Isorhoifolin also promotes recovery of motor function deficit.

Industry Applicability

More than 60% patients with traumatic brain injury are young and middle-aged adults. Early treatment of these patients largely reduces neuronal death due to chronic inflammation. Moreover, the use of this invention would reduce the risk for developing neurodegenerative diseases. This invention is intended to be used in medical center to treat motor function deficit caused by traumatic brain injury.





Booth: FM09

Affiliated Ministry: NSTC

Exhibitor: National Tsing Hua University

Contact: Shang-Hsiu Hu shhu@mx.nthu.edu.tw

Exhibited Technology

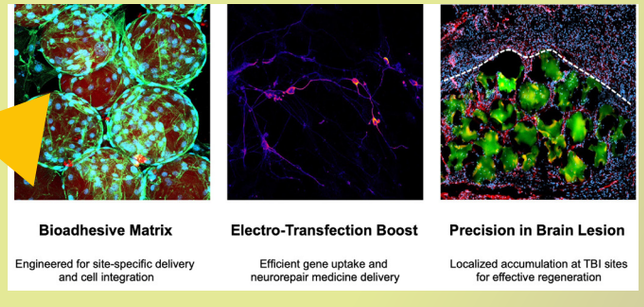
Next-Gen Wireless Magnetoelectric Gene Delivery Hydrogel for Neuroregenerative miRNA Sponge Generation in Traumatic Brain Injury

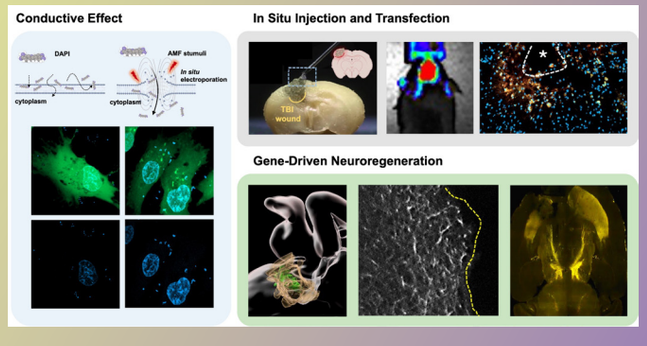
Technology Introduction

Traumatic brain injury (TBI) is difficult to treat due to the blood-brain barrier and limited drug delivery. We developed a hydrogel-based system combining miR-6236 sponge DNA, cationic polymers, and magnetic field responsiveness. This platform protects DNA, enhances cellular uptake, and enables localized delivery. In animal models, it reduced inflammation, promoted neural repair, and improved recovery—offering a promising, targeted approach for TBI and other neurological conditions.

Industry Applicability

TBI lacks effective treatments despite its global impact. We developed a conductive hydrogel-based gene delivery platform enabling targeted brain delivery and neural regeneration. This versatile system shows strong potential for TBI and other CNS disorders like stroke and Alzheimer's, addressing critical needs in a multi-billion-dollar neuroregenerative medicine market.





FUTEX

Bio-tech, New Drugs & Medical Devices

Affiliated Ministry: NSTC

Exhibitor: National Cheng Kung University

Contact: Chen-Sheng Yeh csyeh@mail.ncku.edu.tw

Exhibited Technology

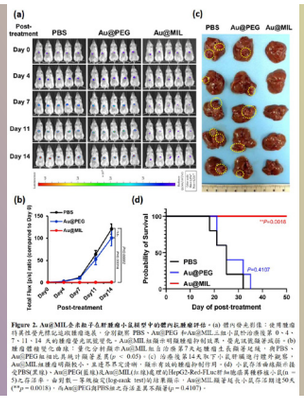
Disrupting Cancer from Within: The Breakthrough 'Power-Off Therapy' That Triggers Cancer Cell Self-Destruction

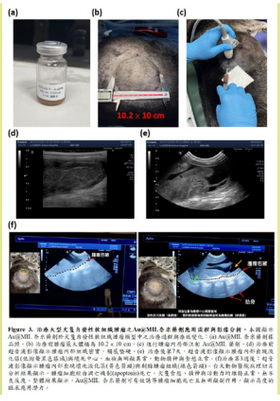
Technology Introduction

This study developed innovative cancer therapy—electroactive membrane-integrated liposome nanoparticles (Au@MIL NPs). Combining electroactive liposomes and gold nanoparticles, Au@MIL NPs efficiently disrupt cancer cells' redox balance, inducing apoptosis without harming normal cells. Mouse and canine studies confirmed efficacy and safety, highlighting its potential as a precise, low-side-effect cancer treatment.

Industry Applicability

The innovative Au@MIL nanoparticles represent a novel cancer therapy that differs from traditional drug design approaches. With their unique mechanism, they hold strong potential for industrial application. These nanoparticles could become a new generation of cancer therapeutics, either replacing or complementing conventional treatments, while also advancing precision medicine and veterinary cancer care. Their high selectivity and low side-effect profile are particularly noteworthy.





Booth: FM11 372

Affiliated Ministry: NSTC

Exhibitor: Taipei Medical University

Contact: Chih-Wei Peng cwpeng@tmu.edu.tw

Exhibited Technology

Prospective Transcranial Temporal Interference Stimulation: Pioneering a New Era of Non-Invasive Deep Brain Stimulation

Technology Introduction

Transcranial Temporal Interference Stimulation (tTIS) is a non-invasive deep brain stimulation technique that utilizes high-frequency alternating currents to generate low-frequency interference within the brain, enabling precise modulation of deep neural structures. Our team has developed a functional tTIS hardware device, completed animal studies and safety certification, and has obtained clinical trial approval. We are currently conducting rehabilitation trials in patients with dementia.

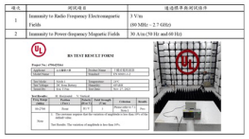
Industry Applicability

The tTIS technology has strong commercialization potential, targeting patients with dementia, Parkinson's disease, spinal cord injury, and chronic pain. It can be applied in clinical treatment and remote rehabilitation, offering a cost-effective alternative to surgery and medication. With deep targeting, high safety, and wearable design, the system is well-positioned for regulatory approval and global commercialization through medical partnerships.

本團隊之經顱干擾波(tTIS)治療系統

- 已完成建立雙腦區經顱干擾波刺激電子電路、神經介面與控制韌體。
- 已通過電性安全、電磁相容、生物相容以及軟體確效認證
- 已通過北醫IRB執行『失智症患者認知功能復健治療』試驗中

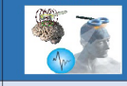
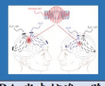




干擾波硬體與技術開發成果，已刊登於優質國際期刊，受到國際重視:

1. IEEE Trans Neural Syst Rehabil Eng. 2022;30:1483-1493.
2. Journal of NeuroEngineering and Rehabilitation, 2024;21:147.

不同大腦神經調控模式之差異比較

	侵入式	非侵入式		
	深腦電刺激 (DBS)	重複性經顱磁刺激 (rTMS)	經顱直流電刺激 (tDCS)	穿顱干擾波電刺激 (tTIS)
				
法規	FDA 核准 帕金森氏症、癲癇	FDA 核准 憂鬱症	FDA 尚未核准，但已有許多臨床試驗進行中	FDA 尚未核准，雖屬於最新技術，但已有少量人體試驗測試中
特色	• 空間選擇性佳 • 深腦聚焦刺激單一腦區 • 波形多元	• 非侵入式 • 刺激波形多元，作用機制較明確 • 可做 MRI 檢查	• 非侵入式 • 可做 MRI 檢查 • 已於眾多臨床試驗證明焦慮、憂鬱、失眠有正面改善幫助	• 非侵入式 • 可做 MRI 檢查 • 可任意調控刺激位置、深度 • 不影響淺層
限制	• 侵入式需要承受開腦手術風險 • 需植入電刺激等裝置於身體內，無法做 MRI 檢查 • 刺激電極位置無法再改變	• 刺激範圍大 • 無法聚焦刺激深腦區	• 僅直流波形 • 無法聚焦刺激深腦區	• 相關神經調控機制仍須進一步建立 • 相關文獻不多 • 相關臨床應用需要更多臨床試驗佐證

Affiliated Ministry: AS

Exhibitor: Academia Sinica

Contact: Ya-Ling Hsiao tiin0706@gmail.com

Exhibited Technology

Quantitative Analysis of Drug Toxicity Using Metallic Nanostructures and Contrast-Enhanced Surface Plasmon Imaging Technology

Technology Introduction

The half-maximal inhibitory concentration (IC_{50}) is a key pharmacological parameter for quantifying drug efficacy. We developed a label-free, contrast-enhanced surface plasmon resonance imaging technique to assess drug-induced cytotoxicity in cells. Compared to conventional assays such as cell proliferation kits and viability fluorescent staining, our platform yields highly consistent results. It enables accurate IC_{50}measurement with the advantages of high throughput and label-free detection.

Industry Applicability

A novel surface plasmon resonance sensing platform integrating patented nanoplasmonic chips with contrast-enhanced imaging technology offers label-free detection with high sensitivity and low cost. This technology is broadly applicable in the biomedical field, providing high-throughput and accurate evaluation of drug efficacy with strong market potential. The platform is also well-suited for applications such as molecular interaction analysis, pollutant monitoring, and food safety testing.

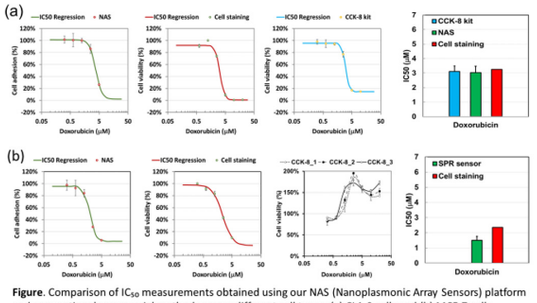
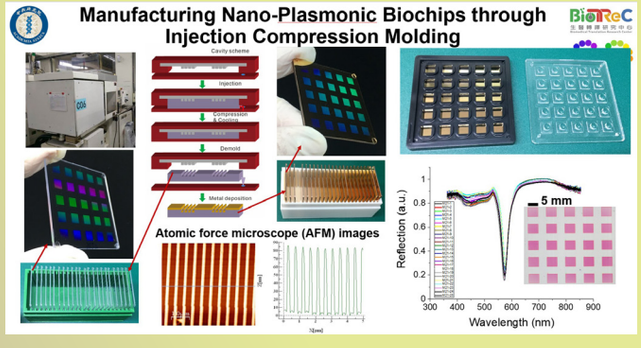


Figure. Comparison of IC_{50} measurements obtained using our NAS (Nanoplasmonic Array Sensors) platform and conventional commercial methods across different cell types: (a) CL1-0 cells and (b) MCF-7 cells.



Affiliated Ministry: NSTC

Exhibitor: National Chiayi University

Contact: Ya-Ling Hsiao tiin0706@gmail.com

Exhibited Technology

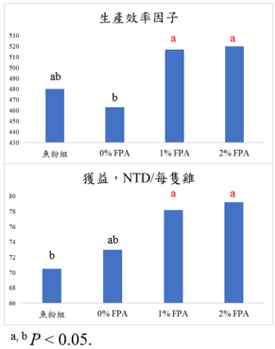
Improving Chicken Production Efficiency: Reducing Carbon Footprint

Technology Introduction

Our team developed functional vegan wet fermentation (FPA) and dry additive (FPB) products using by-products to produce high surfactin content with antimicrobial activity. In broiler feed, FPA fully replaces fishmeal, and FPB replaces antibiotics, enhancing growth and economic benefits. This patented, Q1-published technology reduces carbon emissions and reuses waste, demonstrating a safe, efficient, and sustainable green circular agriculture model.

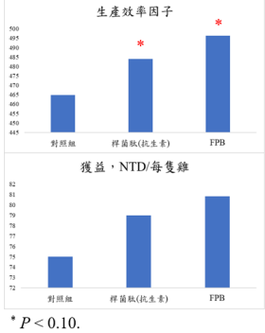
Industry Applicability

This technology uses vegetarian raw materials to challenge animal-based formulas, which can reduce production costs and improve economic profits. It processes soybean hulls, bran, harvest mushroom bags, etc., which can increase the added value of feed, reduce costs and carbon emissions, and promote resource recycling. The products can be applied to other monogastric animals and also be used in agriculture, biotechnology, medicine, and food fields.



a, b $P < 0.05$.

圖2 FPA對雞隻生產效益及經濟效益之影響。



* $P < 0.10$.

圖3 FPB對雞隻生產效益及經濟效益之影響。

FUTEX

Bio-tech, New Drugs & Medical Devices

Affiliated Ministry: NSTC

Exhibitor: China Medical University

Contact: YiWen Chen evinchen@gmial.com

Exhibited Technology

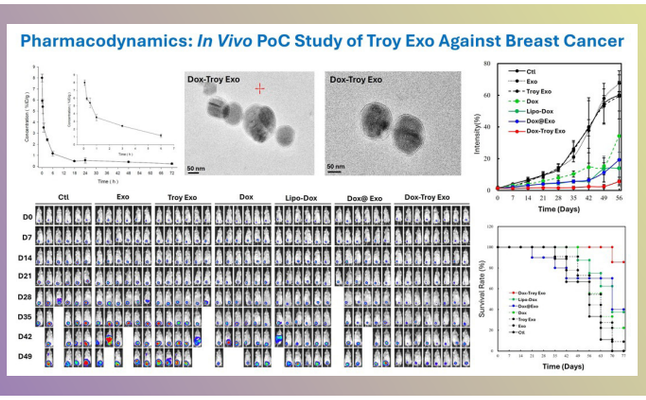
Targeted extracellular vesicle-based therapeutic platform: A nanocarrier for nucleic acid and chemotherapeutic drug delivery

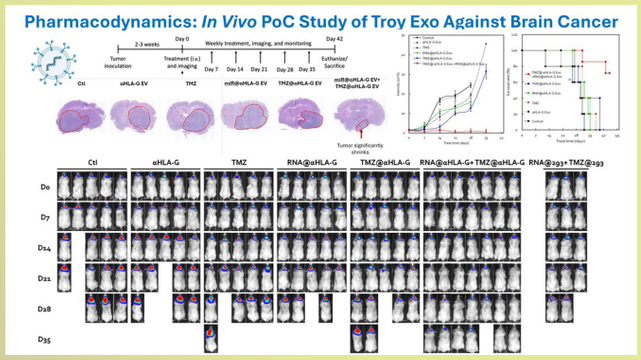
Technology Introduction

1. Developed Troy Exo, an engineered HEK293T-derived EV with αHLA-G nanobody for targeting.
2. Established GMP-grade cell bank and 100L-scale EV production with 65% αHLA-G expression.
3. Completed BioD, PK, and GLP toxicity studies showing excellent safety and tumor accumulation.
4. Dox-loaded EVs enhanced breast cancer killing by 4× with reduced cardiotoxicity.
5. miR-loaded EVs improved GBM therapy, increasing drug response by 2.3×.
6. Received FDA IND approval and accepted by Nat. Commun.

Industry Applicability

Troy Exo is an engineered exosome platform featuring an αHLA-G nanobody, offering high targeting specificity, low immunogenicity, and excellent in vivo stability. It enables precise delivery of drugs and nucleic acids across biological barriers. With scalable GMP manufacturing up to 100L and strong IP protection, it supports multi-indication development, overcoming key limitations of synthetic nanocarriers and offering a next-generation targeted delivery solution.





Booth: FM15

Affiliated Ministry: MOE

Exhibitor: China Medical University and Hospital

Contact: Hong-Wei Li albertli489@gmail.com

Exhibited Technology

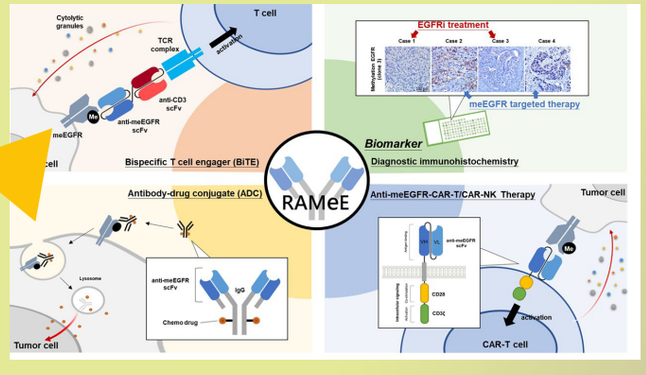
EGFR arginine methylation as a tumor antigen for targeting triple-negative breast cancer

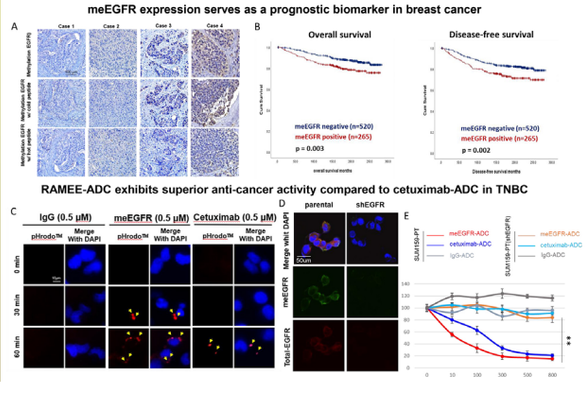
Technology Introduction

Our team is developing an innovative targeted cancer therapy against methylation modifications on the tyrosine kinase epidermal growth factor receptor (EGFR). Methylation of two arginine residues in the extracellular domain of EGFR enhances ligand binding and oncogenic signaling. We have developed antibody-drug conjugates (ADCs) that specifically target methylated EGFR, aiming to establish a first-in-class therapeutic strategy for triple-negative breast cancer and other solid tumors.

Industry Applicability

The RAMeE platform specifically recognizes methylated EGFR (meEGFR), a novel key antigen with tumor-promoting function. Analysis of clinical tumor samples suggests its strong prognostic and predictive value. We are actively developing antibody-drug conjugates (ADCs) and CAR-NK cell therapies targeting meEGFR. This technology shows great promise for commercialization and offers a feasible path toward first-in-class drug development and precision oncology applications targeting difficult cancers.





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Booth: FM16

Affiliated Ministry: NSTC

Exhibitor: Chang Gung Medical Foundation

Contact: Chien-Wei, Chenchienwei33@gmail.com

Exhibited Technology

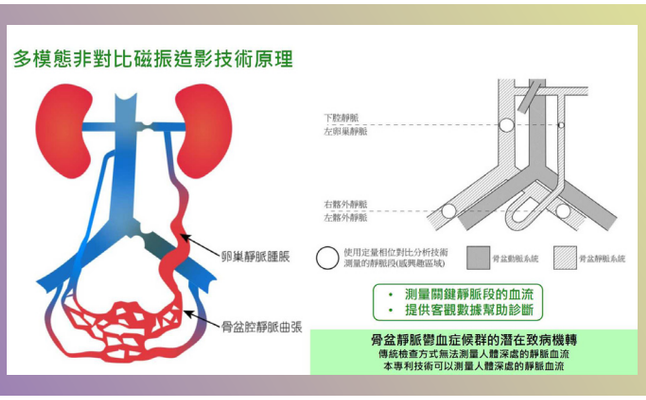
Non-Contrast Magnetic Resonance Imaging System for Imaging Diagnosis and Hemodynamic Analysis of Pelvic Venous Congestion

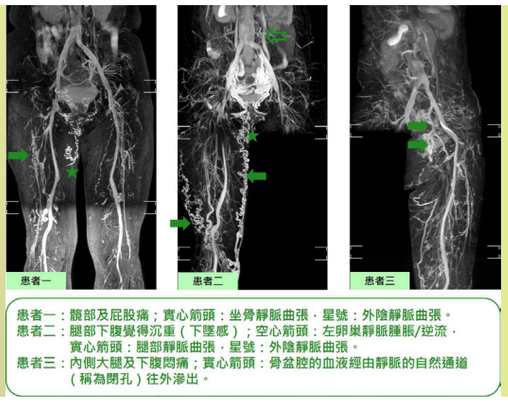
Technology Introduction

This technology is the first multimodal non-contrast MRI system for evaluating pelvic venous congestion. It integrates 3D venography and 2D flow analysis to quantify reflux and provide both visual and numeric outputs. Validated in over 800 clinical cases and cross-institutionally, it was published in the top-tier journal IJS (JCI 2nd), won Taiwan's 2024 National Innovation Award, and holds patents in Taiwan and the U.S., with strong clinical and commercial potential.

Industry Applicability

This technology is the first non-contrast MRI protocol integrating MR sequences for venous structure and flow quantification, with high clinical maturity and cross-institutional validation. It supports venous diagnostics, health screening, and pre-surgical evaluation. The prototype is deployed in hospitals, with expansion and commercialization planned, including flow analysis services and international licensing potential.





Affiliated Ministry: NSTC

Exhibitor: China Medical University

Contact: Fei-Ting Hsu sakiro920@gmail.com

Exhibited Technology

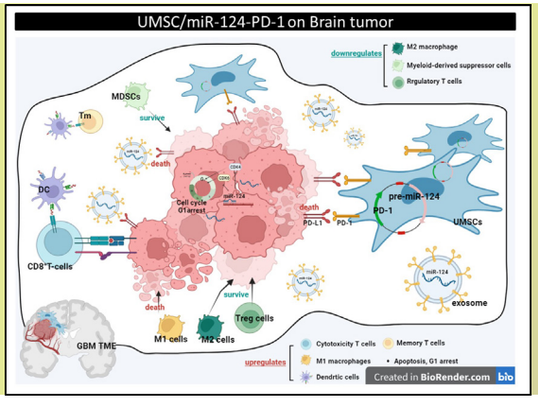
Development of a Mesenchymal Stem Cell Platform for Multi-Gene Precision Delivery: A Novel Strategy for Cross-Cancer Precision Immunotherapy

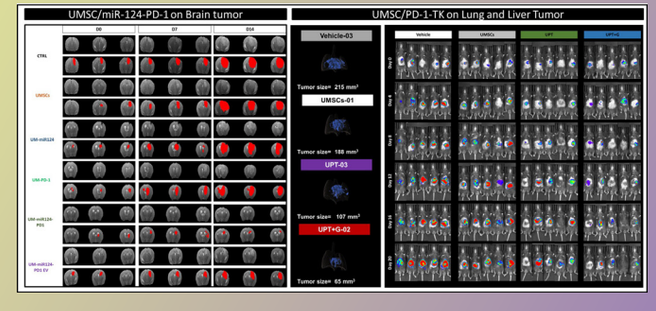
Technology Introduction

This platform introduces a non-viral gene delivery system using umbilical mesenchymal stem cells (UMSCs) engineered via electroporation to carry multiple therapeutic genes. UMSCs' low immunogenicity and tumor-tropic properties enable targeted delivery to solid tumors, achieving both tumor suppression and immune modulation. The approach offers high safety, scalability, and off-the-shelf potential, representing a next-generation strategy for gene and cell-based cancer therapy.

Industry Applicability

This platform targets hard-to-treat solid tumors using off-the-shelf UMSCs with non-viral multi-gene delivery, offering high safety, stable expression, and tumor targeting. It supports applications in regenerative medicine, biotech, immunotherapy, and precision medicine. With scalable manufacturing, global patent coverage, and strong translational value, it offers a differentiated solution for next-generation cancer gene and cell therapy.





379

Booth: FM18

Affiliated Ministry: NSTC
Exhibitor: National Tsing Hua University
Contact: Ting-Wei Wang wangtw@mx.nthu.edu.tw

Exhibited Technology

Lightweight Flexible Electromagnetic Patch for Non-contact Health Monitoring

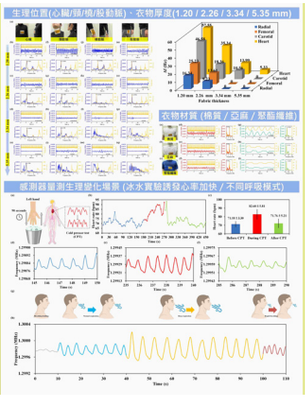
Technology Introduction

This study presents a lightweight (6 g), flexible, and wireless patch (9 × 5 × 0.9 cm) for non-contact cardiopulmonary monitoring. An LC resonant circuit generates a magnetic field that penetrates clothing and couples with underlying conductive tissues in the heart and lungs. Physiological motion alters impedance, shifting the resonant frequency. The patch integrates sensing and wireless modules on a flexible PCB. Signals are sampled at 12.5 Hz and transmitted to a mobile app and cloud platform.

Industry Applicability

Emergency waiting areas are often overcrowded, with limited medical staff and resources. This study introduces a lightweight, flexible, non-contact patch for rapid cardiopulmonary monitoring without removing clothing. Data are wirelessly uploaded to a cloud platform for real-time physiological assessment and objective triage decisions. The system also applies to long-term care, disaster response, and other settings requiring fast screening, offering strong clinical and commercial potential.





Booth: FM19

Affiliated Ministry: NSTC

Exhibitor: Chang Gung Medical Foundation

Contact: Pao-Hsien Chu taipei.chu@gmail.com

Exhibited Technology

Innovative Fixation System for a Leadless Pacemaker in the Atrial Appendage

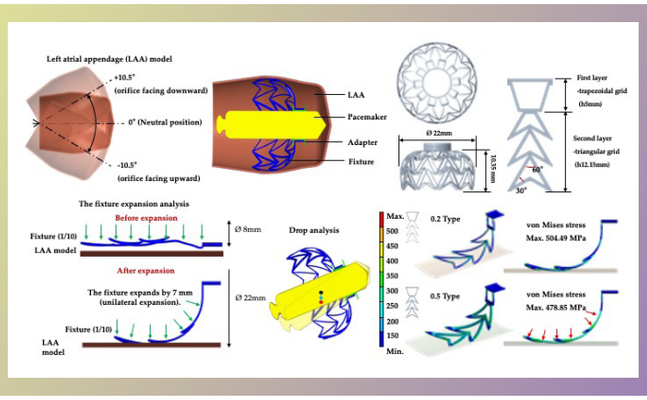
Technology Introduction

his technology introduces a world-first atrial appendage fixation device for leadless pacemakers. Delivered via transfemoral access, it anchors securely in the right atrial appendage to prevent device dislodgement and perforation. The nitinol-based structure supports device replacement and is compatible with existing systems such as Medtronic Micra AV2 and Abbott Aveir DR. It is designed to be FDA-registered as an accessory, offering a safer and scalable solution for dual-chamber leadless pacing

Industry Applicability

This novel atrial appendage fixation device enables safe right atrial implantation of leadless pacemakers. Compatible with systems like Micra AV2 and Aveir DR, it addresses a critical unmet need in dual-chamber pacing. With regulatory positioning as an FDA accessory, it offers accelerated commercialization and strong licensing potential. The technology is well-suited for integration or spin-off development targeting high-growth cardiovascular markets.





381

Booth: FM20

Affiliated Ministry: NSTC

Exhibitor: National Taiwan University

Contact: Thai-Yen Ling tyling@ntu.edu.tw

Exhibited Technology

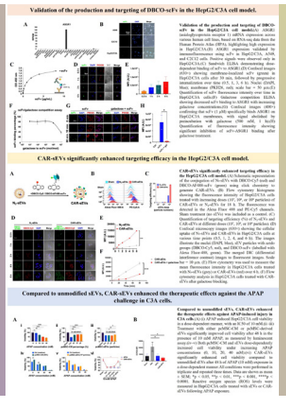
Revolutionary CAR-sEV: Non-Genetically Modified Targeted Stem Cell-Derived Exosome Drugs for Precision Medicine Applications

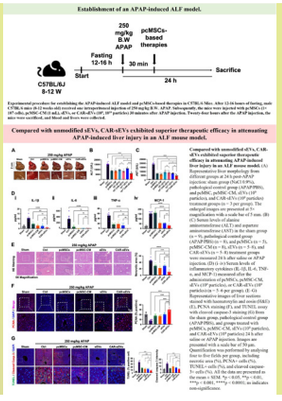
Technology Introduction

The study integrates metabolic glycoengineering in serum-free cultured MSCs to present azide groups on the surface of MSC-derived extracellular vesicles (EVs). Through SPAAC click chemistry, DBCO molecules are attached, and a single-chain antibody fragment (scFv) targeting the liver receptor ASGR1 is designed for modification. This establishes a high-quality, precise, and cost-effective non-genetic modification platform for CAR-sEV, enhancing the targeting capability and therapeutic efficiency.

Industry Applicability

CAR-sEV technology creates a cell-free, targeted delivery platform for cell/gene therapies and vaccines. Using mild, metal-free SPAAC click chemistry with EV purification, it supports scalable manufacturing. Modular scFv swapping enables liver (ASGR1), neurological (TransferrinR), cancer (PD-L1/EGFR), and cardiovascular (VCAM-1) applications. Flexible licensing and OEM partnerships accelerate market entry. Biocompatible, low-immunogenic, and customizable, it meets precision delivery demands.





Booth: FM21 382

Affiliated Ministry: NSTC

Exhibitor: National Cheng Kung University

Contact: Ya-Chin Hou yachi2016@yahoo.com.tw

Exhibited Technology

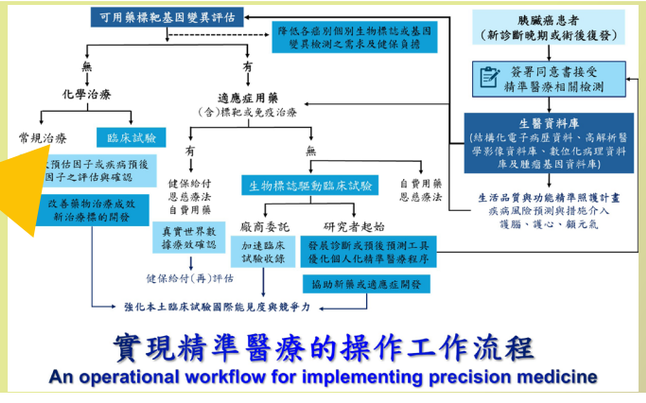
Multi-Omics-Guided Precision Oncology for Pancreatic Cancer

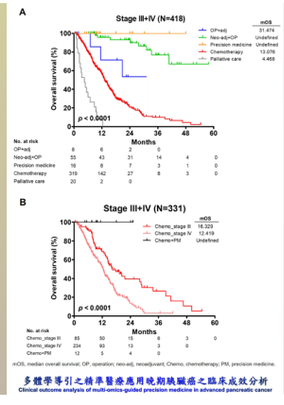
Technology Introduction

This technology platform integrates multi-omics and liquid biopsy data of pancreatic cancer, combined with in silico analysis and patient-derived models, to precisely decode molecular subtypes, immune microenvironment, and drug responses. It has been clinically validated in over 400 patient cases, enabling non-invasive disease monitoring and personalized treatment decision-making, with high potential for clinical translation and commercialization.

Industry Applicability

This platform integrates cfDNA and EV-based liquid biopsy for tumor monitoring and treatment response, with companion diagnostic potential. Using multi-omics and AI, it builds drug sensitivity and prognosis models for personalized therapy. Gene therapies offer high specificity and low toxicity. Applied in 400+ cases, it expands to other GI cancers and smart medicine, with robust data management and cross-disciplinary collaboration, advancing commercialization and Taiwan's biotech growth.





Affiliated Ministry: NSTC

Exhibitor: National Taiwan University Hospital

Contact: Mr.Lei sauron_lai@hotmail.com

Exhibited Technology

Laparoscopic smokeless electrode

Technology Introduction

This technology is an integrated laparoscopic electrosurgical device with proximal active smoke evacuation, featuring the proprietary Electrocautery-Evacuation Synchronizer (EES) system. Compared to trocar-based smoke evacuation and smoke-reducing coated electrodes, it offers superior efficiency and real-time smoke removal. The device enhances surgical safety, improves ergonomic control, and is compatible with a wide range of electrosurgical and suction systems.

Industry Applicability

This technology addresses smoke accumulation and hazardous exposure in minimally invasive surgery through an integrated solution featuring proximal real-time smoke evacuation and high-efficiency filtration. It effectively removes intra-abdominal smoke, enhances endoscopic visibility, and filters over 99% of VOCs and harmful particles. By reducing exposure risks for medical staff, it supports precision surgery and ESG-aligned occupational health, clinical value and global market potential.

Figure 3

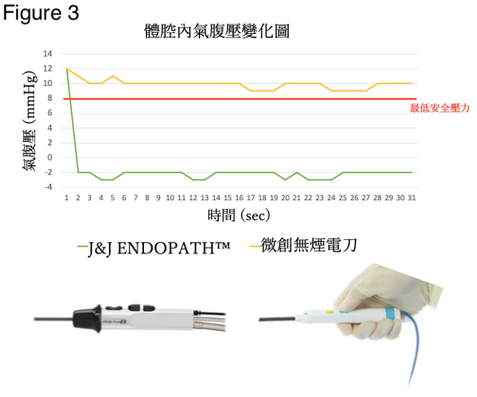
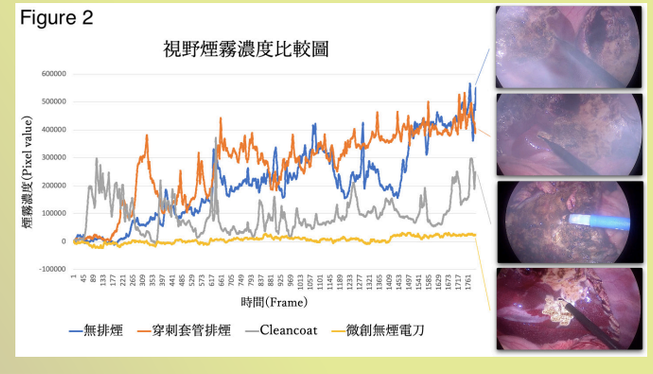


Figure 2





智慧永續館

SUSTAINABILITY PAVILION

The Sustainability Pavilion, themed "SMART • RESILIENT • SUSTAINABLE • HEALTHY," from six ministries across three zones: Smart Innovation, Resilience Empowerment, and Circular Sustainability. It promotes a secure, connected, and sustainable lifestyle through advances in smart technology, food and resource security, national defense, and green industries

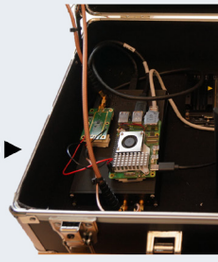
Affiliated Ministry List

MND : Ministry of National Defense
MOA : Ministry of Agriculture
MODA : Ministry of Digital Affairs
MOENV : Ministry of Environment
MOL : Ministry of Labor
NDC : National Development Council

情境模擬

通訊設備驗證模擬	零信任架構
SIP Server 須插入 USB 驗證設備，才能完成登入與啟用通訊功能。	
通訊伺服器攻擊模擬	服務可用性
模擬對 SIP 伺服器持續攻擊，導致通話延遲或中斷。	
應用服務系統攻擊	資料完整性
模擬駭客干擾應用服務系統，針對應用層進行入侵或破壞行為，癱瘓通訊系統服務。	



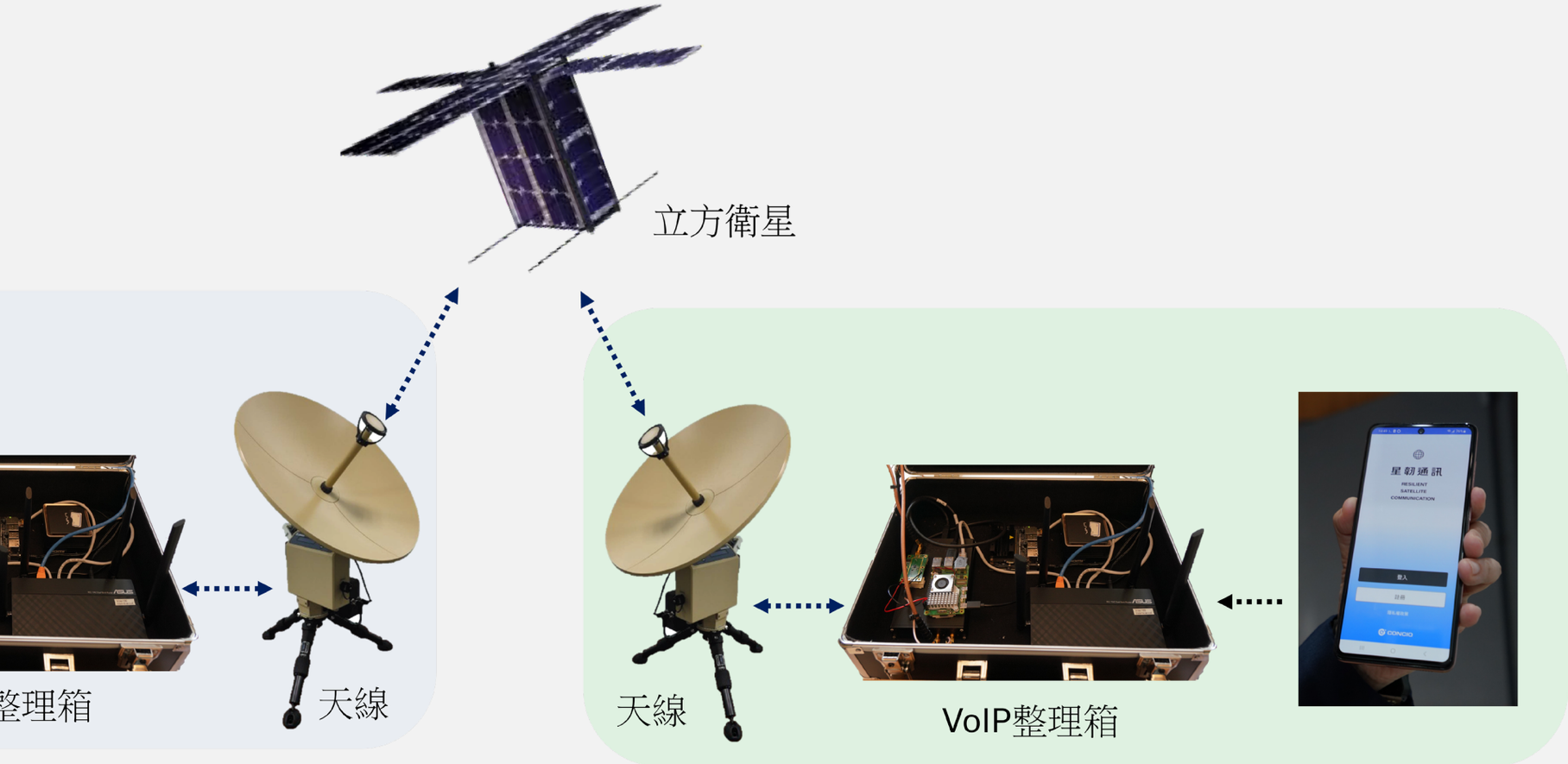


VoIP整

【RESILIENT SATELLITE COMMUNICATION】Non-Terrestrial Network (NTN) Communication Resilience Solution

Technology Introduction

This technology is a cross-domain integrated resilient communication solution that combines a private VoIP system with satellite networks to establish an independent communication architecture without relying on ground infrastructure. It features hardware-based identity authentication, end-to-end encryption, and anomaly behavior monitoring, effectively preventing spoofed connections and packet-based attacks. Compared to conventional solutions that depend on base stations or third-party communication platforms, this system offers greater autonomy, high survivability, and enhanced security. It also supports rapid deployment and flexible scalability, demonstrating innovative advantages in system integration and adaptive response.



- Affiliated Ministry: MODA
- Exhibitor: Institute for Information Industry (III)
- Contact: Karol Chang karolchang@iii.org.tw

Industry Applicability

This technology is well-suited for communication-limited environments such as energy facilities, remote areas, offshore islands, and open-sea operations. It enables the establishment of a backup-ready and highly secure communication network. Even in scenarios without ground infrastructure or after disasters, the system ensures stable voice and data transmission. It is particularly applicable to disaster response, maintenance of critical infrastructure, and maritime command communications. In the future, it can be integrated with IoT, video surveillance, and cybersecurity platforms to support smart inspection, autonomous maintenance, and cybersecurity enhancement, boosting the industry's overall resilience and digital autonomy.

Booth: SD01

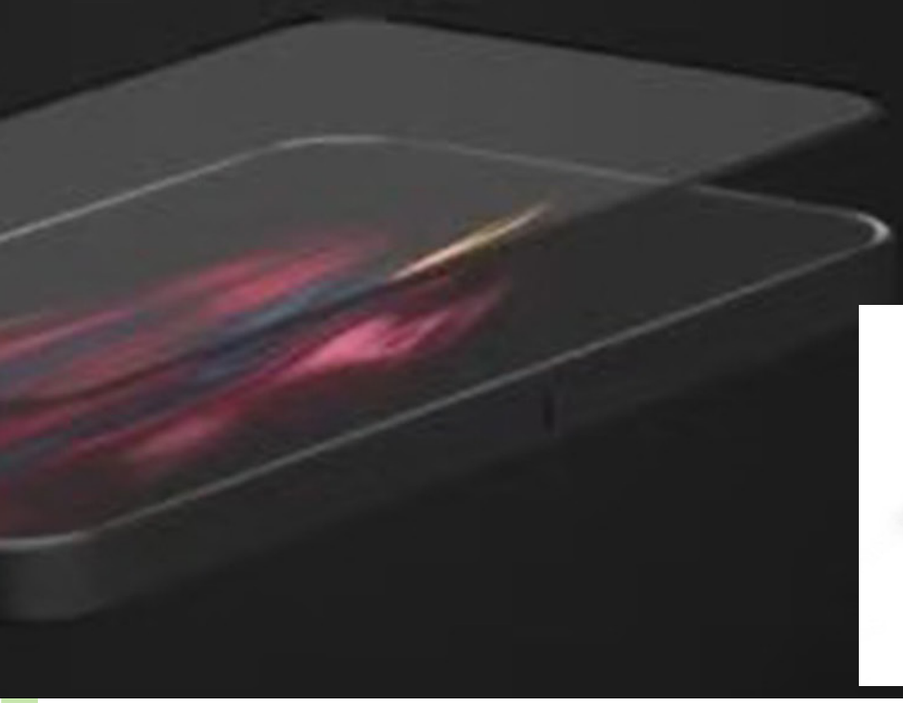


AI Naked-Eye 3D Protective Film_Optiqb

Technology Introduction

We offer comprehensive 3D optical design solutions, underlying algorithmic software, and leverage eye tracking and spatial position recognition technologies, integrated with our AI 3D screen protectors (which attach to smartphones). These solutions enable viewers to enjoy glasses-free 3D live sports, movies, TV series, animation, and other exciting 3D content anytime, anywhere. Optiqb was selected by the Taiwan Science and Technology Technical Advisory Committee (TTA) and invited to participate in the Taiwan exhibition at VivaTech 2025 in Paris, France. During VivaTech, Optiqb also participated in the Global Deep Tech Battel, hosted by Swisstech, and won first place in the Artificial Intelligence category.

qblens





- Affiliated Ministry: NDC
- Exhibitor: Optiqb AI Technology Limited
- Contact: Brian Lin brian.lin@optiqb.com

Industry Applicability

The lifetime-exclusive 3D protective film has the same appearance, function and price as the general protective film; coupled with its exclusive image conversion core technology, the combination of the two software and hardware can be widely used in current online videos share websites or streaming media, allowing ordinary mobile phones and tablets to switch painlessly and experience immersive 3D images.

In the future, it is expected to go further and expand into education, navigation, and even enter the gaming field or the field of more exquisite and three-dimensional floating 3D images through the settings of terminal servers and cloud servers

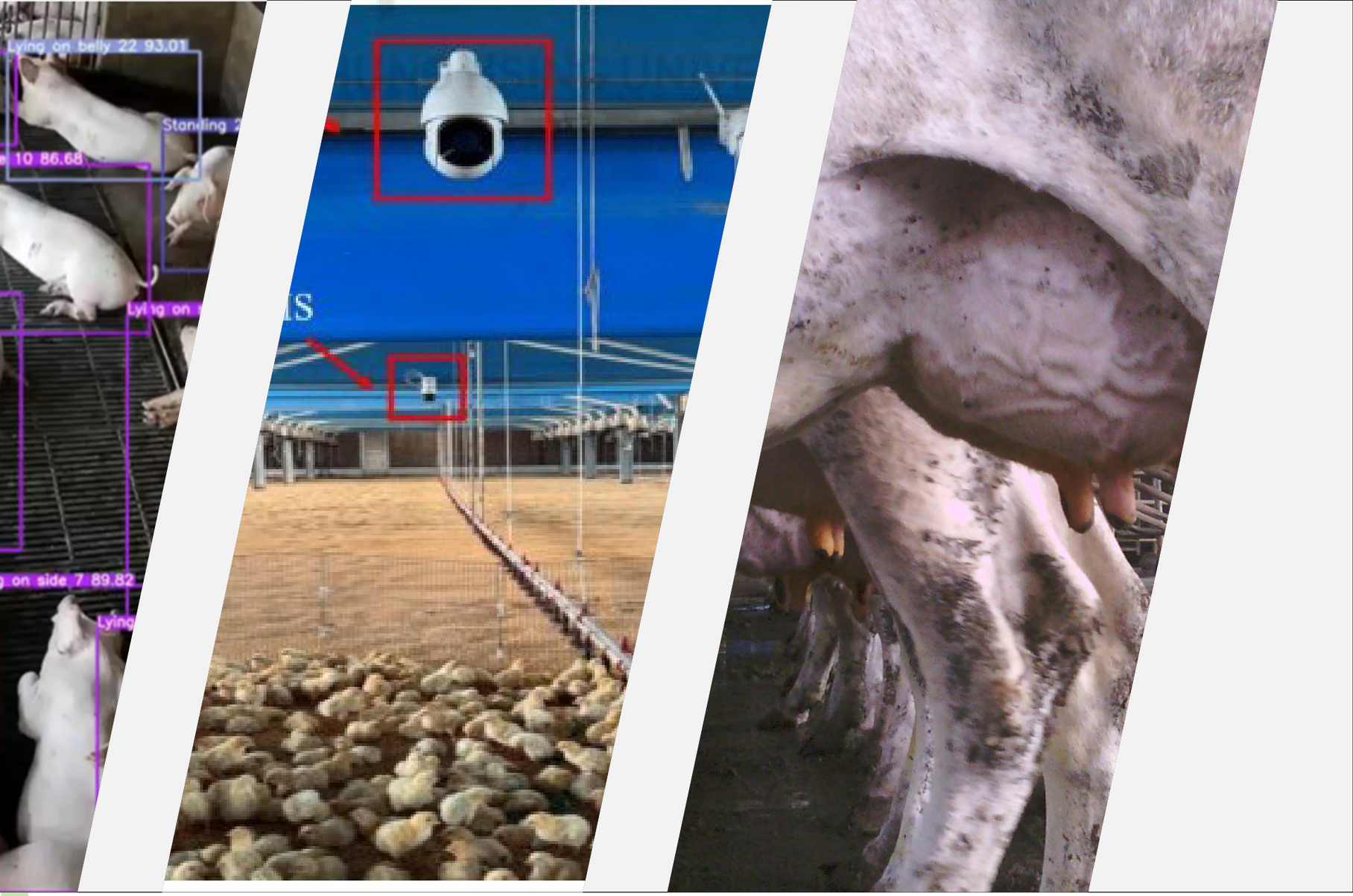
Booth: SD02



AI smart livestock and poultry health monitoring technology

Technology Introduction

"AI Smart Livestock and Poultry Health Monitoring Technology" centers on artificial intelligence, integrating thermal imaging, image recognition, bioacoustic analysis, and IoT technology to create an innovative livestock and poultry health management model. For pigs, the combination of thermal imaging and an AI image recognition model can effectively monitor group dynamics and health status. For dairy cows, the application of infrared thermography and RFID



- Affiliated Ministry: MOA
- Contact: Shuicai Chen stchen@tlri.gov.tw
  Yu-Ting Hung ythung@mail.atri.org.tw
  Kuo-Hua Lee khlee560328@gmail.com
  Yao-Chuan Tsai rung831@gmail.com
- Exhibitor: Department of Agricultural Science and Technology, MOA
  Department of Animal Industry, MOA
  Taiwan Livestock Research Institute, MOA
  Agricultural Technology Research Institute
  National Chung Hsing University

technology allows for monitoring issues such as body temperature and mastitis. For poultry, AI weight monitoring and respiratory bioacoustic detection can provide real-time health status of the flock. This technology conducts comprehensive, non-contact, and digital livestock and poultry health monitoring, which can effectively improve farm management efficiency, animal welfare, and production performance, thereby achieving the goals of agricultural transformation and sustainable development.



Ultra-High Temperature Flame-Resistant Protective Suit

Technology Introduction

The protective suit incorporates a fire-resistant fiber fabric interlayer, designed to provide time for personnel engaged in high-risk operations, such as propellant manufacturing process, to evacuate in the event of an accident. Commercial high-performance flame-resistant suits (US standard) can generally withstand about 800℃ for 10 seconds. In comparison, the interlayer maintains structural integrity under instantaneous exposure to 2000-3000℃ , and the suit ensures that the wearer's skin-surface temperature remains below 50 ℃ within 5 seconds.



- Affiliated Ministry: MND
- Exhibitor: National Chung-Shan Institute of Science and Technology
- Contact: Huang, Mau-Yi HMI@ncsist.org.tw

Industry Applicability

Military: Solid rocket propellant production and testing, Ammunition and explosives handing, Ground crew protection during rocket/missile launches.
Civilian: Steel smelting and casting operations, Boiler and furnace maintenance, Firefighting in extreme fire condictions.

Booth: SD04





Precision Identification and Sorting Technology for Waste Plastic Recycling

Technology Introduction

• Technological Innovation – This technology leverages AI to analyze the spectral characteristics of waste plastics, classifying them by additives and types. It enables fast identification of single and composite materials, improving recycling value and efficiency, addressing the low reuse rate of plastics from waste electrical equipment, and promoting material and energy recovery to minimize waste, generate renewable energy, and support source reduction.

• Competitive or Intellectual Property Advantages – Compared to conventional identification methods, this technology offers real-time, radiation-free, precise identification and high-speed sorting. It is suitable for large-sized waste plastics and can simultaneously detect dark-colored plastics and their additives, significantly improving recycling efficiency and material utilization.

• Important Achievements / Awards – Awarded the Silver Award in the Startup Service Category by the Resource Circulation Administration of the Ministry of Environment in 2023.



- Affiliated Ministry: MOENV
- Exhibitor: Rui Cheng Plastics Co., Ltd.
- Contact: HAO-CIAN,LAI YI-PING, SU safety038523777@gmail.com

Industry Applicability

This system integrates AI and spectral recognition technology for rapid classification and high-value recycling of waste plastics in the resource recovery industry. Combined with automated control, it monitors waste characteristics in real time and precisely adjusts the detection module to efficiently identify and sort large-sized and dark-colored composite plastics. The system-generated data supports recyclers in formulating optimized strategies, improving material utilization, and reducing waste. In the future, it can be extended to smart recycling stations and large-scale waste treatment facilities, setting a new benchmark for sustainable development in the circular economy.

Booth: SA19、SD05

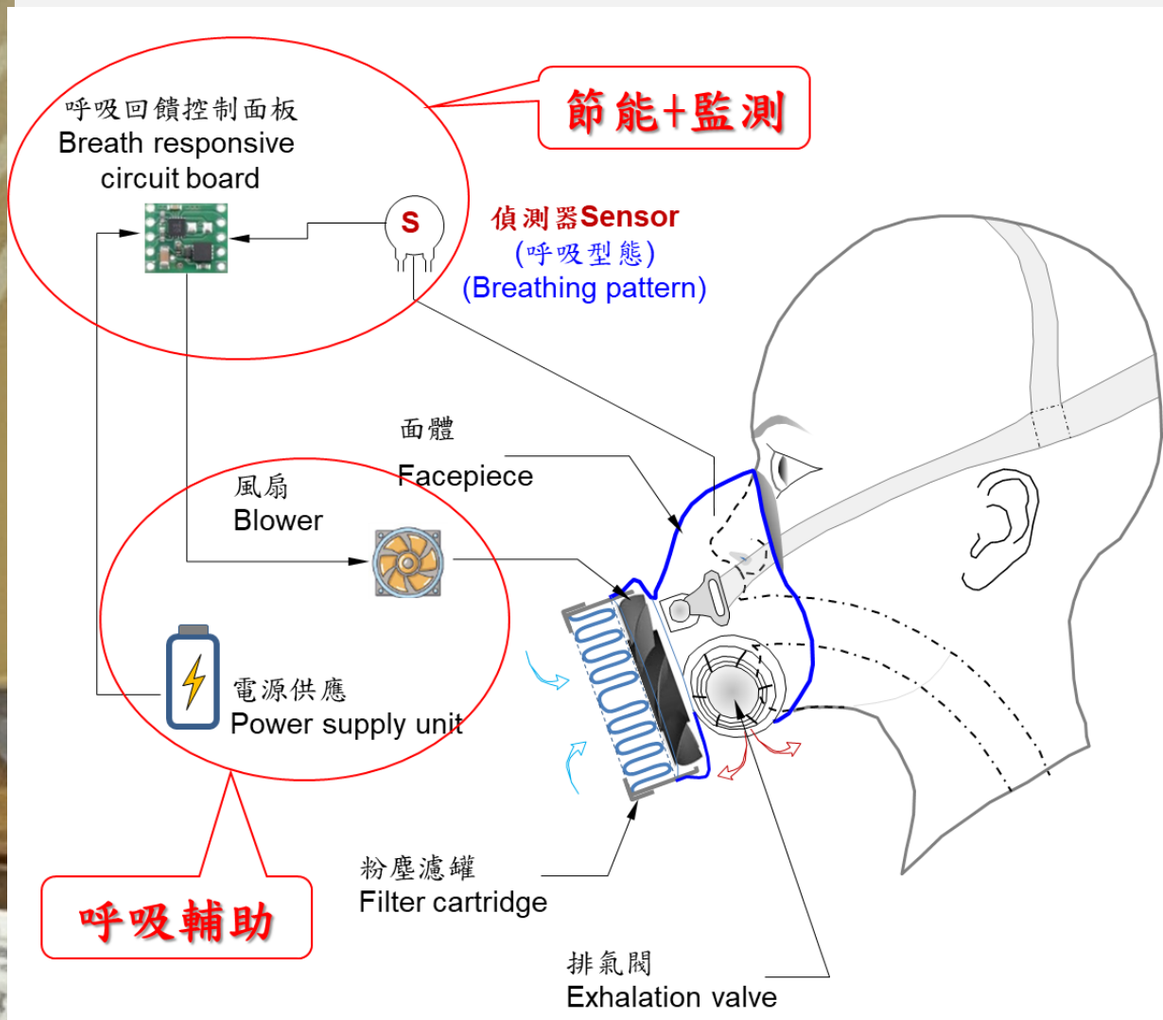


Comfortable Respirator

Technology Introduction

In order to enhance the dignity of work , we have developed a breath-responsive powered air-purifying respirator(BR-PAPR). It provides better protection and reduces the troubles of high temperature, high humidity and breathing difficulties. It has obtained a Taiwan invention patent and won the silver medal in the 2024 Taiwan Innovation and Technology Expo. It has been verified and evaluated on-site in the labor working environment.





- Affiliated Ministry: MOL
- Exhibitor: Institute of Labor, Occupational Safety and Health(ILOSH), MOL, Taiwan
- Contact: Chunwan Chen wann@mail.ilosh.gov.tw

Industry Applicability

A batch of test samples have been produced to verify the feasibility of design and production. Workers exposed to high dust have been asked to assist in the evaluation, which has increased the protection by 7 times, reduced the accumulation of carbon dioxide and temperature inside mask. and greatly improved the satisfaction. It has been proven that it can be mass-produced and applied to benefit workers.

智慧永續館
SUSTAINABILITY PAVILION

Highlight Technology

Contact: Yao-Chuan Tsai yctsaii@dragon.nchu.edu.tw

Affiliated Ministry: MOA

Exhibitor: National Chung Hsing University

Exhibited Technology

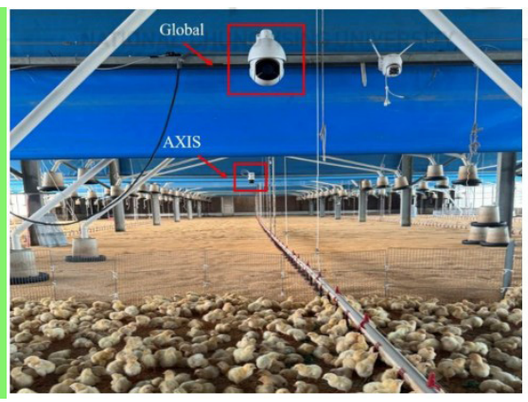
AI-Automated Poultry Weight Monitoring System Poultry feature organ image recognition

Technology Introduction

1.AI-Automated Poultry Weight Monitoring System：The AI-Automated Poultry Weight Monitoring System utilizes a suspended weighing device and AI edge computing technology. It employs an intuitive weight calculation method: the total weight is divided by the number of birds on the scale identified by AI to obtain the average body weight. The data is then uploaded to the cloud, enabling farmers to effortlessly track the weight of their poultry.

2.Poultry feature organ image recognition: Using a controllable camera to capture images of chickens within the poultry house, combined with deep learning technology, to recognize feature organs such as the comb and eyes, thereby continuously monitoring the health status of the chickens.

3.Development of Chicken Voiceprint Warning System and Light Disturbance System：The system utilizes the differences in vocalizations of chickens between healthy and abnormal states. Through voiceprint recognition technology, it automatically detects abnormal sounds associated with respiratory diseases, enabling real-time monitoring of the chickens' health status. It also calculates a quantifiable health warning index to provide valuable reference for poultry farmers.





Booth: SD03 400

Contact: Hung, Yu-Ting ythung@mail.atri.org.tw

Affiliated Ministry: MOA

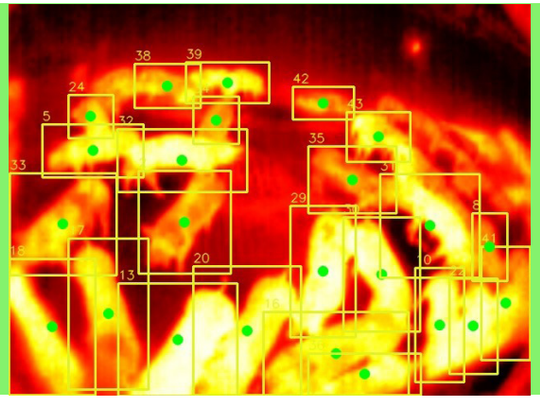
Exhibitor: Agricultural Technology Research Institute

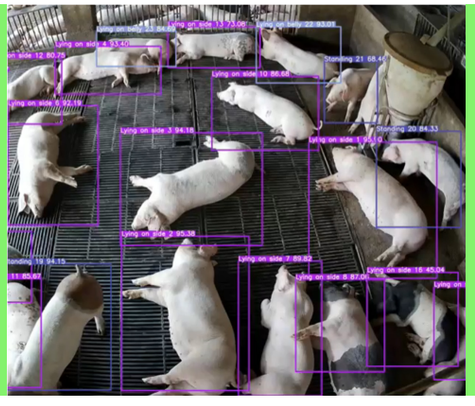
Exhibited Technology

Pig production and disease diagnosis platform

Technology Introduction

This technology integrates the Internet of Things (IoT) and Artificial Intelligence (AI) with veterinary expertise to address labor shortages and disease threats in the swine industry. Key applications include production management, health monitoring, environmental control, and disease diagnosis, already implemented on several pig farms. For example, an AI-based pig counting device provides quick and accurate inventory, while posture recognition and behavior alerts enhance health monitoring. An IoT dashboard connects weather stations and cameras, allowing for remote farm conditions monitoring. AI models for diagnosing pneumonia and polyserositis further support disease identification, aiming to accelerate the digital transformation of the swine industry.





智慧永續館
SUSTAINABILITY PAVILION

Highlight Technology

Contact: Kuo-Hua, Lee khlee@mail.tlri.gov.tw

Affiliated Ministry: MOA

Exhibitor: Taiwan Livestock Research Institute, Ministry of Agriculture

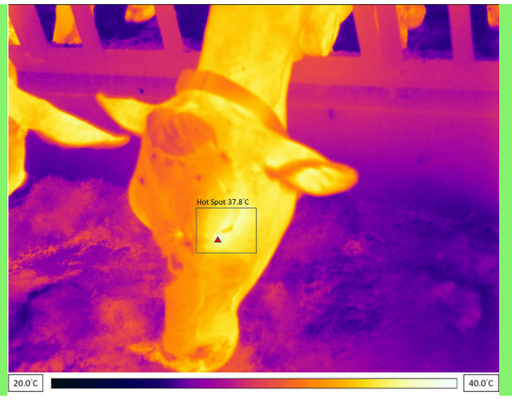
Exhibited Technology

Intelligent infrared thermal imaging health management system for dairy cows

Technology Introduction

This technology integrates infrared thermal imaging with visible light imaging, using a dual-lens camera system to continuously monitor the eye socket and udder temperatures of dairy cows. Combined with image recognition and RFID-based individual identification, the system builds a comprehensive health record for each cow. By automatically comparing measured temperatures with preset thresholds, it provides real-time alerts for early detection of mastitis and fever. In addition, the system is linked to a mobile management platform, enabling farmers to access health status and alerts anytime, anywhere. It can also connect with environmental monitoring and automated cooling systems, ensuring comprehensive and intelligent herd management. This approach not only enables non-contact, precise, and continuous health monitoring, but also enhances both animal welfare and farm productivity through data-driven decision-making.





Booth: SD03 402

Affiliated Ministry: MOA

Exhibitor: Taiwan Livestock Research Institute, Ministry of Agriculture

Exhibited Technology

Pig house thermal imaging biological temperature correction technology

Technology Introduction

Using thermal imaging devices, we measure the biological body temperature of piggeries. We also use physical contact temperature records to form a correction formula and perform thermal temperature correction to achieve non-contact temperature measurement and correction, thus obtaining relatively accurate biological temperature.



智慧永續館
SUSTAINABILITY PAVILION

Circular Sustainability

Contact: Tzong Shyan Hsu tzong@mail.atri.org.tw

Affiliated Ministry: MOA

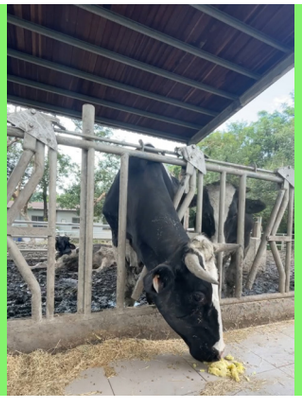
Exhibitor: Agricultural Technology Research Institute

Exhibited Technology

The process technology of pomelo-based alternative forage products

Technology Introduction

By employing processing technologies to mitigate the adverse effects of the bitterness from the oil glands of pomelo on cattle's palatability, this technology not only addresses the issue of surplus or off-grade pomelo requiring disposal, but also allows for the use of pomelo-based alternative forage to replace imported forage, thereby effectively reducing the feeding costs of domestic livestock.





Booth: SA01 404

Contact: Hsin Tai Hong tai61095@gmail.com

Affiliated Ministry: MOA

Exhibitor: Agricultural Technology Research Institute

Exhibited Technology

The process technology for using orange peel residue as a fermented feed ingredient in pig wet-feeding systems

Technology Introduction

This technology utilizes the rich cellulose, protein, carbohydrates, and bioactive compounds (such as polyphenols) found in orange peel residue. After being collected from fruit and vegetable processing facilities, the residue is crushed and anaerobically preserved. This fermented feed ingredient is then appropriately added to pig wet-feeding systems, allowing for the recycling and reuse of agricultural by-products to create a unique economic value.





405 Booth: SA02

Contact: jpwang@mail.atri.org.tw

Affiliated Ministry: MOA

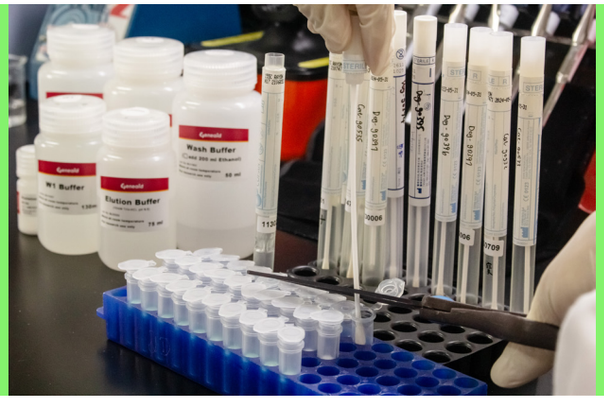
Exhibitor: Agricultural Technology Research Institute

Exhibited Technology

Establishment and application of genetic testing technologies for hereditary diseases in dogs and cats

Technology Introduction

Hereditary diseases in dogs and cats can affect their offspring to varying degrees, some even leading to severe disability or death. To improve breeding quality and prevent long-term suffering for affected pets, breeding dogs and cats should undergo genetic screening. This practice helps reduce the risk of disease transmission from the source. Supported by a program from the Ministry of Agriculture's Department of Animal Welfare , the Agricultural Technology Research Institute (ATRI) has developed seven genetic testing technologies for dogs and cats. We will progressively apply for TAF accreditation and provide related testing, consultation, and technology transfer services to promote the health and welfare of dogs and cats.





Booth: SA03 406

Contact: Ying-Pin Huang YPHuang@itri.org.tw

Affiliated Ministry: MOA

Exhibitor: Industrial Technology Research Institute

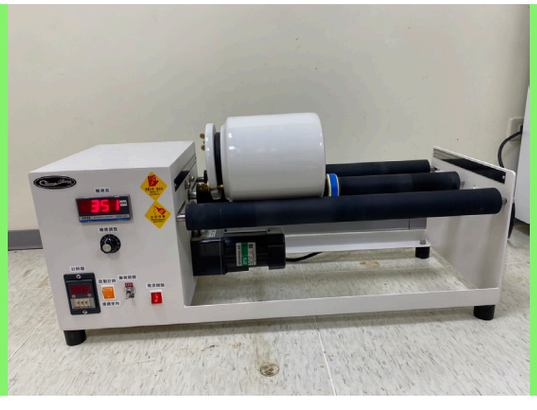
Exhibited Technology

Development of cosmetic products using bamboo charcoal powder

Technology Introduction

Bamboo charcoal powder is produced from bamboo through high-temperature carbonization. Its fine, porous structure provides excellent adsorption and oil-control effects. These characteristics make bamboo charcoal powder versatile for a wide range of cosmetic applications. Furthermore, its natural and eco-friendly properties align with modern consumers' preference for natural and sustainable products. Specifically, bamboo charcoal powder can serve as a substitute for chemical pigments commonly used in cosmetic products. Technically, the ultrafine texture of micro-nanosized bamboo charcoal powder allows it to be easily blended with various cosmetic ingredients, adding new functionality and market appeal to these products.





407 Booth: SA04

智慧永續館
SUSTAINABILITY PAVILION

Circular Sustainability

Contact: Tsung-Chun Lin tclin@tari.gov.tw

Affiliated Ministry: MOA

Exhibitor: Taiwan Agricultural Research Institute, Ministry of Agriculture

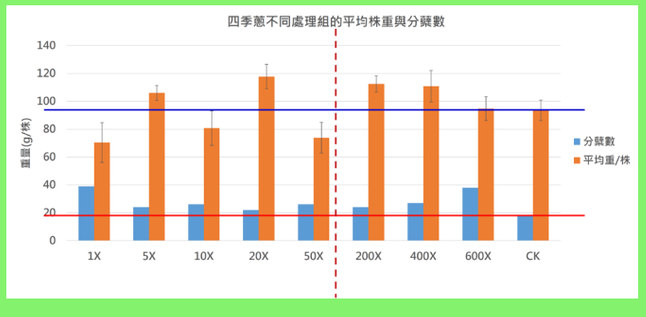
Exhibited Technology

Bacillus amyloliquefaciens T33SR2: A microbial strain for biofertilizer.

Technology Introduction

The bacterium Bacillus amyloliquefaciens T33SR2, developed by the Taiwan Agricultural Research Institute (TARI), has the ability to decompose chitin, cellulose, and collagen, solubilize phosphate, and produce indole-3-acetic acid (IAA) and secondary metabolites such as bacillibactin, iturin A, difficidin, and surfactin. These secondary metabolites can help the T33SR2 strain to colonize the rhizosphere and induce systemic resistance in plants. In a green onion growth trial in Wufeng, Taiwan, coating the roots of green onion seedlings with T33SR2 fermentation broth, diluted 20 times with diatomaceous earth, increased tiller numbers by 22.2% and yield by 20.6%. These results demonstrate the potential of T33SR2 for commercialization as a biofertilizer.





Booth: SA05 408

Contact: Su-Chen Lin linmay@tari.gov.tw

Affiliated Ministry: MOA

Exhibitor: Taiwan Agricultural Research Institute, Ministry of Agriculture

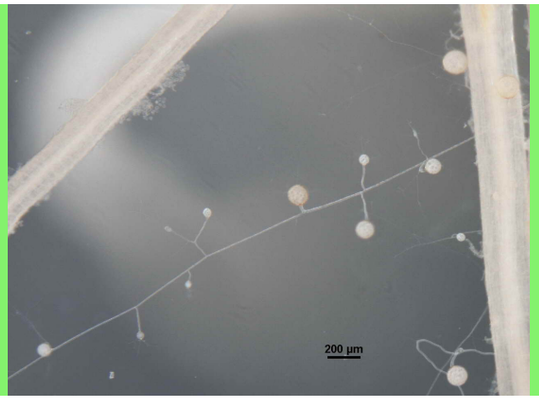
Exhibited Technology

Mass production technology for the arbuscular mycorrhizal fungus, Claroideoglomus etunicatum

Technology Introduction

The dominant species of commercial AMF products in Taiwan is Funneliformis mosseae, which is suitable for a cultivation environment with a pH of 6.0–8.0. However, the Claroideoglomus etunicatum strain, mass-produced with this technology, can facilitate crop growth in a cultivation environment with a pH range of 5.5–7.0, and thus is applicable to more crop types than the current commercial products. The spore density of the mycorrhizal soil produced by this technology can reach over 900 spores/g, with a high purity. This gives it a significant competitive advantage over general commercial products, which often have low purity and low spore density. C. etunicatum can increase the absorption of water and nutrients in crops, promote crop growth, and reduce the yield loss caused by environmental stresses such as flooding, salinization, or drought. This technology is projected to increase crop yields by 10–30%.





智慧永續館
SUSTAINABILITY PAVILION

Circular Sustainability

Contact: Xu,Zi-Yan zyxu@mail.tfrin.gov.tw

Affiliated Ministry: MOA

Exhibitor: Fisheries Research Institute, Ministry of Agriculture

Exhibited Technology

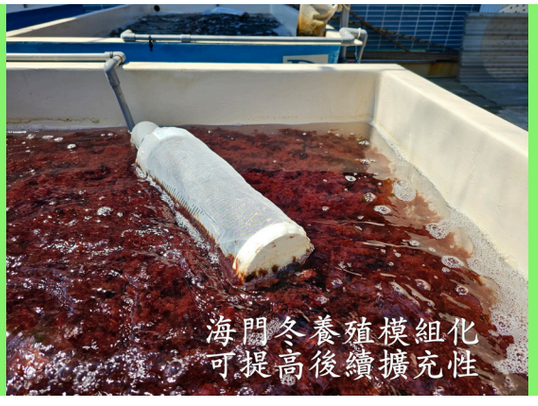
Production techniques of the tetrasporophyte stage of *Asparagopsis taxiformis*

Technology Introduction

This technology focuses on developing a stable and efficient cultivation system for the tetrasporophyte phase of the red seaweed *Asparagopsis taxiformis*. Through purification and screening, light optimization, water flow control, and nutrient regulation, it successfully improves the production stability and growth rate of this single morphological phase. This provides a critical raw material source for methane mitigation applications and facilitates subsequent large-scale production and integration into the international market.



水試所研究人員下海採集
臺灣本土海門冬種原



海門冬養殖模組化
可提高後續擴充性

Booth: SA07 410

Affiliated Ministry: MOA

Exhibitor: Taiwan Livestock Research Institute, Ministry of Agriculture

Exhibited Technology

Livestock farm wastewater carbon emission estimation program

Technology Introduction

This technology helps livestock farm technicians manage wastewater carbon emissions. Its functions include: (1) collecting and analyzing carbon emission data; (2) establishing calculation models and parameter settings; and (3) evaluating the carbon reduction benefits of different treatment methods, such as direct discharge, solid-liquid separation, composting and fermentation , and electricity use. The program can estimate carbon emissions based on site-specific conditions and provide optimization solutions. Its benefits include establishing scientific environmental management, enhancing operational efficiency, reducing environmental risks, and strengthening the foundation for sustainable operations.





411 Booth: SA08

Contact: Yu-Liang Huang ylhuang@mail.nvri.gov.tw

Affiliated Ministry: MOA

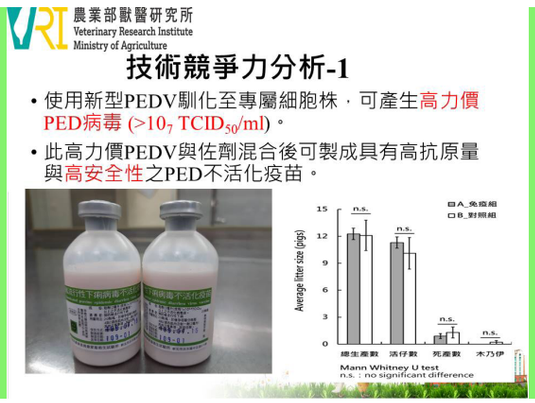
Exhibitor: Veterinary Research Institute, Ministry of Agriculture

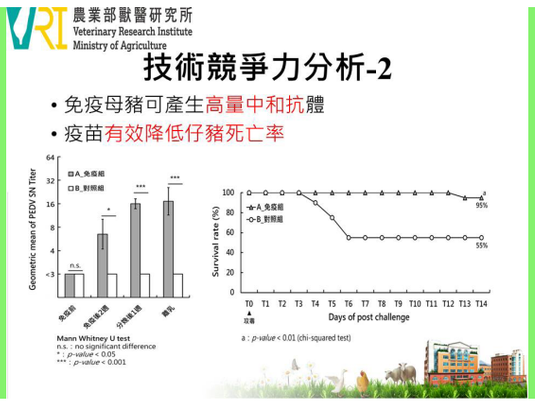
Exhibited Technology

Inactivated porcine epidemic diarrhea vaccine

Technology Introduction

The inactivated vaccine for porcine epidemic diarrhea (PED) is formulated with a novel PEDV strain and an adjuvant, offering both high antigen content and superior safety. When administered to pregnant sows, the vaccine induces high anti-PEDV antibodies with no adverse effects. Nursing piglets with suckling colostrum acquire high levels of anti-PEDV antibodies that significantly reduce mortality and severity of diarrhea. Given that PED remains widespread across East and Southeast Asia, these areas are considered promising markets for this vaccine.





Booth: SA09 412

Contact: Huang yurong huangyr@acri.gov.tw

Affiliated Ministry: MOA

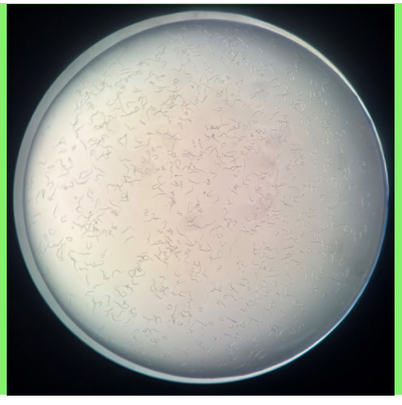
Exhibitor: Agricultural Chemicals Research Institute, Ministry of Agriculture

Exhibited Technology

Long-lasting formulation for root-knot nematode control using biodegradable inert ingredients

Technology Introduction

This new granular formulation for nematicides uses a registered chemical pesticide that has been enhanced with advanced formulation and delivery technologies to prolong its effectiveness. A single application can control root-knot nematodes for up to two months throughout the crop's growing season, thereby reducing crop damage. This formulation is also made with eco-friendly inert ingredients and uses solvent-reduction techniques, making it both labor-saving and environmentally safer. Its application method is the same as traditional granular products, which aligns with existing farmer practices and makes it easier to adopt and promote. This solution represents an ideal option for crop protection, as it combines long-lasting efficacy, labor-saving convenience, and environmental safety.





413 Booth: SA10

智慧永續館
SUSTAINABILITY PAVILION

Circular Sustainability

Contact: Lee shu jean shujeanlee@tydais.gov.tw

Affiliated Ministry: MOA

Exhibitor: Taoyuan District Agricultural Research and Extension Station, Ministry of Agriculture

Exhibited Technology

Intelligent subirrigation cultivation and management technology for Phalaenopsis

Technology Introduction

This technology utilizes IoT devices, irrigation pipelines, bottom trays, absorbent fabrics, and pressure-regulating drippers to achieve automated subirrigation for Phalaenopsis. By monitoring soil moisture levels and controlling irrigation schedules or volumes, the system optimizes resource usage, effectively reducing labor, water, and fertilizer consumption.





Booth: SA11 414

Contact: Wu YI-HUI yhw@mdares.gov.tw

Affiliated Ministry: MOA

Exhibitor: Miaoli District Agricultural Research and Extension Station, Ministry of Agriculture

Exhibited Technology

Eocanthecona furcellata mass production and collection system

Technology Introduction

The predatory stink bug, Eocanthecona furcellata, is a natural enemy that preys on lepidopteran larvae, including oriental leafworm moth, Indian cabbage white, and cotton bollworm. These pests cause significant damage to crops by feeding on leaves, stems, and fruits, resulting in severe year-round crop losses. E. furcellata employs piercing-sucking mouthparts to inject venom into its prey, paralyzing the larvae before extracting and consuming their body fluids.This innovative technology enhances the rearing and collection methods for E. furcellata by incorporating alternative diets, which reduces rearing time by 80%, lowers labor costs, extends the oviposition period of females, and improves egg quality. The optimized system facilitates more efficient mass-rearing for biological pest control, offering a scalable and cost-effective solution for agricultural pest management.





Contact: Tzu-cheng Chien tzucheng@hdares.gov.tw

Affiliated Ministry: MOA

Exhibitor: Hualien District Agricultural Research and Extension Station, Ministry of Agriculture

Exhibited Technology

Organic fertilizer formulation and application technology for green onions

Technology Introduction

This technology utilizes composted livestock and poultry manure, supplemented with plant-based residue fertilizers, to create a mixed organic fertilizer tailored to the nitrogen needs of green onions as outlined in the crop fertilization manual. While the composted manure mineralizes slowly, the faster-releasing plant residues ensure a steady nutrient supply throughout both the early and later growth stages, thereby reducing nutrient loss and overall fertilizer input. Furthermore, as green onion production is often severely affected by natural disasters due to climate change, the addition of plant growth promoters enhances seedling resilience under stress conditions.



與技轉廠商開會討論本案肥料配方調製相關事宜


本配方有機質肥料堆置過程

Booth: SA13 416

Contact: Chen, YingFang yfchen@mail.ttdares.gov.tw

Affiliated Ministry: MOA

Exhibitor: Taitung District Agricultural Research and Extension Station, Ministry of Agriculture

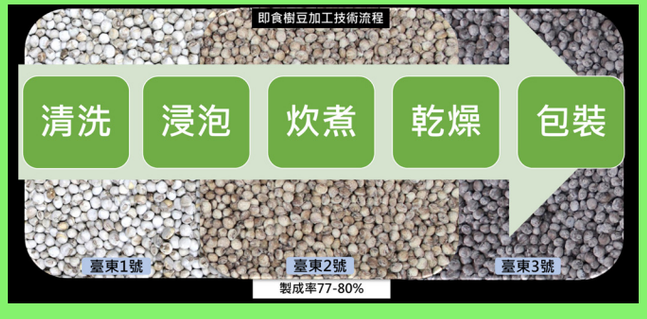
Exhibited Technology

Instant pigeon pea processing technology

Technology Introduction

Pigeon pea (*Cajanus cajan* (L.) Millsp.), also known as "warrior bean," is an important traditional food crop for indigenous communities along the Southern Link Highway in Taitung. The Taitung District Agricultural Research and Extension Station has developed an instant pigeon pea product that is rich in nutrients, can be stored at room temperature, and is ready-to-eat, easy to cook, and time-saving. Each 100 grams contains 25.5 grams of protein, is low in sodium (5mg/100g), has zero cholesterol, and is rich in dietary fiber (24.6g/100g). As a non-allergenic ingredient, it has the potential to be a senior-friendly food, serving as an alternative to refined starchy foods. It can also be consumed as a snack, increasing a person's protein and dietary fiber intake, promoting intestinal motility, enhancing satiety, and reducing the risk of metabolic syndrome by limiting excessive calorie consumption.





Contact: Cheng Huag Chang c.h.chang@tbrs.gov.tw

Affiliated Ministry: MOA

Exhibitor: Tea and Beverage Research Station, Ministry of Agriculture

Exhibited Technology

Manufacturing technology of Taiwan brown tea

Technology Introduction

To address challenges such as shifting consumer demands, labor shortages, and high energy consumption, the Taiwan Tea and Beverage Research Station of the Ministry of Agriculture proactively sought breakthroughs, developing an innovative tea variety named “Taiwan Brown Tea.” The tea is characterized by its labor-saving, low-carbon, and multi-flavored attributes. Its liquor presents an orange-red to amber hue. The new process utilizes prolonged static withering to replace the time-consuming and labor-intensive manual leaf tossing, thus achieving the goal of labor efficiency. This is supplemented by light pan-firing and rolling to shape the leaves, followed by controlled fermentation to ensure stable quality, and finally, oven drying to reduce energy use. The resulting new tea variety exudes a unique floral and fruity aroma with a refreshing and mellow taste.





Booth: SA15 418

Contact: Chin HanShiuan gerrychin@tbrs.gov.tw

Affiliated Ministry: MOA

Exhibitor: Tea and Beverage Research Station, Ministry of Agriculture

Exhibited Technology

Cutting propagation technique of coffee seedlings

Technology Introduction

Coffee (Coffea spp.) is a perennial evergreen shrub native to tropical Africa and belongs to the family Rubiaceae. Arabica coffee (C. arabica), the main cultivar cultivated in Taiwan, is a self-pollinating crop. However, some varieties, such as Geisha, often exhibit cross-pollination, leading to genetic segregation and unstable flavor profiles. Currently, Taiwan still lacks an effective asexual propagation system for coffee, which limits the large-scale propagation and promotion of superior parent plants. Therefore, this technology aims to establish a cutting propagation technique for coffee to rapidly propagate seedlings with superior traits, thereby facilitating the sustainable development of Taiwan's specialty coffee industry.





智慧永續館
SUSTAINABILITY PAVILION

Circular Sustainability

Contact: Janey Hsu eco@wynist.com janey@wynist.com

Affiliated Ministry: MOENV

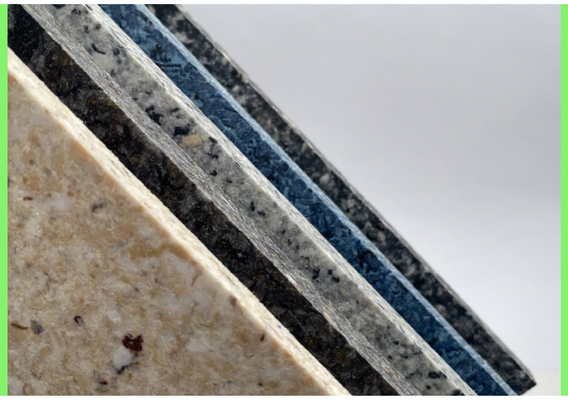
Exhibitor: Wynist Retail Solutions Inc.

Exhibited Technology

Textile Board and Textile Master Batch

Technology Introduction

* All fabrics, regardless of material, are recyclable. In addition to recycled materials, finished products can also be recycled and remanufactured.
* The textile board retains the original color of the fabric, is dye-free, and produces no wastewater. The textile master batch can be used in multiple products, providing brands with different options and reducing resource waste.
* After product launch, attract brand attention by incorporating waste fabric into store design, fiber sunglasses, hangers, and other related products, promoting environmental awareness.





Booth: SA17 420

Contact: Tracy Chen leelink0075@leelink.com.tw

Affiliated Ministry: MOENV

Exhibitor: Leelink Resource Technology Co., Ltd.

Exhibited Technology

Regeneration Method and System for Waste Investment Casting Shell Molds

Technology Introduction

1.High thermal stability and low impurity content, suitable for investment casting.
2.Modular regeneration process, customizable for different shell mold types and casting requirements.
3.Significant carbon reduction—recycled sand emits only ~10% of theCO2of virgin sand.

Industry Applicability

This is the first non-thermal, wastewater-free physical classification system for shell mold regeneration, effectively solving the long-standing challenge of shell mold reuse in the investment casting industry.





421 Booth: SA18

Contact: LIU CHUN FENG fone@aireco.tw

Affiliated Ministry: MOENV

Exhibitor: AIRECO Co., Ltd

Exhibited Technology

AI powered recycling eco system

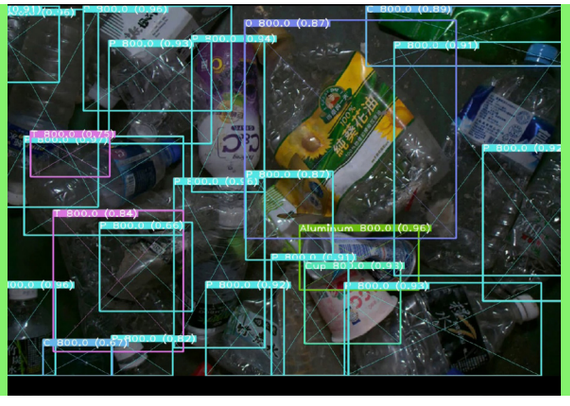
Technology Introduction

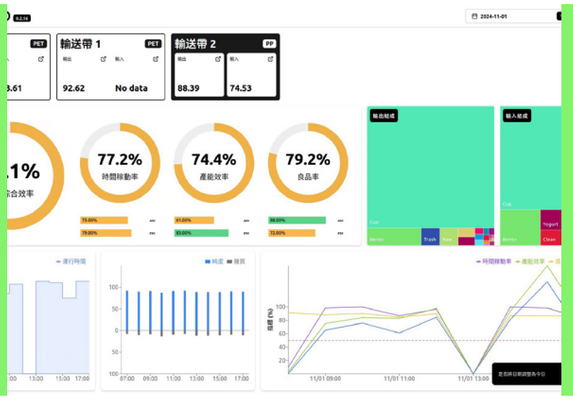
Built a proprietary image dataset with over 5 million images of locally collected recyclable materials in Taiwan, combined with synthetic data for model training. The system is trained to recognize over 30 categories (such as various types of plastics, metals like iron and aluminum, paper, paper containers and others). The model can perform real-time detailed recognition based on visual characteristics (color, shape, material), food grade, brands, detect residue presence, and determine compliance with government recycling standards. The model achieves an average accuracy rate of over 90%, and in 2024, it was selected for the Nvidia Poster session at the Nvidia Developer Conference in San Francisco to showcase applications of synthetic data.

Industry Applicability

maximuOur goal is to build an AI-driven smart recycling ecosystem that connects households, sorting facilities, and brand owners. By integrating smart recycling machines, AI-powered sorting systems, and synthetic data, we enhance sorting accuracy, reduce labor costs, and increase the value of recycled materials.

One of our key solutions is a fully automated, AI-powered sorting system designed for recycling facilities, capable of processing 5,000 to over 30,000 metric tons of waste annually. It achieves twice the throughput of traditional sorting lines while reducing labor demand by up to 70%.m 400 characters





Booth: SA20 422

Contact: Max Ma mayuju@give-circle.com

Affiliated Ministry: MOENV

Exhibitor: GIVE-CIRCLE CO., LTD. (GC)

Exhibited Technology

Item Circulation and Carbon Reduction Management Platform

Technology Introduction

1.)Zero Waste: Circulating idling items from home, office and warehouse extends product life cycle considerably
2.)Efficient: An item is circulated every 96 seconds, thanks to 130,000 members including 647 NPOs
3.)Data: Records and data such as stakeholders, quantity, footprint, waste and CO2 reduction available through GC system
Awards:
National Sustainable Development Award
Taiwan Circular Economy Award
EPA Resource Recycling Model Enterprise Award
59th Ten Outstanding Young Persons – Business, Entrepreneurship and Economic Development Category

Industry Applicability

1.)Express Matching:
An item is circulated every 96 seconds
2.)Automated Carbon Reduction Calculation Module:
Every shared item is automatically translated into measurable carbon reduction and social impact.
3.NPO first:
NPO members are given priority to claim needed items.
4.)Professional Version for brand owners:
Specialized version that visualizes impact through a circular and sharing-based ESG dashboard allows brand owners to convert their stock and idling items easily into branding or cause marketing campaigns





423 Booth: SA21

智慧永續館
SUSTAINABILITY PAVILION

Circular Sustainability

Contact: Jinjin,Lee jin.lee@evolutivelabs.com

Affiliated Ministry: MOENV

Exhibitor: Evolutive Labs Co., Ltd. (Brand name : RHINOSHIELD)

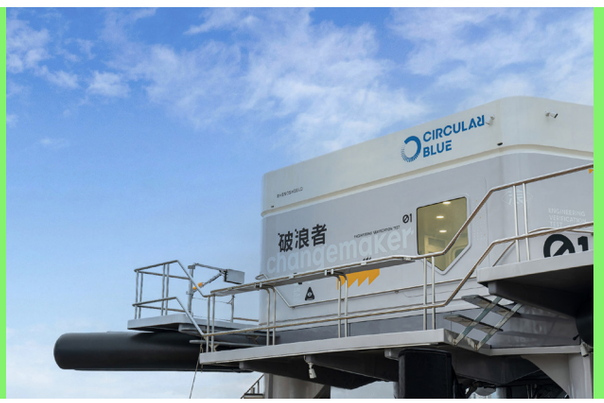
Exhibited Technology

Circular Innovation in Impact-Resistant Materials and Ocean Cleanup Technologies

Technology Introduction

Founded in Taiwan in 2012, RHINOSHIELD has evolved into a global leader in impact-protection accessories, driven by tech innovation and sustainability. Driven by its Changemaker spirit, the brand pioneers impact-resistance engineering, advancing ocean cleanup technologies, and innovative circular solutions. Through its mono-material ecosystem, RHINOSHIELD reduces virgin plastic use, maximizes recyclability, and redefines industry standards in circular design. Looking ahead, the brand remains committed to material innovation and its pledge to Protect Your World, shaping a sustainable future through cutting-edge technologies and responsible action.





Booth: SA22 424

Contact: You Ren Hsu youren.hsu@agriforward.co

Affiliated Ministry: MOENV

Exhibitor: Agriforward Co., Ltd

Exhibited Technology

AIoT Agricultural Smart Water and Electricity Management System

Technology Introduction

The AIoT Smart Agricultural Water and Electricity Management System designed by Womow not only collects carbon emission data from agricultural electromechanical facilities but also provides users with a convenient and easy-to-use human-machine interface through simple settings. The technical features include:

1.Water and electricity information monitoring
2.Weather-responsive motor control, enabling climate-adaptive operations
3.Edge computing optimization
4.Pluton hardware encryption for secure cloud data transmission
5.Cloud-based command center for data visualization
6.LoRa-based intranet for writing parameters to field equipment

Industry Applicability

Our goal is to build an AI-driven smart recycling ecosystem that connects households, sorting facilities, and brand owners. By integrating smart recycling machines, AI-powered sorting systems, and synthetic data, we enhance sorting accuracy, reduce labor costs, and increase the value of recycled materials.

One of our key solutions is a fully automated, AI-powered sorting system designed for recycling facilities, capable of processing 5,000 to over 30,000 metric tons of waste annually. It achieves twice the throughput of traditional sorting lines while reducing labor demand by up to 70%.





Contact: LI,JIN-SHU lijinshuh@ccit.ndu.edu.tw

Affiliated Ministry: MND

Exhibitor: National Defense University

Exhibited Technology

Lightweight Innovative Combustible Cartridge Case Technology

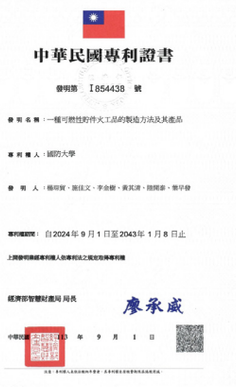
Technology Introduction

Combustible cartridge cases are a groundbreaking innovation in ammunition design, serving as both a structural container and an energy source, thus significantly reducing the weight and cost of cartridges. Initially developed to replace traditional metallic cartridges, enabling them to burn completely or partially during firing. This dual function not only reduces the weight of the ammunition but also minimizes the environmental impact of metallic residue and the space occupied by the tank interior. Over the years, Combustible cartridge cases have found widespread applications in military and industrial domains, particularly in machine gun and tank ammunition, due to their efficient ballistic properties and low cost.

Industry Applicability

This technology is Featuring lightweight, eco-friendly, and residue-free characteristics, it effectively reduces logistical burden and enhances operational and training efficiency. It enables the design of ammunition without metallic shell residues, which is beneficial for stealth operations and optimizing internal space in vehicles such as tanks.




中華民國專利證書

發明第 I854438 號

發明名稱：一種可燃性好件火工品的製造方法及其產品

專利權人：國防大學

發明人：楊印賢、張佳文、李金樹、黃其津、簡開泰、鄧早發

專利權期間：自2024年9月1日至2043年1月8日止

經濟部智慧財產局 局長 廖承威

中華民國 113 年 9 月 1 日

Booth: SA24 426

智慧永續館
SUSTAINABILITY PAVILION

Resilience Empowerment

Contact: Ming-Ju Chen cmj@ntu.edu.tw

Affiliated Ministry: MOA

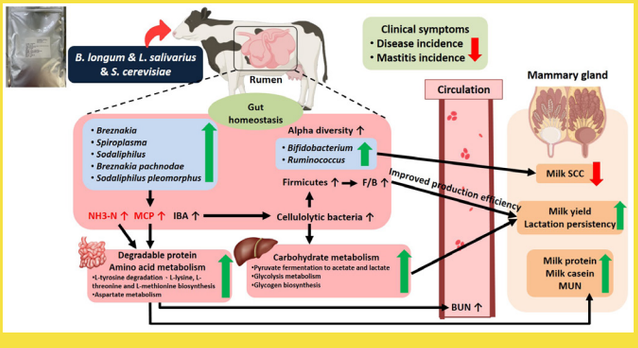
Exhibitor: National Taiwan University

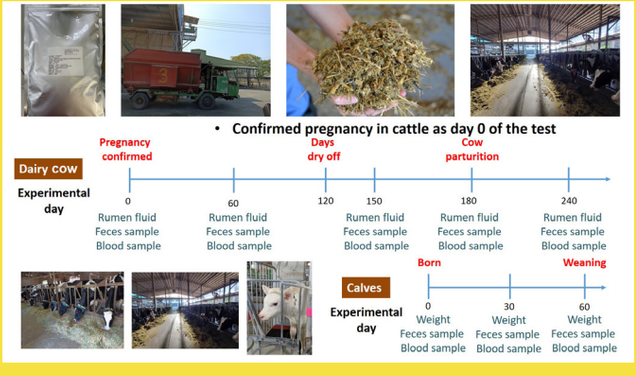
Exhibited Technology

Developing a novel probiotic mix for promoting dairy cow health: A multi-omics approach

Technology Introduction

Using a combination of multi-omics analysis and animal models, we screened for health-promoting probiotics from the bovine rumen to improve dairy cow health and milk quality. By comparing the microbiota and metabolome of healthy cows with those affected by mastitis, we identified and validated the functions of Ruminococcus flavefaciens and Bifidobacterium longum subsp. longum through in vitro fermentation and germ-free mouse fecal microbiota transplantation. We then developed a composite probiotic by integrating Lactobacillus salivarius and Saccharomyces cerevisiae. Farm trials confirmed that this probiotic mix can significantly reduce the incidence of mastitis and increase milk yield and casein content, demonstrating its commercialization potential. Compared to most commercially available non-bovine strains, our technology utilizes strains isolated directly from dairy cows, offering superior colonization and functionality, and aligning with the trends of low-carbon and antimicrobial resistance reduction. The global market is growing by 7% annually, with a potential application scope of over 400,000 cows, estimating an annual output value of 2 billion NT dollars. This highlights its significant application potential and competitiveness.





Booth: SB01 428

Affiliated Ministry: MOA

Exhibitor: Industrial Technology Research Institute

Exhibited Technology

Compact Electric Tractor

Technology Introduction

This 15 kW electric tractor is designed for small-scale farming, offering essential functions such as plowing and lifting. It supports interchangeable attachments, enhancing versatility and adaptability. Powered by lithium batteries with grid charging capability, it is fuel-free, quiet, user-friendly, and requires minimal maintenance. Field tests demonstrate over 4 hours of continuous operation with performance comparable to diesel tractors. Compared to conventional models, it reduces carbon emissions by approximately 95%, lowers energy costs by over 70%, and decreases labor demand by around 30%.





Contact: Shuen-Chi You yousc_1@tari.gov.tw

Affiliated Ministry: MOA

Exhibitor: Taiwan Agricultural Research Institute, Ministry of Agriculture

Exhibited Technology

Accelerated ginger seed production technology package

Technology Introduction

To solve the long-term problem of diseases affecting the ginger industry due to pathogen-infected seed ginger, the Taiwan Agricultural Research Institute, Ministry of Agriculture, has developed the Accelerated Ginger Seed Production Technology Package after years of research and development. This technology combines tissue culture to produce healthy ginger seedlings with a specialized growing medium and uses an off-ground bag cultivation method to grow pathogen-free, healthy seed ginger. This approach not only features a high multiplication rate, a short acclimatization period, and a high survival rate of over 90%, but also enables the production of healthy, market-ready seed ginger within one year, ensuring a stable year-round supply. Furthermore, by promoting the production and use of healthy seed ginger, this technology can reduce disease risks in traditional ginger cultivation, enhance industry resilience, and lay a solid foundation for sustainable development.





Booth: SB03 430

Contact: Hsu Fu Lan flhsu@tfri.gov.tw

Affiliated Ministry: MOA

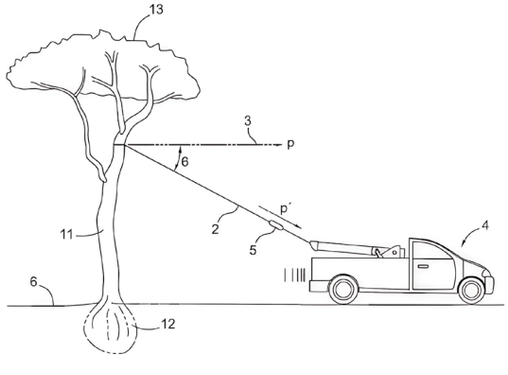
Exhibitor: Taiwan Forestry Research Institute, Ministry of Agriculture

Exhibited Technology

Safety criterion for tree root retention force

Technology Introduction

This technology offers a tree rootplate safety evaluation model. By integrating the values obtained from a pull test into the tree rootplate stability evaluation formula, the safety strength of the tree's rootplate can be assessed. It categorizes the tree's rootplate safety status into highly hazardous, moderately hazardous, slightly hazardous, minimally hazardous, or safe.





Contact: KAI-CHIEH, CHANG kcchang@mail.tfrin.gov.tw

Affiliated Ministry: MOA

Exhibitor: Fisheries Research Institute, Ministry of Agriculture

Exhibited Technology

Selective breeding technology for red tilapia (Oreochromis sp.) in Taiwan

Technology Introduction

The red tilapia originated from a mutant Oreochromis mossambicus found in Tainan. Through selective breeding, a stable lineage was developed that can produce almost all-red offspring. Its red appearance and high market value, double that of black tilapia, make it a desirable strain. Our technology, which includes mass production and screening, can be transferred to producers, enabling them to efficiently produce and sell fingerling in both domestic and international markets.





Contact: Jen-You Jian jianjenyou@tydais.gov.tw

Affiliated Ministry: MOA

Exhibitor: Taoyuan District Agricultural Research and Extension Station, Ministry of Agriculture

Exhibited Technology

Propagation and seed production techniques for the rice variety Taoyuan No. 7.

Technology Introduction

To ensure the seed purity and strong resistance to rice blast disease of the "Taoyuan No. 7" rice variety, we have developed the "Propagation and Seed Production Techniques for Taoyuan No. 7 Rice." This technology reduces the risk of leaf blast disease during the mid-growth stage and protects against panicle blast disease during the grain-filling stage. By cultivating this high-quality, pure variety, farmers can avoid using rice blast-related fungicides throughout the entire growing season while preserving its distinctive aroma. This not only lowers production costs but also enhances the resilience of the rice industry, mitigating the impacts of climate change.





智慧永續館
SUSTAINABILITY PAVILION

Resilience Empowerment

Contact: Lan, Hsuan-Chin lanhc@tcdares.gov.com

Affiliated Ministry: MOA

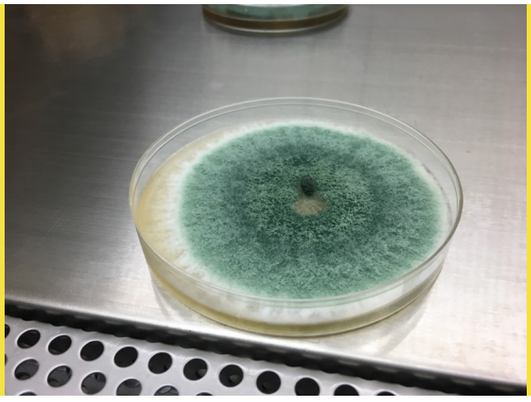
Exhibitor: Taichung District Agricultural Research and Extension Station, Ministry of Agriculture

Exhibited Technology

Technology for enhancing crop stress tolerance with Trichoderma TCTP003

Technology Introduction

When applied to top-grafted pear cultivation after liquid fermentation with various substrates, Trichoderma TCT-P003, under identical growing conditions, enhances leaf stomatal conductance and net photosynthesis. This increases carbohydrate content within the plant tissue, thereby protecting cell membranes, reducing damage from low temperatures, and regulating osmotic pressure. The treatment sustains the growth of scions and fruits, mitigates stress, and significantly improves fruit quality and weight.





Booth: SB07 434

Contact: Chou, Chia-Lin jia@tss.gov.tw

Affiliated Ministry: MOA

Exhibitor: Taiwan Seed Improvement and Propagation Station, Ministry of Agriculture

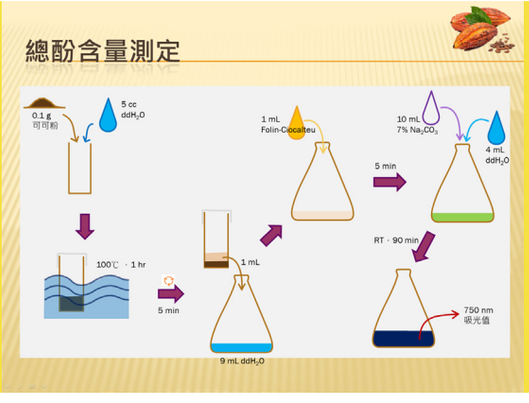
Exhibited Technology

Cocoa clonal grafted seedling selection technology

Technology Introduction

This technology involves the provision by industry partners of mature cocoa trees over five years old that have already reached mass production, along with fermentation techniques. We conduct field evaluations of individual cocoa trees for yield traits and the content of active compounds in dried beans, and establishes analytical methods for determining the antioxidant content in dried cocoa beans as well as orchard renewal techniques. These efforts help enhance the overall yield and quality of cocoa plantations. The technical package includes: methods for investigating cocoa yield traits, analytical methods for determining antioxidant compounds (total phenolics and total flavonoids), and cocoa grafting techniques.





435 Booth: SB08

智慧永續館
SUSTAINABILITY PAVILION

Resilience Empowerment

Contact: SHIH, YI-TING pyt0218@mail.ilosh.gov.tw

Affiliated Ministry: MOL

Exhibitor: Institute of Labor, Occupational Safety And Health, Ministry of Labor

Exhibited Technology

Shipboard Personnel Overboard Monitoring System

Technology Introduction

The system can be configured on a vessel and includes a micro wireless radio-frequency (RF) beacon transmitter, which is bound to an operator and attached to the operator's body to actively broadcast an RF beacon. And a plurality of RF beacon receivers, which are externally connected to the ship's main control computer and distributed throughout the vessel to receive the RF beacon.
The man-overboard management software is equipped with a detection mechanism to determine whether the RF beacon signal strength continuously falls below a threshold. If the signal strength remains below the threshold, the software determines that a man-overboard event has occurred and executes an alert procedure.

Industry Applicability

To be used on domestic coastal fishing vessels, enhancing and protecting fishermen's operational safety.





Booth: SB09 436

Contact: LIU, KUO CHING danlie@mail.ilosh.gov.tw

Affiliated Ministry: MOL

Exhibitor: Institute of Labor, Occupational Safety And Health, Ministry of Labor

Exhibited Technology

Intelligent Image Recognition Safety Monitoring System for Crane Operations and Hoisting

Technology Introduction

To prevent accidents during crane hoisting operations, the Labor Safety Institute has developed a safety control monitoring system. This system utilizes intelligent image recognition technology to monitor hazardous areas during operations. It includes features such as range setting, monitoring of objects (events) within the designated area, and the activation of message notifications, alarms, and system alerts. The technology is also expected to be further extended for use in monitoring various hazardous areas on construction sites, such as window edges, elevator openings, stairwells, and other areas where there is a risk of falls during labor activities.

Industry Applicability

It is expected that the technology can be further applied to monitoring various dangerous areas in construction sites, such as windows, elevator openings, stairwells, etc., as well as monitoring areas where workers may be at risk of falling during work.





437 Booth: SB10

智慧永續館
SUSTAINABILITY PAVILION

Resilience Empowerment

Contact: SHEN,YU LIN david@mail.ilosh.gov.tw

Affiliated Ministry: MOL

Exhibitor: Institute of Labor, Occupational Safety And Health, Ministry of Labor

Exhibited Technology

The smart helmet

Technology Introduction

In order to improve the functions of traditional helmets and enhances the functions of traditional helmets, improves the convenience and safety of workers in special working environments, and meets the practical needs of special fields.
This smart helmet can send back data from the on-site working environment and worker activities to the back-end monitor, so that the management personnel can have a good knowledge and understanding of the information of the physical condition and working environment conditions of the on-site personnel at all times and make appropriate decisions in an emergency to protect the safety of workers.

Industry Applicability

By integrating sensing and communication technologies, the functionality of traditional safety helmets is enhanced to provide lighting, photography, and emergency communication features. This meets the needs of workers operating in special environments. Backend management personnel can monitor the status of on-site workers in real time, enabling timely response during emergencies and ensuring personnel safety





Booth: SB11 438

Contact: Chen, Soon-lin chensl@ncsist.org.tw

Affiliated Ministry: MND

Exhibitor: National Chung-Shan Institute of Science and Technology

Exhibited Technology

Mobile Electrolyser Hydrogen Power System

Technology Introduction

This exhibit integrates NCSIST's 2024 hydrogen production, hydrogen storage, and fuel cell exhibit modules. It is Taiwan's first mobile electrolysis hytrogen production and power generation system, which integrates a 6kw full self-made AEM electrolyser, 20 cubic meters of hydrogen storage alloy, 20kW fuel cell, and EMS. The system design includes water and thermal management, and can serve as proof-of-concept system of hydrogen-production power plants at the NCSIST Minxiong campus. In addition, the highlight of the exhibit is that the entire system operates in a low temperature (less than 80℃) and low pressure(less than 10 bar) environment, reducing concerns about the safety issue and accelerating the popularization of hydrogen energy.

Industry Applicability

Military: War preparedness energy storage, emergency backup power systems for importanat locations, power supply for weapon systems.
Civilian: Power supply to areas without feeder lines (remote villages, outlying islands), green emergency backup power.





Contact: Ho, Sheng Han HoSH00@ncsist.org.tw

Affiliated Ministry: MND

Exhibitor: National Chung-Shan Institute of Science and Technology

Exhibited Technology

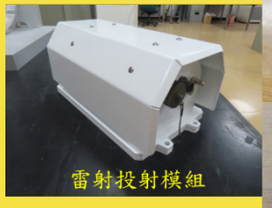
Laser Dazzler System

Technology Introduction

The Laser dazzler system mainly consists of green laser(510~540nm). It can warn and drive away the target.

Industry Applicability

Military:UAV Defense System, Warn and Drive Away the Target.
Civilian: Laser ilmination


雷射投射模組


電源訊號處理模組


控制面板

Booth: SB13 440

Contact: Eric Yang ericyang@iii.org.tw

Affiliated Ministry: MODA

Exhibitor: Institute for Information Industry (III)

Exhibited Technology

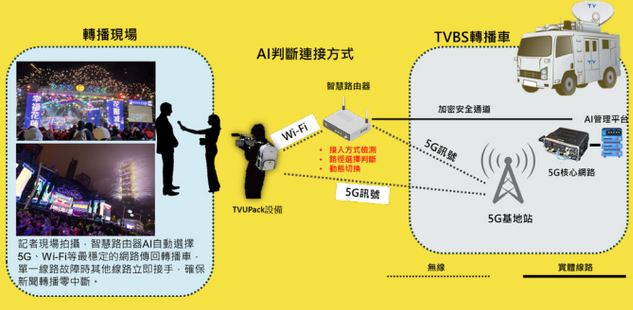
Heterogeneous Network Trust Technology – Video Streaming Disconnection Experience

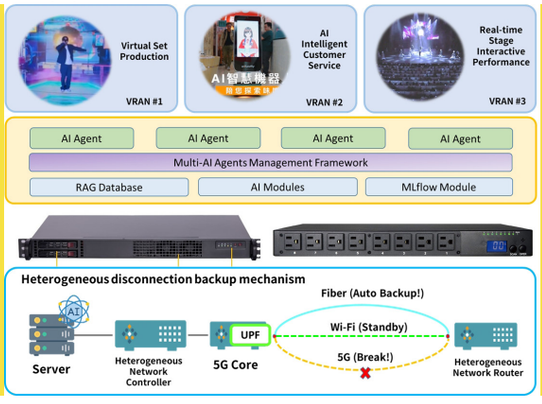
Technology Introduction

For various exhibition and performance applications—such as motion capture and audio/video transmission—this solution enables the creation of dedicated network architectures tailored to specific application needs. The system integrates multiple access technologies, including Ethernet, Wi-Fi, and 5G, offering flexible network connectivity. It supports a variety of endpoints, including VxLAN and GRE tunneling mechanisms, and provides endpoint IP mobility to ensure stable operation across different network environments.

Industry Applicability

5G heterogeneous networking technology demonstrates strong potential in the cultural technology industry. By integrating multiple transmission methods such as 5G, Wi-Fi, and wired networks, it enables automatic failover to ensure uninterrupted performances and exhibitions, enhancing network stability and reliability. The technology supports LAN broadcast functionality, allowing cultural content providers to seamlessly adopt 5G private networks while lowering technical barriers. Additionally, it offers network quality testing and visual monitoring tools to quickly identify whether issues stem from the application or the network, accelerating the deployment process. This makes it especially suitable for cultural content creation, performance integration, and advanced communication applications.





441 Booth: SB14

智慧永續館
SUSTAINABILITY PAVILION

Resilience Empowerment

Contact: Wan-Yi Lin WYLin@itri.org.tw
Kuo-Huang Hsu GHHsu@itri.org.tw

Affiliated Ministry: MODA

Exhibitor: Industrial Technology Research Institute (ITRI)

Exhibited Technology

Green Mobile Network Application

Technology Introduction

• Technological Innovation: This solution pioneers energy-saving control for telecom networks by integrating base station sleep mode, cooling optimization, and green energy forecasting. It allows dynamic power reduction without service disruption, achieving up to 30% energy savings and supporting carbon reduction goals.
• Competitive or Intellectual Property Advantages: Equipped with high-precision green energy forecasting and flexible energy-saving control capabilities, the solution establishes a standardized verification mechanism, forming a leading energy-efficient solution.
• Important Achievements / Awards: Recognized with the ASOCIO International Award, this solution has been successfully field-tested with Chunghwa Telecom and Compal Electronics, showcasing its strong impact, reliability, and wide applicability across the telecom industry.

Industry Applicability

This technology is widely applicable to telecom base stations and data centers, enabling operators to save energy without disrupting services. Through automated sleep mode and air conditioning control, it adjusts equipment operation based on network traffic, optimizing energy use. It also integrates green energy forecasting and dispatching, allowing facilities to align energy consumption with renewable generation and increase green energy adoption. Field-tested with Chunghwa Telecom and Compal Electronics, the solution has proven effective and scalable. It offers strong real-world applicability and supports energy-saving transformation in 5G and future telecom networks.





Booth: SB15 442

Contact: Kevin Yang KevinYang@itri.org.tw

Affiliated Ministry: MODA

Exhibitor: Industrial Technology Research Institute (ITRI)
Institute for Information Industry(III)

Exhibited Technology

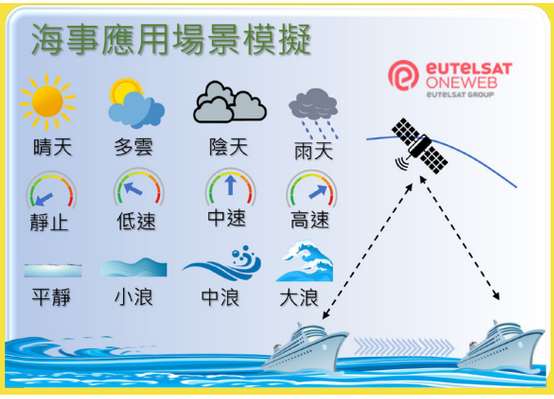
Maritime satellite communication simulation

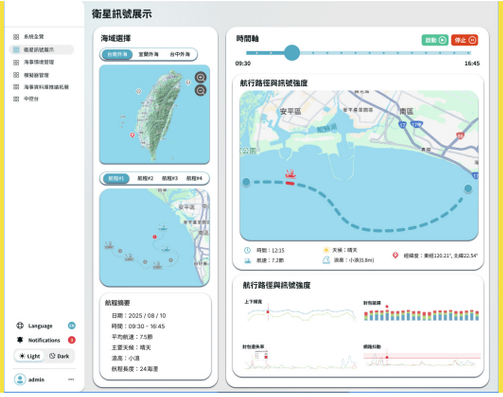
Technology Introduction

Conduct field measurements of MEO/LEO satellite communication performance using mobile platforms (e.g., vessels) under varying times, locations, speeds, and weather conditions.
The recorded data will serve as baseline reference for future satellite communication transmission simulations of mobile devices.

Industry Applicability

By collecting and analyzing accurate simulated environmental data, satellite service providers can validate maritime applications without the need for actual sea trials, thereby reducing technical risks and development costs. This effort also opens new market opportunities for system integrators and network vendors, enhances network system and software capabilities, and broadens the scope of product applications.





443 Booth: SB16

智慧永續館
SUSTAINABILITY PAVILION

Resilience Empowerment

Contact: Eric Yang ericyang@iii.org.tw

Affiliated Ministry: MODA

Exhibitor: Institute for Information Industry (III)

Exhibited Technology

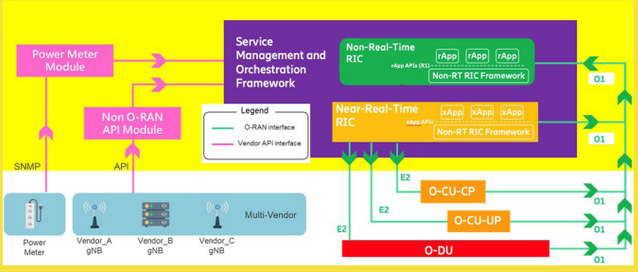
5G Energy Saving and AI Platform

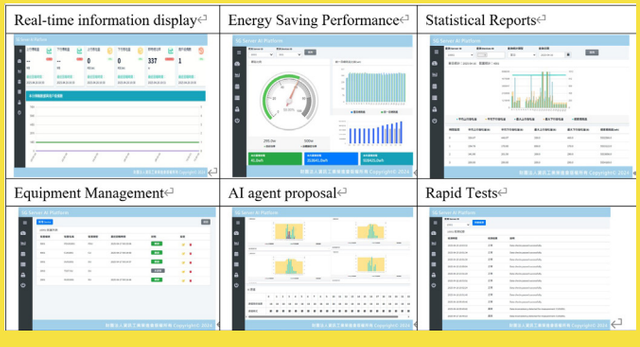
Technology Introduction

Integrating conventional gNB base station equipment with O-RAN base stations, IoT devices, and other data nodes, this platform utilizes AI algorithms for analysis to enable diverse AI applications such as O-RAN module performance optimization, energy consumption management across all modules, and module failure prediction. The platform will also establish standardized unified access protocols and integrated testing mechanisms to accelerate the integration of communication and sensing applications for 5G and IoT devices, thereby shortening the development timeline for domestic vendors in deploying AI applications in 5G environments.

Industry Applicability

This platform offers high industrial applicability by addressing the high power consumption costs associated with 5G private network operations. It provides an effective energy-saving solution that helps operators reduce electricity expenses by up to NT$300,000 per site annually. The platform integrates energy management and anomaly detection functions, collecting power usage and communication data from 5G equipment through standardized data exchange. This data serves as an interface for AI model training, enhancing operational efficiency and intelligence. The solution also aligns with ESG and net-zero carbon emission policies, supporting enterprises in strengthening their energy-saving efforts as part of brand image and supply chain evaluation advantages. The primary target users are network system integrators and equipment vendors, making the platform highly suitable for integration and commercial promotion.





Booth: SB17 444

Contact: Wen-Chien Hung jelly_hung@askey.com

Affiliated Ministry: MODA

Exhibitor: ASKEY Computer Corp.

Exhibited Technology

Smart 5G Private Network

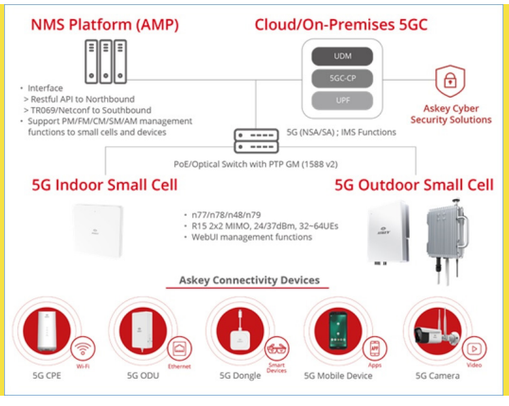
Technology Introduction

Askey's smart 5G private network is designed for enterprise customers to build a dedicated wireless network, which has excellent features of low latency, high-speed transmission, and ultra-high reliability, and key benefits of low total cost of ownership, easy deployment and management, and superior performance. It can be applied to smart manufacturing, smart transportation, smart exhibitions, smart cities, and other fields.

Industry Applicability

This system can be applied in a 5G smart factory, improving manufacturing efficiency and yield rate and reducing manpower. It can be applied in a 5G smart zoo as well, providing a dense, uninterrupted mobile network and a novel interactive experience with fantasy animals. It can also be applied in a 5G remote acting platform, providing an innovative acting environment that integrates virtual and real, and achieving multi-point remote synchronization and real-time interactive feedback.





445 Booth: SB18

Contact: Fiona Chen top-marketing6620@topmso.com.tw

Affiliated Ministry: MODA

Exhibitor: Taiwan Digital Optical Technology Co., Ltd.

Exhibited Technology

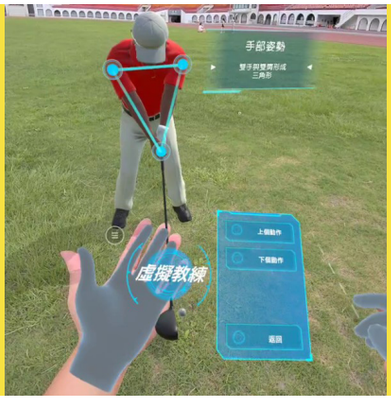
5G Private Network Cross-Domain Deployment and Integration Services

Technology Introduction

Taiwan Optical Platform services span three major business sectors: cable television, telecommunications, and media. Its operational area stretches from Taoyuan in the north to Tainan in the south, making it the only MSO (Multiple System Operator) in Taiwan with a complete regional footprint, covering 41% of the nation's territory.
Taiwan Optical Platform was also the first MSO in Taiwan to offer fiber-to-the-home (FTTH) services, with nearly 2,000 deployed base station circuits. In 2018, the group established an IoT platform integrating cloud technologies, and partnered with the government on urban innovation projects such as autonomous vehicles, smart factories, and smart streetlights. These initiatives contributed to the development of a comprehensive IoT supply chain and added value to its telecommunications business.

Industry Applicability

Taiwan Optical Platform leverages a fiber-optic network foundation to support 5G private network deployment, integrating technologies such as digital twins, automated guided vehicles (AGVs), and AI-based machining error detection. We focus on assisting factories in Taiwan's central region—a key hub for the manufacturing and machine tool industries—in their 5G transformation.
Beyond industrial use, our 5G services extend to diverse locations such as Wufeng Golf Course, remote schools in Tainan, and the Dali Art Plaza, integrating mixed reality (MR) for golf training, drone-based inspections, VR English learning, digital historical archives, and remote collaborative performances—demonstrating the full potential of 5G private network technology across multiple domains.
Through Taiwan Optical Platform cross-disciplinary digital solutions, we meet the diverse needs of businesses within our service areas. Looking ahead, we will continue to build on our 5G private network foundation, expanding into applications such as smart healthcare, intelligent transportation, and smart entertainment, providing high-quality telecom services to a wider range of industries.





Booth: SB19 446

Contact: Alice Chang alice.chang@hwacom.com

Resilience Empowerment

智慧永續館 SUSTAINABILITY PAVILION

Affiliated Ministry: MODA

Exhibitor: HwaCom Systems Inc.
OME Technology Co., Ltd.

Exhibited Technology

5G Innovation and Smart Manufacturing

Technology Introduction

- AI-Driven Optical Defect Detection
- Intelligent Material Picking
- AR-Enabled Remote Assistance

Industry Applicability

This demo uses 5G's high bandwidth, low latency, massive connectivity, and security to enable smart manufacturing.
MR glasses allow remote guidance and seamless knowledge transfer.
Intelligent picking system integrates QR scanning and navigation with ERP.
AI image recognition detects anomalies at workstations in real time, improving productivity, quality, and efficiency.





447 Booth: SB20

智慧永續館
SUSTAINABILITY PAVILION

Resilience Empowerment

Contact: Ho-Hsin Lee kernoli@itri.org.tw

Affiliated Ministry: MODA

Exhibitor: Industrial Technology Research Institute (ITRI)

Exhibited Technology

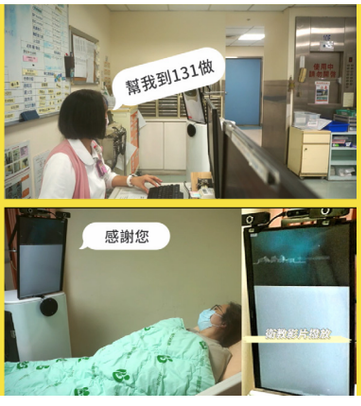
5G AI Medical Assistance Robot

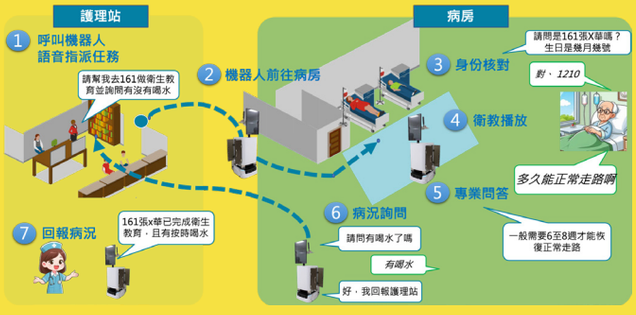
Technology Introduction

This system is an autonomous mobile robot intelligent healthcare solution utilizing 5G communication and AI technology. It can interact with patients, collect information about their conditions, or provide health education; at the same time, it can understand nurses' instructions, help deliver medications, relay messages, and even guide visitors. This system particularly strengthens identity verification and personalized health education systems, sharing nurses' complex movement and communication tasks, allowing them to focus more on core care, saving 52% of time on personalized health education, environment navigation, and other tasks.

Industry Applicability

This system targets healthcare settings, improving issues of nursing staff shortage and excessive workload. By integrating 5G communication, autonomous mobile robots, and large language model technology, the system assists medical staff in medication delivery, guidance explanations, and basic health education communication, effectively reducing nurses' in-hospital movement time by 6.6% and decreasing patient waiting time by an average of 13 minutes. This system not only saves working hours but also has the potential to expand to long-term care facilities, remote care in isolation wards, or as an assistive tool for rural healthcare, enhancing overall accessibility and quality of medical services.





Booth: SB21 448

Affiliated Ministry: MODA

Exhibitor: earthbook Inc.

Exhibited Technology

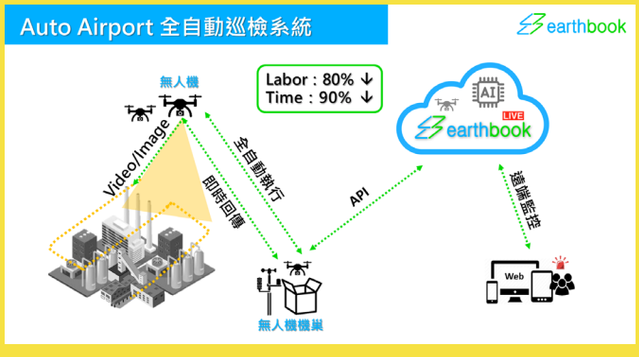
AI Digital-Twins Platform for Drone

Technology Introduction

• Technological Innovation –Our drone 3D platform integrates AI and IoT technologies to enable fully autonomous flight missions without human control.
•Using AI image analysis, it detects defects and builds real-time digital twins for a smart management system.
• 2024 Presidential Hackathon – Excellence Team
• 2024 Digital Innovation Award (ADI 15)
• 2021 20th National Innovation Award

Industry Applicability

Our drone 3D platform conducts fast, automated inspections of factory pipelines, power plants, and construction sites, and supports medical drone logistics for remote and emergency deliveries.





智慧永續館
SUSTAINABILITY PAVILION

Resilience Empowerment

Contact: Josephiena Chen josephiena@ezgpm.com

Affiliated Ministry: MODA

Exhibitor: ezGreen Inc.

Exhibited Technology

ESG Supply Chain Cloud Services

Technology Introduction

A cloud platform integrating carbon management and ESG ratings, featuring real-time carbon footprinting, digital auditing, custom ESG assessments, and AI-powered reviews. It enables Scope 3 data reporting and analysis via enterprise-supplier collaboration, supports ERP/MES API integration, and showcases its value in sustainability and data governance through real-world use cases.

Industry Applicability

The platform integrates carbon auditing, ESG scoring, and AI audit technologies, supporting industries like manufacturing, electronics, automotive, and services. It enables Scope 3 data integration, risk analysis, and supply chain collaboration. Proven deployment cases highlight its maturity and cross-industry scalability.
SB23





Booth: SB23 450

Contact: Alex Wu it_group@fwp.com.tw

Affiliated Ministry: MODA

Exhibitor: Foxwell Power Co., Ltd.

Exhibited Technology

AI-Driven Foxwell Cloud: Innovating Green Energy for a Sustainable Tomorrow

Technology Introduction

A digital green energy management platform focused on Taiwan's electricity market, integrating real-time monitoring, carbon calculations, and REC tracking to deliver one-stop energy services. Leveraging IoT and AI, it enables real-time tracking, links carbon inventory data, reduces labor costs, and improves accuracy.

Industry Applicability

The platform helps enterprises track green electricity use across supply chains, enhancing transparency and supporting sustainability reporting. It consolidates renewable energy (RE) progress for corporate groups and provides forecasts on future electricity consumption and costs to guide procurement. It also assists electricity retailers in optimizing green power allocation, improving efficiency and accuracy while reducing manual errors. Together, these features boost energy management and enable smarter, digital solutions.





451 Booth: SB24

智慧永續館
SUSTAINABILITY PAVILION

Resilience Empowerment

Contact: Fang Lai fang.lai@yourcarbon.com.tw

Affiliated Ministry: MODA

Exhibitor: YC Holdings Inc.

Exhibited Technology

ASPNex

Technology Introduction

ASPNex is the industry's only patented digital carbon management system developed independently by a consulting team. It integrates 10 systems, including GHG inventory, CBAM calculation, carbon footprint calculation, and internal carbon pricing calculation. The system offers modular flexibility, allowing enterprises to select features based on their needs, quickly grasp emission data and risks, and develop precise carbon reduction strategies. It helps businesses achieve emission reduction targets at the lowest possible cost and has been certified by Singapore's IMDA as an international digital solution.

Industry Applicability

ASPNex features a flexible modular design, suitable for various industries such as manufacturing, electronics, construction, logistics, finance, and retail. It supports functions like CBAM response, carbon inventory, reduction planning, and ESG evaluation. Enterprises can select modules based on their needs, enabling quick deployment and smooth integration with existing systems. Supporting both local and international standards, ASPNex helps businesses improve carbon management efficiency and meet net-zero goals.





Booth: SB25 452

Affiliated Ministry: MODA

Exhibitor: SYSTEX CORPORATION

Exhibited Technology

SYSTEX SUP Innovative Supply Chain Platform

Technology Introduction

1. Digitization: The system generates work orders with 2D barcodes, enabling device-based reporting and real-time progress tracking.
2. Visualization: Graphical charts monitor dispatch and work order statuses, reducing manual entry and improving accuracy.
3. Low Entry Barrier: Supports cloud and on-premise deployment, suitable for businesses of all sizes, lowering trial costs.

Industry Applicability

1. Manufacturing industry supply chains.
2. Businesses with procurement, order, and management needs.





Contact: Shu-Ling Hsieh slhsieh@nkust.edu.tw

Affiliated Ministry: MOA

Exhibitor: National Kaohsiung University of Science and Technology

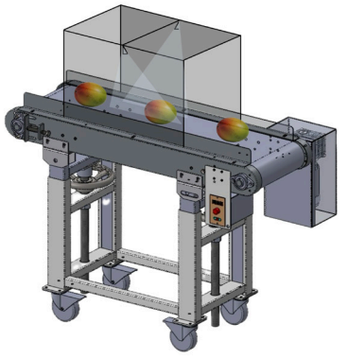
Exhibited Technology

Application of nano-scale essential oil microbubble composite coating for extending the shelf life of fruits and vegetables

Technology Introduction

This team's prior research established two key technologies for treating fruits and vegetables. The first is a microbubble technology that effectively removes pests and impurities from the fruit and vegetable surfaces. The second is a nano-essential oil coating technology which forms a nano-scale film on the surface, reducing water loss and delaying spoilage. We have since integrated these two technologies to create a composite treatment system that offers both cleaning and preservation in a single process. This technology not only significantly improves post-harvest processing efficiency, but also prolongs the shelf life of produce during storage and transportation. Ultimately, this enhances the quality and international market competitiveness of exported fruits.





Booth: SC01 454

Contact: Huang Chih-Hsiung chhuang23511@nkust.edu.tw

Smart Innovation

智慧永續館
SUSTAINABILITY PAVILION

Affiliated Ministry: MOA

Exhibitor: National Kaohsiung University of Science and Technology

Exhibited Technology

Integrated application of seawater slurry ice and micro-vibration technology

Technology Introduction

This exhibit focuses on the innovative cold chain integration for aquatic product processing, combining the <continuous seawater slurry ice production system> and <micro-vibration cold chain preservation technology>. Seawater slurry ice has high adhesion and rapid cooling capabilities. When used with micro-vibration technology during rapid freezing, it induces micro-vibrations of water molecules. This technology effectively overcomes the cell membrane damage caused by conventional freezing, reduces the risk of quality degradation, and shortens the freezing time and energy consumption. It showcases an innovative solution while promoting sustainable development.





455 Booth: SC02

智慧永續館
SUSTAINABILITY PAVILION

Smart Innovation

Contact: SU-feng-jie fengjie@nkust.edu.tw

Affiliated Ministry: MOA

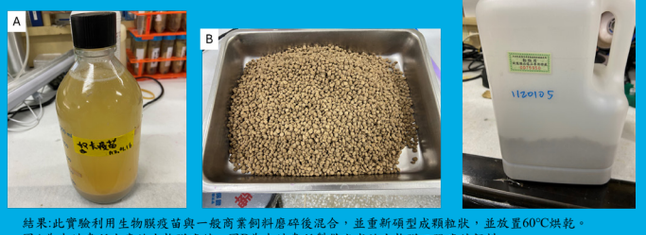
Exhibitor: National Taiwan University

Exhibited Technology

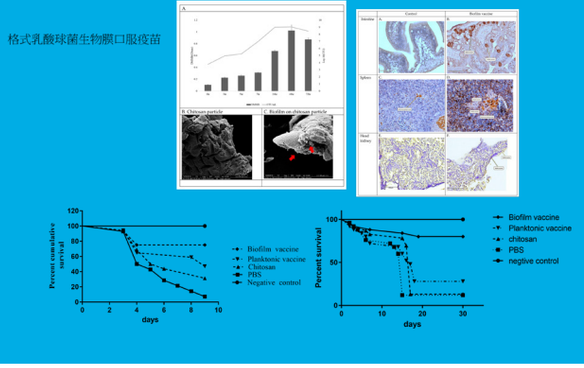
Vaccine composition against bacteria and biofilms, preparation method thereof, and applications

Technology Introduction

This invention proposes a novel biofilm-based oral vaccine designed to combat pathogens protected by biofilms. By using suspension culture, bacteria are induced to form biofilms on the surface of chitosan microparticles. These are then formalin-inactivated to preserve their antigenicity, creating an oral vaccine. This technology effectively stimulates both humoral and cellular immune responses, leading to increased antibody concentrations, enhanced phagocytic activity, and improved host survival rates. It successfully overcomes the biofilm-mediated immune evasion mechanism, providing cross-protection against a variety of bacteria. Specifically suited for aquaculture, this vaccine offers an innovative, antibiotic-free solution for controlling chronic and recurring infections, thereby improving health management and promoting sustainable development in the industry.



結果:此實驗利用生物膜疫苗與一般商業飼料磨碎後混合，並重新碩型成顆粒狀，並放置60°C烘乾。
圖A為本計畫所生產的生物膜疫苗。圖B為本計畫所製備完成的生物膜口服疫苗飼料。
圖C經核准試製用於執行田間試驗之生物膜口服疫苗飼料



Booth: SC03 456

Contact: Yang Jeng-Chuann yjc@tfri.gov.tw

Affiliated Ministry: MOA

Exhibitor: Taiwan Forestry Research Institute, Ministry of Agriculture

Exhibited Technology

Advanced rapid cold-drying technology for tea fruits and seeds

Technology Introduction

1. This technique can reduce the moisture content of seeds from fresh fruits of small-fruit oil tea (Camellia brevistyla (Hayata) Coh.-Stuart) to below 6%—the threshold suitable for storage—within five days, excluding the time required for husk removal.
2. This drying method can process up to 2.4 metric tons of fresh tea fruits or seeds per batch within a 14-ping (approximately 46.3 square meters) space.
3. This technique operates independently of weather conditions and labor constraints, requiring only a simple turning of the tea fruits or seeds twice a day—once in the morning and once in the evening—making it both time-efficient and labor-saving.





457 Booth: SC04

Contact: Yu-Chun Wang ycwang@mail.tfrin.gov.tw

Affiliated Ministry: MOA

Exhibitor: Fisheries Research Institute, Ministry of Agriculture

Exhibited Technology

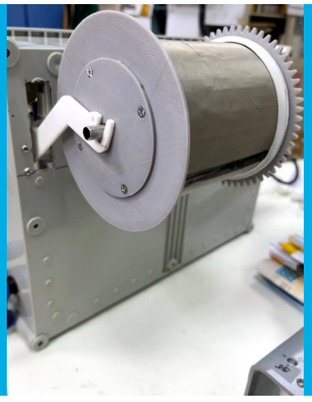
Aquaculture tanks water exchange system

Technology Introduction

This aquaculture tanks water exchange system features an innovative elevating design that integrates lifting, drum filtration, and pumping modules. Governed by a central control unit, it fully automates the water renewal process.

Compared to conventional, manually operated procedures, this system significantly reduces labor requirements. Its design, which automatically lifts the filter screen from the water, effectively inhibits biofilm formation. Characterized by its modularity and scalability, the system is suitable for various aquaculture applications. Currently in its commercialization stage, this system showcases a high degree of technological maturity and strong potential for industrial application.





Booth: SC05 458

Contact: Hsiao-Han Liao hhliao@tlri.gov.tw

Affiliated Ministry: MOA

Exhibitor: Taiwan Livestock Research Institute, Ministry of Agriculture

Exhibited Technology

Domestically developed manure-cleaning robot for dairy farms

Technology Introduction

Most dairy farms in Taiwan use intensive housing systems, often laying grooved rubber mats on barn floors to reduce slippery, sticky conditions from manure buildup. However, current imported manure-cleaning robots are expensive to purchase and maintain, and their reliance on imported replacement parts limits widespread adoption. The domestically developed manure-cleaning robot is tailored to local barn layouts and mat depths. It features interchangeable brush modules to enhance manure removal and a modular design that supports local maintenance and future mass production, reducing burdens for dairy farmers.





Contact: Chia-Xin Lee jxlee@tlri.gov.tw

Affiliated Ministry: MOA

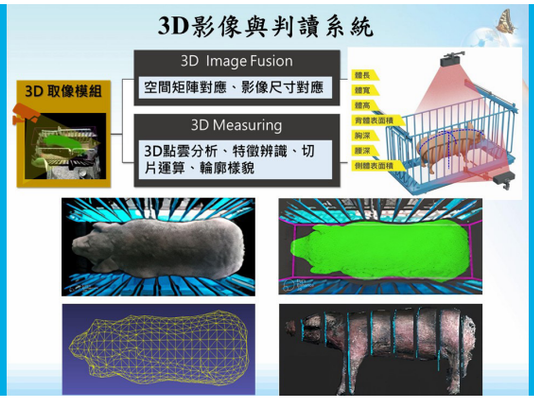
Exhibitor: Taiwan Livestock Research Institute, Ministry of Agriculture

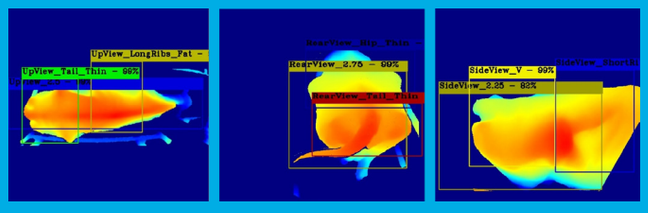
Exhibited Technology

Digital imaging technology for animal body size measurement and body condition scoring

Technology Introduction

This technology uses 3D imaging and AI deep learning to build a "Digital Imaging System for Animal Body Size Measurement and Body Condition Scoring," which is applied to dairy cows and breeding pigs. For dairy cows, the system combines 2D and 3D images for BCS scoring, effectively reducing interference from coat patterns and dirt, improving recognition accuracy and stability, and assisting in assessing health and nutritional status. For breeding pigs, it uses 3D cameras to measure body length, body width, body height, chest depth, waist depth, and body surface area, etc., within 15 seconds while the pigs are walking. This expands the range of measurement items, reduces labor costs and the risk of employee injury, while also promoting animal welfare and improving the efficiency of precise breeding and selection. The overall technology integrates diverse data to advance the intelligent development of the livestock industry.





Booth: SC07 460

Contact: Wei-Chin Hung weichin@tydais.gov.tw

Affiliated Ministry: MOA

Exhibitor: Taoyuan District Agricultural Research and Extension Station, Ministry of Agriculture

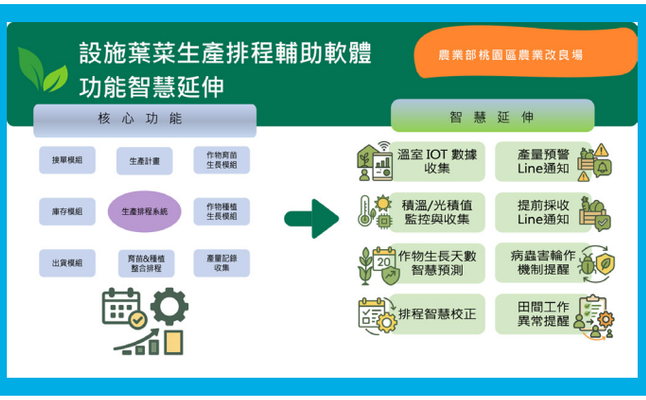
Exhibited Technology

Protected cultivation scheduling assistant for leafy vegetable production

Technology Introduction

In medium- to large-scale protected vegetable farms, production is often set at 1.5–2 times the required quantity to ensure timely delivery, which can lead to overproduction and increased costs. This system utilizes data from yield, delivery schedules, cultivation records, and greenhouse space management to offer digital production scheduling and intelligent order management support. By leveraging data analysis and automated forms, it enables precise yield forecasting, daily updates on production capacity, and optimized resource allocation, reducing waste and enhancing production efficiency.





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Smart Innovation

Contact: Hsu Ching Ching hsuching@tcdares.gov.tw

Affiliated Ministry: MOA

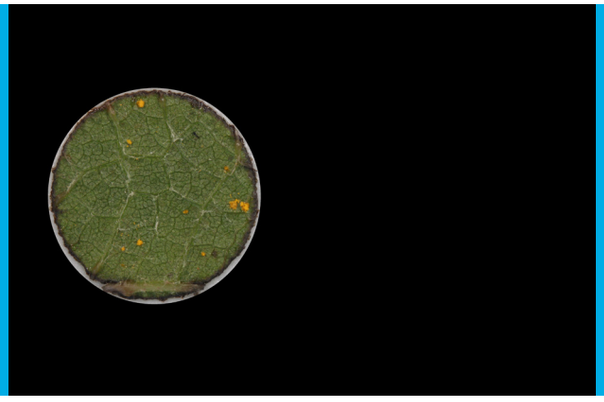
Exhibitor: Taichung District Agricultural Research and Extension Station, Ministry of Agriculture

Exhibited Technology

Light-based suppression system for plant pests

Technology Introduction

The Light-Based Suppression System is a non-chemical technology using UV light to inhibit spore germination and infection. Designed for fruit crops, it offers easy operation, no residues, and compatibility with nighttime automation. Greenhouse and field trials show it reduces diseases without harming growth. With stricter pesticide rules and resistance issues, demand for non-chemical control is rising. The system is modular and smart-ready, integrating with prediction models, autonomous vehicles, and sensors, offering a sustainable crop protection tool.





Booth: SC09 462

Contact: Chang, Ching Yuan changcy@tcdares.gov.tw

Affiliated Ministry: MOA

Exhibitor: Taichung District Agricultural Research and Extension Station, Ministry of Agriculture

Exhibited Technology

Road driving training module for agricultural tractors

Technology Introduction

The training module simulates tractor driving with controls such as a steering wheel and levers. The training includes one scenario and 11 evaluation items, covering tests like engine startup, reverse parking, curved forward movement, uphill and downhill ramps, road obstacles, pedestrian crossings, parallel parking, straight lane driving, railway crossings, driving on a circular road, and endpoint parking. The module provides operational instructions, scores, and time displays, and features automatic scoring and pop-up warnings. Upon completion, a digital score report is displayed to evaluate performance. This module allows for training regardless of weather conditions, enables users to select specific training items as needed, and provides a safe learning environment with opportunities for trial and error. Compared to diesel tractors, it offers a carbon reduction advantage by allowing repeated practice without fuel consumption or exhaust emissions.

學習模式	內容說明
分站練習	✓ 可自行選擇且分別練習評測項目。 ✓ 有操作說明、扣分警示、分數及時間統計等。 ✓ 可重複練習同項目、跳轉或繼續練習其他項目。
練習模式	✓ 為固定流程。 ✓ 有操作說明、扣分警示、分數及時間統計等。 ✓ 不受分數及時間限制，可完整練習所有項目。
測驗模式	✓ 為固定流程。 ✓ 有扣分警示、分數及時間統計等。 ✓ 分數不及格 (70分以下) 或操作時間超過10分鐘會強制結束，成績匯入紀錄庫。



Contact: Sheng-Shan Wang sswang01@mail.tndais.gov.tw

Affiliated Ministry: MOA

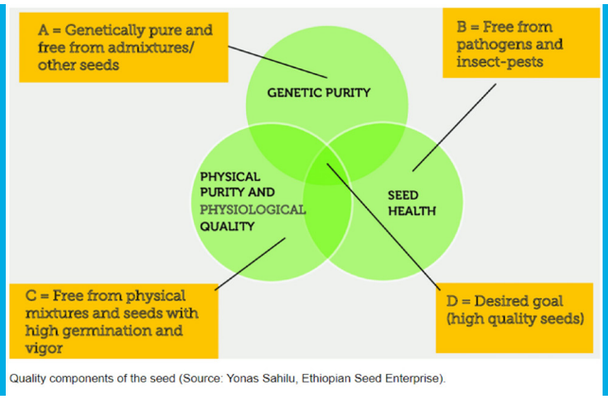
Exhibitor: Tainan District Agricultural Research and Extension Station, Ministry of Agriculture

Exhibited Technology

Genetic purity testing technology for cucurbit crops

Technology Introduction

Genetic purity testing is a critical step in quality control during the production of hybrid seeds. This technology utilizes a genotyping platform based on KASP (Kompetitive Allele Specific PCR) molecular markers to develop a hybrid seed purity testing method applicable to cucurbit crops. With advantages such as low operational barriers, high accuracy, and high-throughput capacity, this technology enables seed companies to perform rapid and efficient seed purity assessments, thereby improving shipping efficiency and ensuring the production quality of vegetable hybrid seeds.



Quality components of the seed (Source: Yonas Sahilu, Ethiopian Seed Enterprise).



Booth: SC11 464

Contact: Yu-Chun Chu yujun@mail.kdais.gov.tw

Affiliated Ministry: MOA

Exhibitor: Kaohsiung District Agricultural Research and Extension Station, Ministry of Agriculture

Exhibited Technology

Smart irrigation module for papaya orchards

Technology Introduction

This technology collects meteorological data, such as temperature, humidity, rainfall, wind speed, and solar radiation, from a weather station. It then calculates the crop evapotranspiration (ETo) to determine irrigation needs and can later be connected with a smart irrigation controller to automatically start the pump. The guidance from this technology allows users to calculate irrigation times based on field information, including the papaya orchard's irrigation pipe specifications, area, planting density, and soil texture. It also provides water requirement suggestions for different growth stages.





Contact: LINYIWEI ackman26@mail.kdais.gov.tw

Affiliated Ministry: MOA

Exhibitor: Kaohsiung District Agricultural Research and Extension Station, Ministry of Agriculture

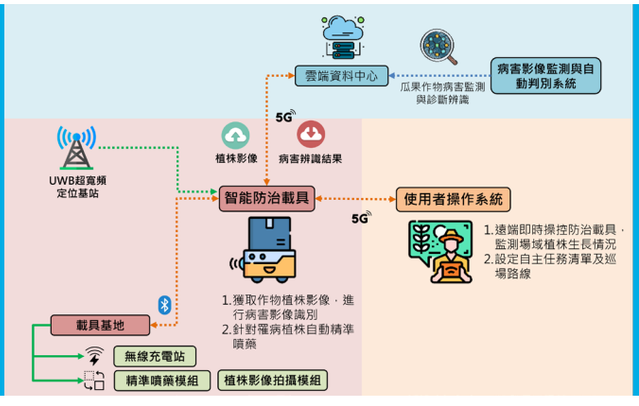
Exhibited Technology

Autonomous crop disease detection and precision spraying robot

Technology Introduction

This technology integrates several systems, including a tracked autonomous vehicle, AI-powered disease image recognition, precision spraying, low-latency remote operation, and a 1 kW wireless charging system. The sprayer vehicle autonomously navigates within greenhouses, continuously performing AI image recognition on the leaves of crops (such as cucurbits) at different growth heights to detect diseases like powdery mildew and downy mildew. It then automatically sprays the appropriate agents onto the affected areas, while also recording crop growth and pesticide usage. This achieves a precise and real-time automated disease control process. Paired with its automatic return-to-base wireless charging function, the system enables continuous 24/7 smart operations, effectively reducing labor requirements, chemical usage, carbon emissions, and operational safety risks.





Booth: SC13 466

Contact: Ten-Lin Liu tres806@tbrs.gov.tw

Affiliated Ministry: MOA

Exhibitor: Tea and Beverage Research Station, Ministry of Agriculture

Exhibited Technology

Development of an obstacle-avoiding weeding mechanism

Technology Introduction

As a solution to the labor shortage in agriculture, high-efficiency machinery is being gradually introduced into tea plantations. While riding mowers can work quickly, the weeds beneath the tea canopy still require manual removal with a brush cutter. When a person operates a brush cutter, accidentally hitting the tea plant's stem can lead to girdling or even severing the plant, causing it to die. To address this, we developed a weeding mechanism with an "obstacle-avoidance function" that can operate deep under the tea canopy. Its obstacle-sensing device automatically retracts the weeding head upon detecting a tea plant stem, fundamentally preventing accidental damage while ensuring the healthy growth of the tea plants.





智慧永續館
SUSTAINABILITY PAVILION

Smart Innovation

Contact: CHEN WEI CHEN weichen@hdares.gov.tw

Affiliated Ministry: MOA

Exhibitor: Hualien District Agricultural Research and Extension Station, Ministry of Agriculture

Exhibited Technology

Growth prediction model and smart cultivation management technology for soybean 'Hualien No. 1'

Technology Introduction

This technology, focusing on the soybean variety 'Hualien No. 1,' utilizes multi-year organic cultivation trials and environmental monitoring data to develop a growth prediction model. This model accurately forecasts crop development stages, with prediction errors of only about 3 days for the flowering stage and 7 days for the maturity stage. By analyzing two key factors—temperature and light intensity—it provides dynamic growth prediction results. The system also combines field management recommendations and risk assessment indicators to help farmers optimize operational schedules and resource allocation, thereby effectively improving management efficiency and reducing production risks.





Booth: SC15 468

Contact: Huang, Jenglong 753@mail.ttdares.gov.tw

Affiliated Ministry: MOA

Exhibitor: Taitung District Agricultural Research and Extension Station, Ministry of Agriculture

Exhibited Technology

A second-generation mechanical cleaning system for atemoya fruits

Technology Introduction

This technology utilizes a novel fruit gripper, a rotating conveyor mechanism, and an integrated cleaning system with a swiveling high-pressure water jet and air nozzles for cleaning Atemoya fruit. Currently, the cleaning of Atemoya fruit for export is largely performed manually at collection yards, a method that can easily cause detached insects to be scattered. Manual cleaning may also result in incomplete fruit cleaning due to operator negligence or fatigue. This machine automates the in-line fruit cleaning process, replacing manual labor. Trials have shown a 3.3-fold increase in efficiency and a 100% removal rate for mealybugs, which helps improve the operational efficiency of Atemoya fruit collection yards and ensures fruit quality.





智慧永續館
SUSTAINABILITY PAVILION

Smart Innovation

Contact: Tung-Wu Chang twchang@hdares.gov.tw

Affiliated Ministry: MOA

Exhibitor: Hualien District Agricultural Research and Extension Station, Ministry of Agriculture

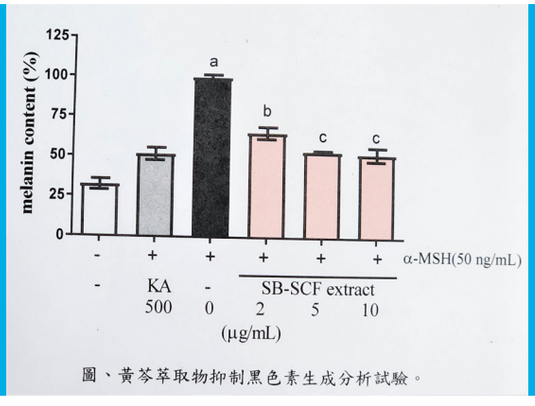
Exhibited Technology

Supercritical extraction process technology for *Scutellaria baicalensis* residue extract.

Technology Introduction

This technology utilizes supercritical carbon dioxide extraction to effectively extract the functional ingredients wogonin and baicalein from the root of *Scutellaria baicalensis*. This process effectively concentrates the active functional ingredients, resulting in a light yellow powder with the potential to inhibit melanin production and provide anti-inflammatory effects.





圖、黃芩萃取物抑制黑色素生成分析試驗。

Booth: SC17 470

Contact: HONR-RU,ZENG ms0015543@gmail.com

Affiliated Ministry: MOA

Exhibitor: Taiwan Seed Improvement and Propagation Station, Ministry of Agriculture

Exhibited Technology

Pelleting technology of onion seed

Technology Introduction

Traditionally, onion cultivation has been heavily reliant on manual labor. However, the agricultural labor shortage has become increasingly severe. Furthermore, open-field seedling cultivation often faces challenges like heavy rains and pest infestations, which leads to an unstable supply of onion seedlings and hinders the development of the seedling industry. To resolve these issues, onion seed pelleting technology is used to transform irregularly shaped seeds into uniform pellets. This enhances the viability of automated mechanical sowing, thereby reducing labor costs during the seedling stage and paving the way for mechanized seedling production.





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Smart Innovation

Contact: Cheng Nai Yun acer3192@mail.ilosh.gov.tw

Affiliated Ministry: MOL

Exhibitor: Institute of Labor, Occupational Safety And Health

Exhibited Technology

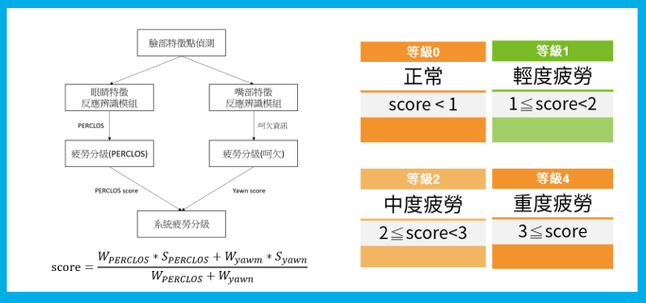
Utilization of Image Recognition Techniques for the Detection of Physiological Fatigue

Technology Introduction

In light of the increasing prevalence of image recognition and analysis technologies, this institute has applied such techniques to workplace fatigue detection. Recognition modules targeting facial, ocular, and oral features have been developed, and machine learning methods are employed to classify the monitored fatigue indicators into graded levels. The system provides real-time feedback on workers' fatigue status to both employees and managers. The application scope particularly encompasses job tasks associated with immediate hazards or occupations prone to operational fatigue, delivering instant monitoring results and fatigue alerts to reduce occupational risks and hazards.

Industry Applicability

This technology leverages image recognition and machine learning to monitor workers' facial and ocular features in real time, identify physiological fatigue states, and classify them into graded levels. It has broad potential applications in high-risk industries such as transportation, construction, and manufacturing, where workers are required to work long hours with sustained concentration, making them prone to fatigue-related occupational accidents. The system can issue real-time fatigue alerts, supporting workers' self-awareness while reminding management to implement protective measures, thereby helping to reduce occupational accident risks. In addition, this technology can serve as an auxiliary tool for occupational health management, demonstrating both industrial scalability and practical applicability.





Booth: SC19 472

Contact: Po-Chen Hung hungpc@mail.ilosh.gov.tw

Affiliated Ministry: MOL

Exhibitor: Institute of Labor, Occupational Safety and Health(ILOSH), Ministry of Labor, Taiwan

Exhibited Technology

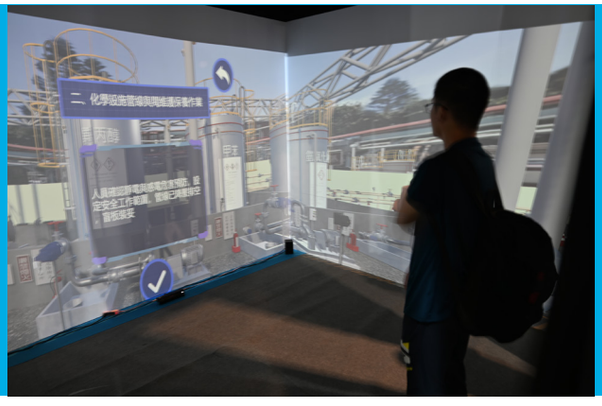
Master of Chemical Hazard: Multi-language Interactive Somatosensory Platform

Technology Introduction

Provides basic education courses on labeling and hazard communication of hazardous chemicals, practical courses on the regulations for labeling and hazard communication of hazardous chemicals, wastewater tank bottom sludge removal operations, sewer sludge removal operations, chemical facilities pipeline maintenance operations, and chemical storage tank maintenance. The platform includes ten units of multi-language (Vietnamese, Indian, English) virtual space somatosensory education and training materials (with 13 units available in Chinese). The total operation time is approximately 180 minutes.

Industry Applicability

This tool uses virtual reality (VR) technology to develop a chemical education and training tool, and continues to add relevant courses to meet practical needs. In addition, in order to help foreign migrant workers receive general education training on chemical hazards, English, Vietnamese and Indonesian versions of teaching materials have been successively developed. It has also designed multiple experience methods, which can be used through the virtual reality version, PC version, immersive three-screen hand interactive projection version and three-screen hand interactive PC version. It is convenient for business units of different sizes to carry out operations according to their needs and existing equipment.





473 Booth: SC20

Contact: Cheng-Yao Chen cychn@mail.ilosh.gov.tw

Affiliated Ministry: MOL

Exhibitor: Institue of Labor, Occupational Safety and Health

Exhibited Technology

Personal Samplers for Assessing Aerosol Hazards

Technology Introduction

By taking the characteristics of aerosol particles suspended in the air, personal aerosol samplers for workers are designed using cyclonic separation, filtration or inertial impaction mechanisms to collect respirable dust or nanoparticles, thereby assessing the hazardous exposure dose of workers to aerosols.

Industry Applicability

These samplers are designed according to the international respirable dust sizing criteria and can be used for occupational health and labor personal hazard assessment.





Booth: SC21 474

Affiliated Ministry: MND

Exhibitor: National Defense Medical University

Exhibited Technology

Interactive AI Personal Protective Equipment Monitoring System

Technology Introduction

Personal protective equipment is essential for those entering infectious pathogen testing facilities, isolation wards, and high-containment laboratories. However, improper or incorrect PPE usage can increase the risk of pathogen exposure. Our system combines cutting-edge technology with management protocols to effectively ensure that workers wear appropriate protective equipment when entering laboratory spaces, thus safeguarding personnel and maintaining biosafety standards.

Industry Applicability

It is used in the biomedical industry, virus research, hospital laboratories, isolation ward medical care, and semiconductor technology industry. It can be upgraded from the software or manufactured in various hardware types to meet different needs.





Contact: Tse-Min Wei Wei.teacher@gmail.com

Affiliated Ministry: MND

Exhibitor: National Defense Medical University

Exhibited Technology

Simulation Training System

Technology Introduction

At present, the digital court for medical disputes is established, where judges can mark the key parts of evidence for defendants and witnesses to watch, immerse themselves in the rights and obligations of judges, prosecutors, lawyers and litigants, and train trainees to deal with social situations through situational cases (such as medical correction) to reduce time and cost.

Industry Applicability

It can be applied to hospitals, schools, companies, academic associations, tourist centers, military recruitment centers, and police, fire and rescue drills. This software is used as the basis for productization, and can be added later according to the needs of other units.





Booth: SC23 476

Contact: FANG, CHIHWUN u101530009@gap.kmu.edu.tw

Smart Innovation

智慧永續館
SUSTAINABILITY PAVILION

Affiliated Ministry: MND

Exhibitor: Zuoying Armed Forces General Hospital

Exhibited Technology

Smart Pharmaceutical Assistance: AI-Based Medication Risk Assessment System for Kidney Disease

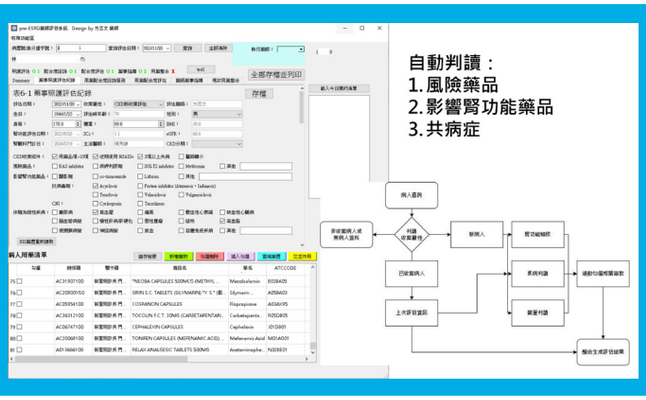
Technology Introduction

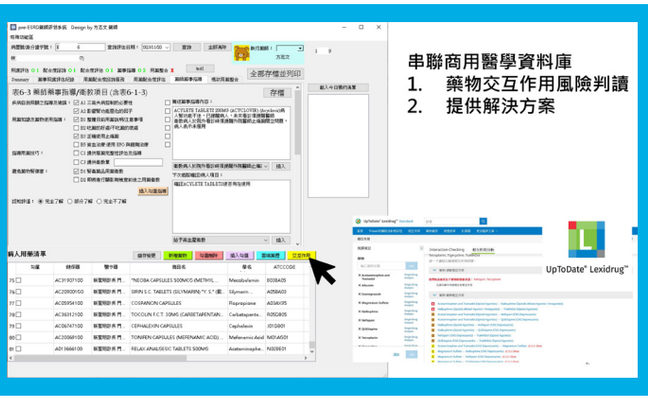
This technology integrates weak artificial intelligence with clinical pharmacy to rapidly assess medication risks while automatically connecting to commercial medical databases and laboratory data. Through intelligent analysis, healthcare professionals can promptly identify potential renal medication risks in patients and provide precise recommendations, significantly reducing evaluation time and enhancing patient safety.

Key Achievements / Awards:2024 Symbol of National Quality

Industry Applicability

This AI-powered system supports medication interpretation for CKD patients, analyzing prescriptions and comorbidities. Integrating medical databases, it offers one-click drug interaction screening with risk assessments and solutions. Usable across hospitals, clinics, and pharmacies, it evaluates medication risks, delivers personalized recommendations, and promotes holistic patient care.





Contact: Yu, Ruo-Jiun j590088@ncsist.org.tw

Affiliated Ministry: MND

Exhibitor: National Chung-Shan Institute of Science and Technology

Exhibited Technology

Intelligent Assistive Exoskeleton System

Technology Introduction

The intelligent assistive exoskeleton system developed by the NCSIST consists of a powered upper-limb exoskeleton and a ground-contact powered lower-limb module. The upper-limb exoskeleton features powered assistance at the shoulder and elbow joints, with a 5-DOF structural, each joint delivers >10 Nm of torque, and the exoskeleton weights ~10 kg. The lower-limb module provides powered support at the knee and hip joints, delivering >50 Nm of torque per joint. When combined with the upper-limb exoskeleton, it adds only~16kg to the total weight. The system integrates torque sensors for detecting user intent with a response latency of <100ms, and supports hot-swappable batteries with up to 6 hours of operation.

Industry Applicability

The intelligent assistive exoskeleton system is applicable to high-intensity military scenarios such as missile loading, ammunition handing, and heavy equipment lifting. It is also suitable for various logistical support missions. Its technology can be extended to civilian applications, including industrial handing, medical care, and elderly assistance. The system helps reduce user burden, enhances operational safety and efficiency, and demonstrates cross-domain application potential while supporting the independent development of domestic exoskeleton technologies.



Booth: SC25 478

Contact: Peng,Tz-Shiuan tspeng@ncsist.org.tw

Affiliated Ministry: MND

Exhibitor: National Chung-Shan Institute of Science and Technology

Exhibited Technology

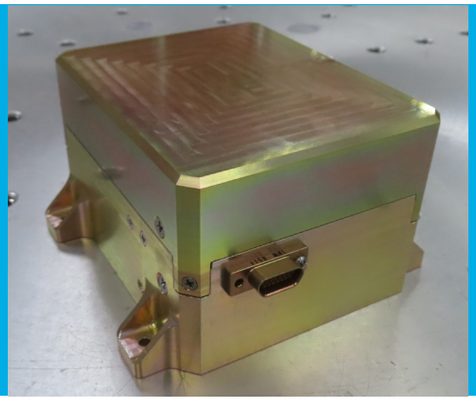
Advanced Positioning and Navigation System

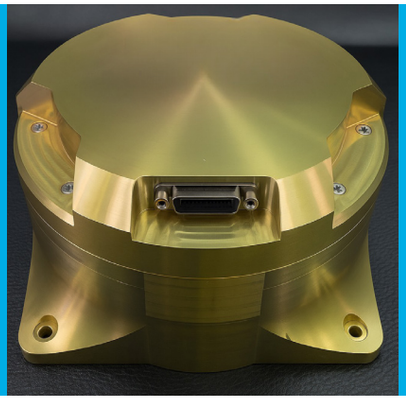
Technology Introduction

Inertial measurment units (IMUs) are international export control items. The exhibits focus on applications of unmanned vehicles and LEO satellites.
B-IV is the smallest tactical-grade IMU with optical gyroscopes.
FS7 IRU composes of 4-axis fiber optic gyroscopes (FOGs), and has been employed in Triton satellite launched from Oct. 2023.
B-PRO FIRU composes of 3-axis FOGs which have functions of high pointing accuracy and firmware redundancy.Startraker can provide the absolute position of the satellite by observing the star constellation. Our startraker has the flight varifcation by employed in the cubic satellite.

Industry Applicability

Military: missile, UAV, launcher, microsatellite, ship, submarine.
Civilian: UAV, UGV, USV, UUV, cubic satellite, microsatellite.





Contact: Jiang, Long Jie ljjiang@ncsist.org.tw

Affiliated Ministry: MND

Exhibitor: National Chung-Shan Institute of Science and Technology

Exhibited Technology

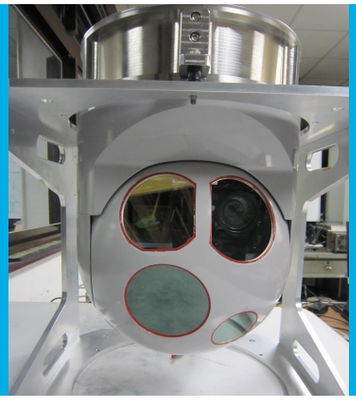
MEO-10D EOTS

Technology Introduction

The MEO-10D is a key component for UAV precision-guided munitions. Its laser designator can be used to guide precision-guided missiles equipped with laser seekers. When integrated with a UAV's weapon system, it provides both reconnaissance and strike capabilities.
The MEO-10D incorporates a miniaturized laser designator, thermal imager, visible-light camera, and laser rangefinder. It is equipped with a gimbal servo stabilization system to ensure steady operation under various flight conditions. With day and night target locking and tracking capabilities, it can accurately designate targets, providing precise guidance for laser seeker-equipped missiles to hit target.

Industry Applicability

Military: Intelligence, surveillance, and reconnaissance (ISR) and strike missions carried out by unmanned platforms.
Civilian: Coastal surveillance and protection, personnel search-and- rescue (SAR), etc.



Contact: CHEN,SHU-CHUAN scchen@ccit.ndu.edu.tw

Affiliated Ministry: MND

Exhibitor: National Defense University

Exhibited Technology

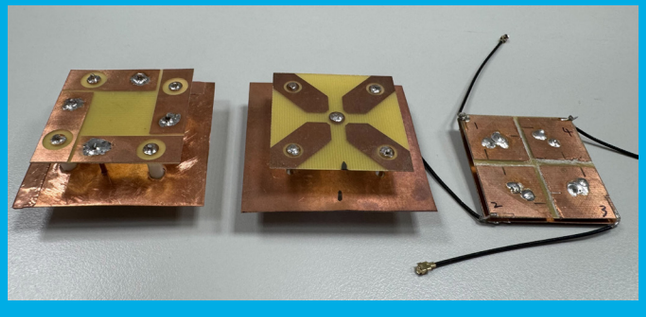
Ultra-Compact Multi-Antenna Systems: Enabling Next-Gen Miniaturized Wireless Technologies

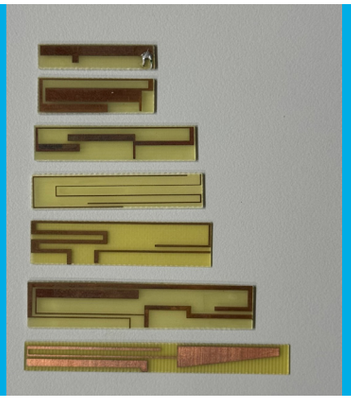
Technology Introduction

This exhibit presents compact multi-antenna systems and miniaturized antenna technologies. The miniaturization approach, tailored for various devices and installation positions, integrates metal environments, chip components, matching circuits, and switches to achieve low profile, small size, and high performance. The multi-antenna design is optimized from the outset for isolation, and decoupling techniques are applied to increase antenna density while maintaining excellent radiation performance and minimal interference. These technologies have wide applications in 5G communications and IoT, addressing the need for both high performance and miniaturization.

Industry Applicability

This technology applies to 5G, IoT, and UAV communication systems. It enables high integration and multi-band operation in space-constrained devices through antenna miniaturization and dense configuration, enhancing performance and flexibility.





481 Booth: SC28

Contact: LEE,YOU-HUA dawnlu42011@gmail.com

Affiliated Ministry: MND

Exhibitor: The 401st Plant,Materiel Production Center,Armaments Bureau,M.N.D

Exhibited Technology

Augmented Reality Display System (ARDS)

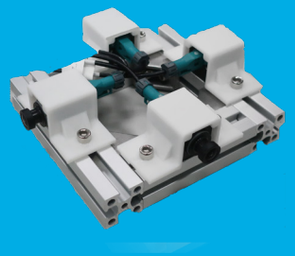
Technology Introduction

Augmented Reality Display System, the system captures 360-degree panoramic imagery by installing camera modules on armored vehicles, unmanned vehicles, and other platforms. It integrates the imagery into AR glasses for display, incorporating features such as important targets and AI-based target recognition. This enables more comprehensive spatial intelligence acquisition, enhancing mission effectiveness.

Industry Applicability

Military：Environmental monitoring for tanks and armored vehicles，and patrol vehicles surveillance.
Civilian：Smart patrol cars and driver assistance for heavy machinery or transport vehicles.





Booth: SC29 482

Contact: HONG,MING-JUN mjhung1943@gmail.com

Affiliated Ministry: MND

Exhibitor: The 401st Plant,Materiel Production Center,Armaments Bureau,M.N.D

Exhibited Technology

Handheld Thermal Imaging Rangefinder

Technology Introduction

This equipment utilizes a long-wave infrared sensor to detect thermal radiation from target objects and converts this data into visible images for the operator.This functionality enables effective observation in various conditions, including daytime, nighttime, complete darkness, or heavy smoke. Additionally, the built-in laser rangefinder allows precise measurement of target distances, enhancing adaptability to different battlefield requirements.

Industry Applicability

Military：Reconnaissance and surveillance, nighttime patrols， and battlefield hotspot identification.
Civilian：Search and rescue operations, thermal inspection of power systems, and machinery maintenance.





483 Booth: SC30

Contact: Nicolas Tsao Nicolas.Tsao@b4-app.com

Affiliated Ministry: NDC

Exhibitor: Keep Tossing Lab Inc.

Exhibited Technology

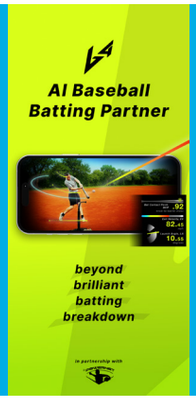
AI Baseball Batting Partner: b4-app

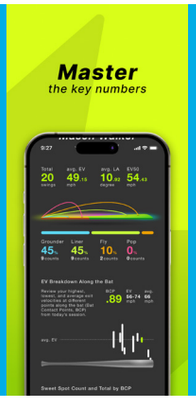
Technology Introduction

• Technological Innovation – AI + computer vision on iPhone provides pro-level swing analysis with insights on contact point, exit velocity, launch angle, and biomechanics.
• Competitive Advantages – Proprietary AI lowers barriers, scales easily, and builds defensible advantages in sports tech.
• Important Achievements – Recognized by ABCA, NFCA and endorsed by pro players for market impact.

Industry Applicability

This AI and computer vision technology uses the iPhone camera to analyze contact point, exit velocity, launch angle, swing path, and biomechanics, providing instant professional feedback. With low cost and high accessibility, it can be applied in daily training or games, supporting teams, schools, and training centers while enabling remote coaching and data sharing.





Booth: SC31 484

Contact: Bowei bowei.chen@chase.com.tw

Affiliated Ministry: NDC

Exhibitor: Chase Sustainability Technology

Exhibited Technology

ESMS—AI Text Generation Function for Sustainability Reports

Technology Introduction

Three major features of AI Text Generation

1. Precise Alignment with GRI Standards

Reduces the time spent on repeated reviews and revisions, thereby enhancing writing efficiency and ensuring content completeness.

2. Customized Text Generation

Combines standard guidelines, online social media messages, and company-related disclosure information. The AI simultaneously analyzes industry best practices and the company's historical sustainability reports, maintaining the existing style and tone to ensure content accuracy and alignment with the company's actual practices.

3. Intelligent Chart Generation

Use prompt commands to fulfill the charting requirements of each chapter by automatically selecting and generating relevant data, efficiently integrating information across multiple years, and enhancing the visual appeal of the charts.

Industry Applicability

AI text generation, combined with automated web crawling, retrieval-augmented generation (RAG), and large language model (LLM) fine-tuning technologies, is being applied to the writing and chart creation of sustainability reports. In response to the Financial Supervisory Commission's regulations, publicly listed companies are required to submit their sustainability reports by the end of August starting this year. Consequently, companies are placing greater emphasis on writing efficiency and accuracy.

By leveraging AI text generation capabilities, it is possible not only to produce customized content but also to create charts through prompt commands. The generated text complies with GRI international standards and includes company news and important information, helping businesses achieve both efficiency and quality in their writing.





Contact: Ringo Chang ringo.chang@bytelingo.co

Affiliated Ministry: NDC

Exhibitor: Bytelingo Co., Ltd.

Exhibited Technology

Multilingual Enterprise AI Transformation Platform

Technology Introduction

• Technological Innovation – By integrating enterprise documents, our AI models can read and analyze corporate content to generate optimized report translation and intelligent Q&A for corporate websites and reports.
• Important Achievements / Awards – We serve nearly 200 publicly listed companies in Taiwan and supported ITRI in building on-premise AI model environments.

Industry Applicability

Bytelingo helps enterprises transform unstructured information into AI-ready knowledge. From text data cleaning and Q&A design to defining AI tasks and roles, we support businesses by offering multilingual text translation and conversational AI applications. Whether it's report translating or product introductions on websites, companies can unlock greater value with AI through our system.





Booth: SC33 486

Affiliated Ministry: NDC

Exhibitor: Data-DI Solution

Exhibited Technology

AltaBots.ai

Technology Introduction

AltaBots.ai is a no-code AI Agent platform. It lets business pros build AI apps easily. The platform has over 100 AI templates and tools for customer service, marketing, and more. It supports all major LLMs and offers a dedicated enterprise AI Workspace. This makes AI directly accessible for business needs. Its key features are high flexibility, no-code development, and rapid deployment.

Industry Applicability

AltaBots.ai is used across industries to boost efficiency. E-commerce can use it for automated customer service, handling orders and returns. The finance sector can build AI assistants to answer questions and guide clients through online applications. Manufacturing can optimize operations with automated report generation and supply chain management, cutting costs and improving competitiveness.





智慧永續館
SUSTAINABILITY PAVILION

Smart Innovation

Contact: Charles Zeng, PhD charles@litmtc.com

Affiliated Ministry: NDC

Exhibitor: LiT MedTech Co. Ltd.

Exhibited Technology

LiTgenAI

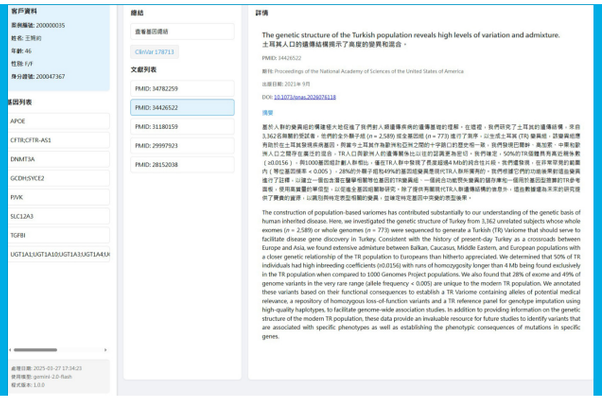
Technology Introduction

- Technological Innovation – LiTgenAI uses LLM+RAG trained on clinical data to auto-interpret variants, speeding up and improving genetic analysis.
- Competitive Advantages – AI and clinical data enable accurate genetic reports, cutting time and labor costs vs. traditional manual interpretation.
- Awards – Awarded by MOEA for global business, and selected by NSTC for academia-industry collaboration and talent training programs.

Industry Applicability

LiTgenAI is an AI-based system using LLM and RAG technologies, trained on tens of thousands of genomic cases from LiT MedTech and BCM. It delivers accurate genetic reports in 1–2 weeks, helping labs reduce costs and expertise requirements compared to the traditional 3-month workflow.





Booth: SC35 488

Contact: Shiny Lai shiny@thinktronltd.com

Affiliated Ministry: NDC

Exhibitor: ThinkTron Ltd.

Exhibited Technology

Emergency Data Cloud | Integrated All-Hazard Information Service

Technology Introduction

EDC integrates GIS, IoT, and AI to create an all-hazard information integration, AI predictive analysis, and real-time decision-support platform. Through the self-developed TRONCube automated spatiotemporal storage technology and AI intelligent monitoring system, it consolidates on-site sensor data, spatial information, and visualization tools to support disaster early warning, situation assessment, and emergency dispatch, greatly enhancing digital disaster governance capabilities.

All-Hazard Visualization & Decision Support – Real-time dashboards with case grading, disaster location mapping, and instant alerts, enabling decision-makers to swiftly identify priorities and coordinate response.

TRONCube Automated Storage – Flexible, multi-dimensional data retrieval for faster, more accurate disaster information access, supporting cross-time-and-space applications.

AI Disaster Prediction – Advanced models analyze rainfall, river and sewer water levels, and slope stability to forecast risks and secure more preparation time.

AI Monitoring & Sensor Integration – Merges proprietary monitoring devices, environmental sensing, and public IoT data for high-density, real-time disaster surveillance.

EDC has been successfully deployed in multiple industrial parks and local government disaster prevention platforms, delivering proven improvements in early warning and emergency response efficiency. It has been recognized with awards in the fields of disaster management and smart city innovation, and continues to expand its footprint through strategic collaborations with public and private sector partners, contributing to ESG and sustainable development goals.

Industry Applicability

The Smart Disaster Prevention Cloud – EDC All-Hazard Information Integration Service, developed by Shing Chong Intelligence, is an integrated cloud-based disaster response platform featuring core capabilities in all-hazard information integration, AI predictive analytics, and intelligent decision support—building a forward-looking cloud disaster management system.

The platform covers IoT-based early warning and monitoring services for natural hazards in industrial zones and integrates the TRONCube automated geospatial-temporal storage solution with public IoT data platforms and Shing Chong's proprietary AI monitoring devices, combined with on-site environmental sensor data. It supports disaster prevention information linkage and real-time decision-making from central to local levels, addressing both pre-disaster early warning and serving as an operational platform for emergency response centers.

Through geospatial data visualization and real-time information dissemination, EDC secures valuable response time and effectively reduces disaster losses. In alignment with ESG and green transition goals, the system promotes the application of GIS + IoT + AI in industrial parks, helping enterprises achieve smart and sustainable operations. Unifying Hazard Data for Smarter, Faster Response





489 Booth: SC36

Contact: Frinny Lee service@avmapping.co

Affiliated Ministry: NDC

Exhibitor: A.V. Mapping

Exhibited Technology

Music–Video & B2B Recommendation & Licensing AI Agents

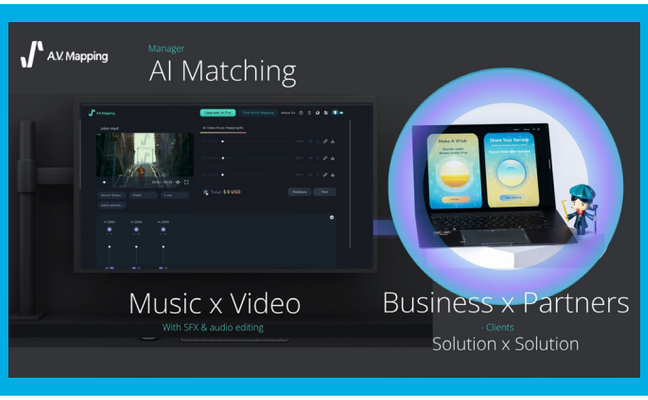
Technology Introduction

A.V. Mapping transforms video-music collaboration with patented AI that analyzes video expressions, actions, colors, and music features to instantly match soundtracks, cutting months of work to seconds. NFT tech ensures transparent licensing and fair pay. The expanding Ones platform uses AI to smartly connect creators, businesses, and professionals for faster, smarter industry growth.

Industry Applicability

A.V. Mapping's AI tech transforms film, ads, gaming, and music with globaladoption by 25,000+ creators across 126 countries, including McDonald's, UN agencies, and partnerships with AMD, Logitech, and Microsoft. Its instant music- visual matching cuts workflows from months to seconds:
Film and TV: Rights-cleared soundtracks in seconds.
Ads (McDonald's, UN): Boosts engagement and efficiency.
Gaming/XR: Dynamic audio sync for immersive experiences.
Musicians: Free uploads, 70% royalties via NFT smart contracts.
Ones Platform: Connects creators, brands (AMD, Logitech), and services for cross-industry collaborations.
One platform, limitless creative power.





Booth: SC37 490

Contact: josef chiang Josef.Chiang@sleepwellcorp.com

Smart Innovation

智慧永續館 SUSTAINABILITY PAVILION

Affiliated Ministry: NDC

Exhibitor: SleepWell Technology Corp.

Exhibited Technology

Facial Recognition Sleep Wellness Medical AI

Technology Introduction

- Technological Innovation – Sleep Technology | Self-care Toolkit
- Competitive Advantages – Cost Effectiveness | AI-guided Sleep Pattern Analysis
- Achievements – International R&D Teams | Health Accessibility | ESG Opportunities

Industry Applicability

This mobile application , accessible on users' phones, combines clinical big data analysis and algorithms in sleep medicine to provide comprehensive sleep medicine services, including sleep health analysis, expert treatment recommendations, and solution suggestions, to users in medical institutions, nursing homes, corporate employee health, and home sleep health settings. After passing medical device review, it has become an innovative digital medical device for sleep health protection.





491 Booth: SC38

Contact: Elena Tseng elena.tseng@ahoku.com

Affiliated Ministry: NDC

Exhibitor: AHOKU Electronic Company

Exhibited Technology

ant CareSpot

Technology Introduction

The ant CareSpot combines IoT and AI with voice sensing and non-contact detection to deliver smart care without wearables. It integrates health measurement, routine monitoring, emergency help, and video calls with RCC and family apps for a one-stop prevention-to-rescue solution. Recognized by the iF Design Award 2022 and Eldercare Innovation Awards 2023, it also received government funding in 2024 and 2025 through official innovation and technology subsidy programs.

Industry Applicability

The ant CareSpot supports home care, nursing homes, day care centers, and community stations, solving issues of elderly safety and fragmented caregiving. Using AI voice sensing and non-contact detection, it monitors routines and detects abnormalities in real time. With health measurements, video calls, and one-touch emergency help, it integrates with RCC and family apps, expanding to medical and smart home care.







Booth: SC39 492

Affiliated Ministry: NDC

Exhibitor: Artifact

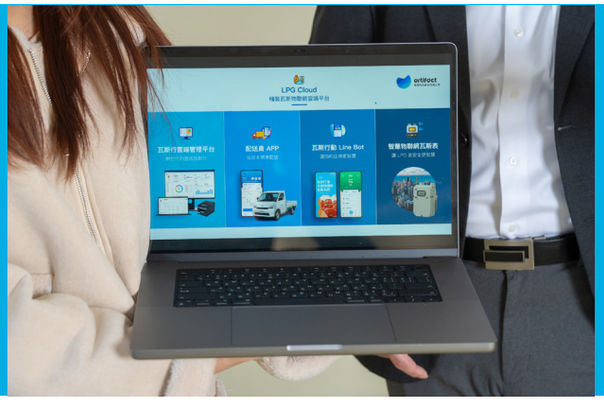
Exhibited Technology
LPG Cloud

Technology Introduction

• Technological Innovation:
This system integrates an AI decision-making model, which autonomously learns customer behavior data to establish a dedicated behavioral database. The system adopts a multi-model architecture that dynamically generates key decision factors, thereby supporting intelligent operational decisions. It helps clients address issues such as human resource allocation, user behavior prediction and proactive engagement, as well as gas cylinder turnover efficiency.
• Key Achievements / Awards:
Received funding under the Digital Cloud Service R&D Subsidy Program.

Industry Applicability

LPG Cloud integrates a cloud-based gas company management system, delivery D-APP, gas industry LINE Bot, and smart IoT gas meters. By combining SaaS with IoT devices, it effectively streamlines the management processes of gas companies. Supported by AI-based predictive models, it enables planned delivery and intelligent dispatch, ensuring precise scheduling of gas orders and optimizing delivery efficiency.
By adopting this integrated solution, bottled gas companies can achieve:
Replacing traditional administrative roles:
The AI decision-making model acts as a digital store manager, handling daily dispatching, forecasting, inventory allocation, and customer interaction—reducing reliance on manual experience and administrative manpower.
Enhancing manpower efficiency and order processing capacity:
Through intelligent dispatching and dynamic scheduling, the system significantly increases the daily order handling capacity of individual delivery staff, supporting business expansion.
Reducing cylinder idle time and inventory pressure:
With systematic rotation mechanisms, gas cylinder assets maintain high turnover rates, minimizing inventory pressure and operational costs caused by stockpiling or prolonged idleness.
Realizing the vision of unmanned offices:
By leveraging automated decision-making and predictive functions, the system helps gas companies gradually move toward unmanned operations, strengthening organizational flexibility and competitiveness.





國際區

INTERNATIONAL AREA

Organized by the Ministry of Economic Affairs, the International Zone serves as a global platform showcasing award-winning innovations and breakthrough technologies across Asia, Europe, and the Americas.

This year's exhibition highlights cutting-edge achievements in 5G communications, precision healthcare, silver-haired assistive devices, smart agriculture sensing, and intelligent lifestyle solutions.

Affiliated Ministry List

MND : Ministry of National Defense
MOA : Ministry of Agriculture
MODA : Ministry of Digital Affairs
MOENV : Ministry of Environment
MOL : Ministry of Labor
NDC : National Development Council
AS : Academia Sinica
MOE : Ministry of Education
MOHW : Ministry of Health and Welfare
NSTC : National Science and Technology Council
DOIT : Department of Industrial Technology
DSEA : Department of State-owned Enterprise Affairs
EA : Environmental Administration
IDA : Industrial Development Administration
SMESA : Small and Medium Enterprise and Startup Administration

國際區
INTERNATIONAL AREA

Americas

Contact: Tim Chen
timchen@drugomics.graphen.ai

◆ Affiliated Ministry: IDA

◆ Exhibitor: Graphen Drugomics Inc. ◆ Nationality: United States

Exhibited Technology

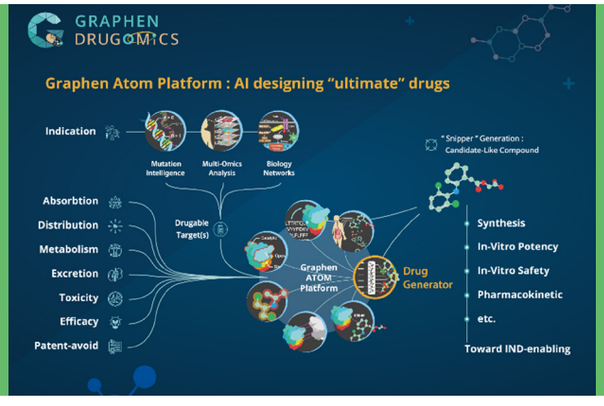
All-in-One Drug Generator

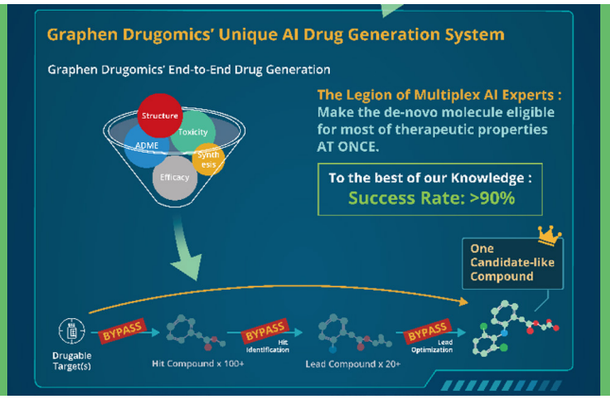
Technology Introduction

The All-in-One Drug Generator is an AI-driven technology capable of precisely generating candidate small-molecule drugs based on specific therapeutic requirements. Developed by Graphen Drugomics Inc. and integrated into the Atom Platform, this technology is trained on both small- and large-molecule structures as well as experimental language, enabling it to perform accurate conditional generation and internal optimization in iterative cycles.

Industry Applicability

Leveraging multimodal features, we integrate advanced drug design to support complex multi-target, multi-drug scenarios, improving the success rate of drug development.
Utilizing precision small molecule generation technology, we design novel and effective drugs for a variety of diseases, shortening the early drug development process from the traditional 2-4 years to just 6-12 months.





Booth: GI01

Contact: Mr. Nathan Chu Mr. Keivin Wu
nathanchu@tw.maxxis.com
kelvinwu@tw.maxxis.com

Affiliated Ministry: MOENV

Exhibitor: Maxxis International – USA Nationality: United States

Exhibited Technology

Maxxis Eco Commitment

Technology Introduction

In line with ESG, tire making shifts from fossil/silica to sustainable materials.
Eco-yarn: Waste fishing nets are recycled into stronger yarn, surpassing the strength limitations of recycled materials.
Electric arc furnace steel: Boosts recycled steel blend while maintaining performance.
Rice husk silica: Utilizes rice husk silicon for silica production, recycling agricultural waste into products.

Industry Applicability

Eco-yarn, once textile-focused, now in tires, expanding the recycling chain.
Electric arc furnace steel: Green-produced, cuts carbon, recycles scrap steel for a closed loop.
Rice husk silica: Uses rice husk silicon, recycling agricultural waste into products. Eliminates straw burning pollution, serves as a renewable resource, reducing non-renewable reliance.

THE MAXXIS
ECO COMMITMENT



Contact: Debby Hsu
dhsu@mmm.com

◆ Affiliated Ministry: MOL

◆ Exhibitor: 3M ◆ Nationality: United States

Exhibited Technology

Respiratory protection

Technology Introduction

1. Designed with intuitive features, the 3M Secure Click Half Facepiece Reusable Respirator HF-800 Series helps protect workers from particulates and/or a wide variety of gases and vapors when used with approved 3M Secure Click filters and cartridges
2. Secure Click connection helps provide confidence that filters/cartridges are installed properly.
3. Easy, one-touch seal check helps increase worker confidence that the respirator is being worn properly.
4. The 3M ™ Cool Flow ™ valve effectively removes heat build-up and provides a cooler and more comfortable wear. The 3M Cool Flow valve also minimises the risk of fogging up eyewear
5. Individually wrapped for protection from contamination prior to use
6. Activated carbon layer reduces exposure to nuisance levels of organic vapor and odor.

Industry Applicability

The resipratory protcetion's indusrty applicability:
1. Experience the greater breathability and comfort provided by the world's first quad-flow cartridge system.
2. Speaking diaphragm is designed to help provide easier communication while working.



Booth: GI03

Contact: Debby Hsu
dhsu@mmm.com

- Affiliated Ministry: MOL
- Exhibitor: 3M
- Nationality: United States

Exhibited Technology

Fall protection

Technology Introduction

3M ™ DBI-SALA® Full-Body Harnesses advantages:
1. Trauma straps easily deploy and hook together in seconds, allowing you to stand up while suspended in harness to relieve suspension trauma.
2. Quick-connecting buckles enhance productivity
3. Revolving adjusters maintain fit and lock excess webbing in place

Industry Applicability

3M provides a total solution of fall protection products, including Anchorage for various environments, Full body harness, Lanyard, SRL, and Confined space rescue.



國際區
INTERNATIONAL AREA

Americas

Contact: Debby Hsu
dhsu@mmm.com

◆ Affiliated Ministry: MOL

◆ Exhibitor: 3M ◆ Nationality: United States

Exhibited Technology

3M ™ Speedglas ™ G5-03 Welding

Technology Introduction

3M ™ Speedglas ™ G5-03
The 3M ™ Speedglas ™ G5-03 Pro Welding Helmet uses next-generation technology to help provide dynamic welding protection. Intuitively designed for the challenges faced on the job, this helmet setup includes a haptic tapping function to activate grind or cut mode. We make use of the welding technology of the future, today — equip the 3M ™ Speedglas ™ G5-03 Pro Welding Helmet with various accessories, such as task-light, neck Cover and head Cover to configure the helmet to meet your specific needs.

3M ™ Speedglas ™ Welding Helmet, G5-03 Pro is specifically designed for the versatile welder. The helmet allows you to switch between welding and grinding tasks through our new Tap functionality. With highly customisable adjustment settings, including more control over how you see your weld pool and how you configure the helmet for additional protection against radiation, sparks and spatter, G5-03 Pro allows you to take control over your protection. Features 3M ™ Speedglas ™ Natural Color Technology, Variable Color Technology (with G5-01/03VC), and a Tack Welding Mode (with G5-01/03TW). The new optional Task Light also allows you to see more of your work piece. an optional helmet adapter system also enables the connection of a hard hat for welders requiring head protection.

Industry Applicability

The 3M ™ Speedglas ™ G5-03 Welding can minimize eye strain and improve comfort from work



Booth: GI03

500

Contact: Thomas Kuo
thomas.kuo@keysight.com

Americas

國際區
INTERNATIONAL AREA

◆ Affiliated Ministry: MODA

◆ Exhibitor: Keysight Technologies ◆ Nationality: United States

Exhibited Technology

Simulation, Emulation, and Validation Solutions for AI and 6G

Technology Introduction

Keysight provides end-to-end simulation, emulation, and validation solutions that accelerate AI and 6G technology development, enabling realistic, scalable, and repeatable test environments for next-generation systems.

• AI-driven EDA tools and digital twins simulate real-world 6G scenarios at scale, accelerating system design, validation, and deployment.

• Proprietary channel emulation and integrated HW/SW platforms enable validation of real B5G/6G use cases with unmatched fidelity.

• Designed for large-scale AI data centers and supply chains, helping optimize performance across all layers from the physical to the application, accelerate development, and realistically emulate AI workloads.

Industry Applicability

Keysight's solutions apply to wireless communications, semiconductor, automotive, aerospace, and defense industries, enabling AI- and 6G-related design, emulation, and validation across R&D and production. They support device, network, and system-level testing to ensure real-world performance and regulatory compliance.





國際區
INTERNATIONAL AREA

Americas

Contact: Jack Wang
Jwang38@rockwellautomation.com

◆ Affiliated Ministry: DOIT

◆ Exhibitor: Rockwell Automation ◆ Nationality: United States

Exhibited Technology

Pavillion 8 AI Close loop control Technology

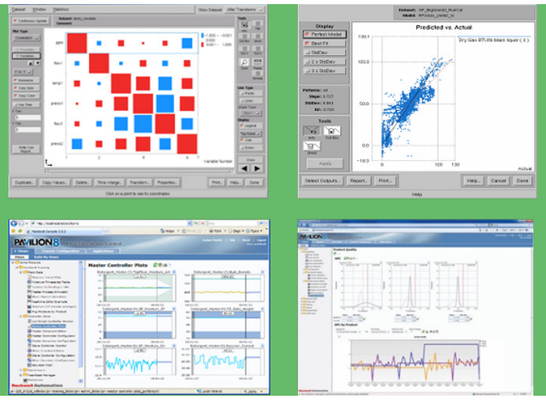
Technology Introduction

Technological Innovation
Modular MPC software platform with browser-based UI, real-time insights, and seamless integration across control systems for process optimization.
Competitive or Intellectual Property Advantages
Scalable architecture, personalized user experience, reduced training costs, and easy integration with existing business infrastructure.
Important Achievements / Awards
Reduces quality variation 75%, cuts energy consumption 20%, maximizes throughput 25%.

Industry Applicability

Primary Industries Served:
Cement - Process optimization and energy efficiency
Chemical - Advanced process control and quality consistency
Pharmaceuticals - Quality control and regulatory compliance
Polymers - Process variability reduction and consistency
Water - Chemical Dosing, Water and Energy nexus





Booth: GI05

Contact: claudio arenas andrade
claudio.arenas@qscire.com

Affiliated Ministry: NSTC

Exhibitor: qScire SpA Nationality: Chile

Exhibited Technology

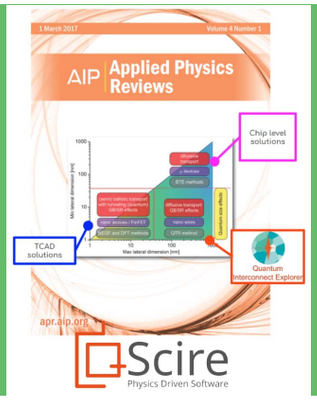
Quantum Interconnect Explorer – QIE

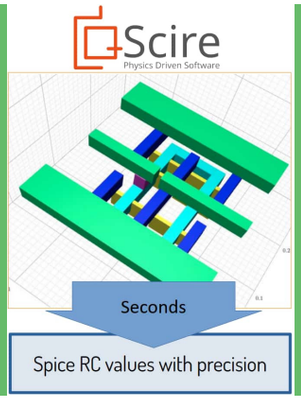
Technology Introduction

Quantum Interconnect Explorer (QIE) is a software tool for resistance and capacitance estimation in current and future integrated circuit technologies. Its core relies on closed-form equations and proprietary algorithms, enabling fast and accurate results. QIE won a 2022 TIE award and has been used in projects with industry-leading partners.

Industry Applicability

Quantum Interconnect Explorer (QIE) is a software for the semiconductor industry, for circuit designs parasitic estimation. It enables tech node exploration and library optimization. Using closed-form resistivity models based on quantum effects, QIE outperforms semiclassical and iterative methods. It supports classical (Cu, Au, Al) and advanced 2D materials.





Contact: 張鈺雯
lchang@alltech.com

◆ Affiliated Ministry: MND

◆ Exhibitor: Alltech ◆ Nationality: United States

Exhibited Technology

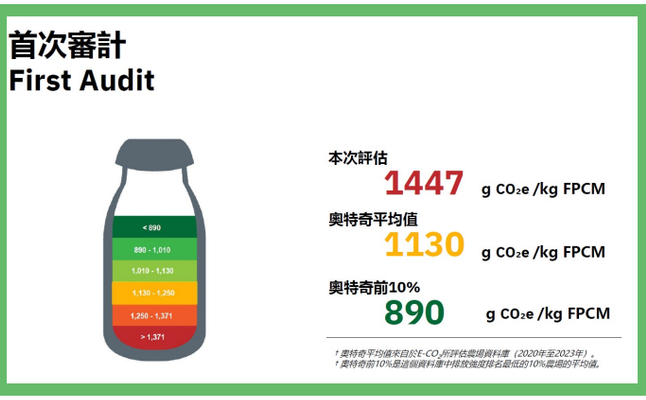
E-CO2 program

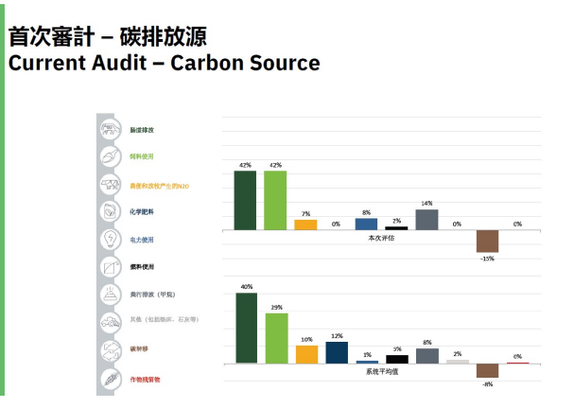
Technology Introduction

Alltech E-CO2 is a market-leading agri-environmental consultancy company, specializing in farm-level carbon and water assessments. We have pioneered the use of on-farm environmental tools and assessments and carry out farm consultancy visits globally.

Industry Applicability

Animal Nutrition Management / Nutritional Additives





Booth: GI07

Contact: 張鈺雯
lchang@alltech.com

Affiliated Ministry: MND

Exhibitor: Alltech Nationality: United States

Exhibited Technology

Providing practical and proven nutritional solutions for your animals

Technology Introduction

Through our innovative study of nutrigenomics, our nutritional technologies help animals maximize the nutrients in their feed for optimal well-being and performance. Alltech has proven that organic trace minerals in the form of Bioplex® and Sel-Plex® can be included at significantly lower levels while improving animal performance. This optimizes animal mineral requirements and reduces negative environmental impacts. We call this innovation Alltech's Total Replacement Technology ™ (TRT).

Industry Applicability

Animal Nutrition Management / Nutritional Additives





505

Booth: GI07

Contact: 李國華
new.jeida@jeida.com.tw

- Affiliated Ministry: MOA
- Exhibitor: Vostermans Ventilation
- Nationality: Netherlands

Exhibited Technology

Ventilation system

Technology Introduction

We manufacture a wide range of Multifan fans Most Multifan fans are easily recognizable by the red blades, made of high-tech engineering plastics. Comply with IP55, and UL-marked fans comply with UL507.

Industry Applicability

Vostermans develop, produce and distribute axial fans for agricultural and industrial markets in particular.





Booth: GI08

Contact: 陳佳心
cindy.chen@elgin.com.tw

◆ Affiliated Ministry: MOA

◆ Exhibitor: Gattefossé ◆ Nationality: France

Exhibited Technology

Self Emulsifying Drug Delivery System (SEDDS)

Technology Introduction

Gattefossé is a professional oil and emulsifier development company with rich experience. About, Self-emulsifying drug delivery systems (SEDDS) are a technology used to enhance the oral bioavailability of poorly soluble drugs. They are isotropic mixtures of oils, surfactants, and sometimes cosolvents, which spontaneously form fine oil-in-water emulsions or microemulsions when exposed to aqueous environments like those in the gastrointestinal tract. This emulsification increases the solubility and absorption of the drug, improving its bioavailability.We can provide full formulation information.

Industry Applicability

Gattefossé's SEDDS technology provides an efficient solution for formulating poorly water-soluble or highly lipophilic active ingredients. Suitable for both early-stage development and commercial manufacturing, SEDDS offers flexibility in liquid or solid dosage forms. It enables formulators to enhance drug performance without altering molecular structure—making it an ideal approach for modern lipid-based oral delivery solutions.



Contact: James Wang
jawang@igus.net

◆ Affiliated Ministry: NSTC

◆ Exhibitor: igus GmbH ◆ Nationality: Germany

Exhibited Technology

Injection moulded frames-plastics frame e-bike

Technology Introduction

A RECO bicycle frame is created from the advanced composite granulate using complex injection moulding technology. At the end of its life, this can simply be ground up, melted down and manufactured into a new frame or component. Completely without wasteTechnology Introduction

- Made in Germany
- Sustainable mobility solution
- Carbon composite 100% recyclable frame

Industry Applicability

1. Urban Logistics & Last-Mile Delivery 2. Corporate & Campus Mobility 3.Rental & Tourism 4.Sports & Recreation (High-End Consumer) 5.Sustainable Urban Development & Smart Cities Initiatives 6.Research & Development (Materials/Mobility)



Booth: GI10 508

Contact: James Wang
jawang@igus.net

◆ Affiliated Ministry: NSTC
◆ Exhibitor: igus GmbH ◆ Nationality: Germany

Exhibited Technology

iglidur® slewing ring, PRT-02, slewing ring ball bearing based on wood

Technology Introduction

The PRT-02 series is characterised by its low weight and low cost.
The PRT-02-30-WPC product range consists of a wood-plastic combination with 50% wood and 50% plastic. This is the first time we are offering a material combination that consists of 50% renewable raw materials and requires no lubricants.
iglidur® PRT slewing ring bearings are ready-to-install slewing rings for lubrication-free, dry operation. The design is not based on re-circulating components, but on maintenance-free sliding elements made of proven, tribologically optimised iglidur® materials - in this case also made of wood.

Industry Applicability

1. Eco-friendly & Sustainable Product Manufacturing 2. Lightweight Robotics & Cobots 3. Food & Packaging Industry 4.Medical & Laboratory Technology 5.Education & Didactic Systems 6. Display & Presentation Technology 7. Logistics & Light Material Handling

Contact: James Wang
jawang@igus.net

◆ Affiliated Ministry: NSTC

◆ Exhibitor: igus GmbH ◆ Nationality: Germany

Exhibited Technology

ReBeL KID

Technology Introduction

The ReBeL KID expands the Cobot family with a small but no less functional robot. The robot is particularly suitable for small installation spaces and use in the education sector.
This is where the name KiD comes from: Kinematics in Didactic. It is ideally suited for overhead applications, as it is very space-saving thanks to the control integrated in the base.
With over 1 million test cycles in the automation laboratory, its resilience and durability have been proven. Thanks to its 4 kg weight, the ReBeL® KID is easy to transport.

Industry Applicability

1. Education & Training 2. Small-scale Automation & Light Manufacturing 3. Laboratory Automation & Medical Assistance 4. Quality Inspection & Measurement 5. Remote Operation & Maintenance 6. Product Development & Prototyping 7. Service Robotics - Specific Applications



Booth: GI10

Contact: Sherry Liu
sherry@bellwether-industries.com

- Affiliated Ministry: NSTC
- Exhibitor: Bellwether Industries Limited
- Nationality: United Kingdom

Exhibited Technology

Air Traffic Management System (Scout)

Technology Introduction

Volar is an eVTOL designed for urban air mobility, featuring a concealed propulsion system, compact body, and city compatibility to enhance efficiency and safety. Leveraging expertise in aerodynamics, avionics, and systems integration, we developed Scout—an adaptive air traffic management system for drones and low-altitude aircraft to take it further. Scout integrates advanced sensing, distributed processing, and AI for planning, execution, and emergency response, with automated fleet control, regulator coordination, and a patented AI navigation algorithm ensuring safe and efficient missions.

Industry Applicability

The Scout system is applicable across industries such as public safety, logistics, agriculture, infrastructure, and government regulation. It enables real-time UAV coordination for tasks like emergency response, aerial delivery, crop monitoring, and facility inspection. By enhancing airspace transparency and efficiency, Scout supports smart city and low-altitude airspace management.





Contact: Nancy Hsiao
sales@innotrust.com.tw

◆ Affiliated Ministry: MODA

◆ Exhibitor: TASSTA GmbH-(INNOTRUST CORP) ◆ Nationality: Germany

Exhibited Technology

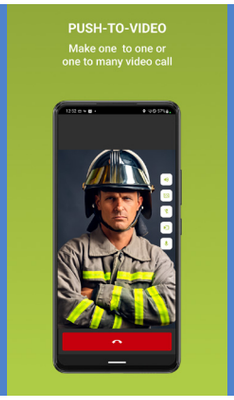
Mission Critical Push to Talk, MCPTT

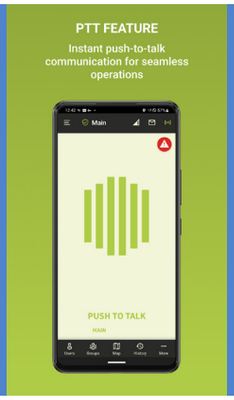
Technology Introduction

Technology Introduction (3 Key Features):
• Technological Innovation: 3GPP-compliant MCPTT, MCVideo, and MCData solutions for mission-critical communications.
• Competitive/IP Advantages: Cross-platform PTT with GPS tracking, emergency alerts, and lone worker protection.
• Achievements/Awards: Adopted by global public safety and transportation agencies.

Industry Applicability

Serves public safety, logistics, utilities, and field services with secure, real-time communication and coordination tools across diverse devices and networks.





Booth: GI12

Contact: Joseph Lin
joseph@stellar-exploration.eu

- Affiliated Ministry: DOIT
- Exhibitor: Stellar Exploration
- Nationality: Czech Republic

Exhibited Technology

Satellite Subsystems

Technology Introduction

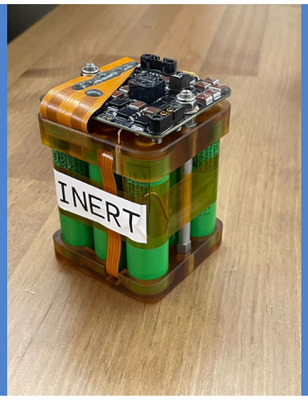
Stellar provides affordable, flight-ready power, propulsion, and RF systems. Our modular solutions enable rapid integration, high reliability, and mission-tailored engineering support.

Flight heritage:
Propulsion: 5 monoprop systems in operation, 6 biprop, 2 monoprop, 2 warm gas systems to be delivered by end of 2025
Power: over 2 dozen systems in operation, 20+ more to be delivered in 2025

Industry Applicability

Taiwanese satellite companies/Taiwanese Government

We welcome introductions to companies or institutions seeking expertise in power systems, battery technology, or propulsion for space applications—especially those interested in co-development, local manufacturing, or joint missions.



國際區
INTERNATIONAL AREA

Europe

Contact: Dennis Hsu
dennis.hsu@camgandevices.com

- Affiliated Ministry: EA
- Exhibitor: Cambridge GaN Device
- Nationality: United Kingdom

Exhibited Technology

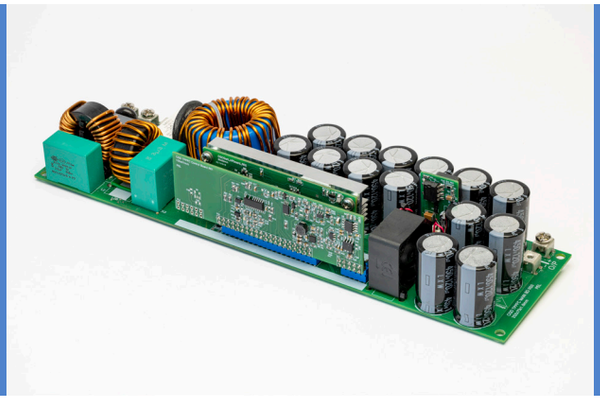
ICeGaN® Power IC

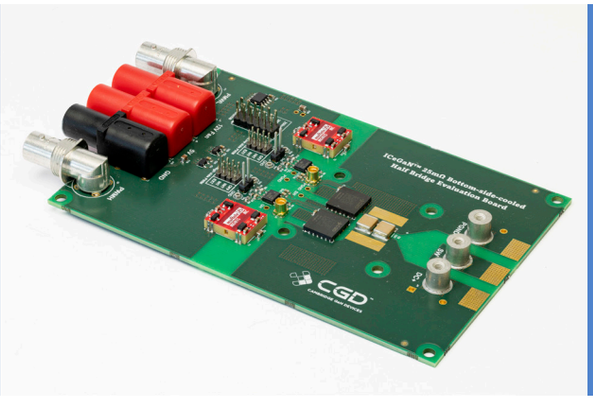
Technology Introduction

• Technological Innovation – A monolithic chip integrates interface circuits to enable eGaN HEMTs to exhibit drive characteristics similar to those of MOSFETs, while retaining the fast switching performance and thermal advantages of enhancement-mode GaN.
• Competitive or Intellectual Property Advantages – Simplified gate driving—no need for external gate driver circuits or custom driver ICs.
The monolithic structure improves packaging yield and significantly reduces component count in power modules.
• Important Achievements / Awards – 2024 EE Awards Asia, 2024 WEAA Award

Industry Applicability

ICeGaN integrates a gate interface circuit and e-mode GaN HEMT into a single chip, making it easy to use like a MOSFET while keeping the benefits of GaN—high speed, low loss, and good thermal performance. It is ideal for fast chargers, server power, EV onboard chargers, motor drives, and solar inverters. With simpler design and fewer components, it helps reduce size, cost, and improve power density. ICeGaN is well-suited for next-generation efficient power systems.





Booth: GI14

Contact: Vivi Lee
vivi.lee@lightsourcebp.com

- Affiliated Ministry: EA
- Exhibitor: Lightsource bp
- Nationality: United Kingdom

Exhibited Technology

Onshore renewable and energy storage solutions

Technology Introduction

Lightsource bp is a leading developer and manager of global utility-scale onshore renewable and energy storage solutions. We deliver affordable and sustainable power for businesses and communities around the world. We provide full scope development for our projects, from initial site selection, financing and permitting through to long-term management of projects and power sales to our clients.

Industry Applicability

Lightsource bp delievers safe, value-driven renewable projects to support the global energy transition. Our first project in Taiwan - a 115MWp fishery solar farm in Budai and Yizhu, Chiayi County - is under construction and set for completion in 2026. We're honored to bring world-class solar expertise to Taiwan and committed to building a long-term partnership with Taiwan and its communities.





Contact: 周志宜
yi@ecard-tech.com.tw

◆ Affiliated Ministry: EA

◆ Exhibitor: Dassault Systèmes ◆ Nationality: France

Exhibited Technology

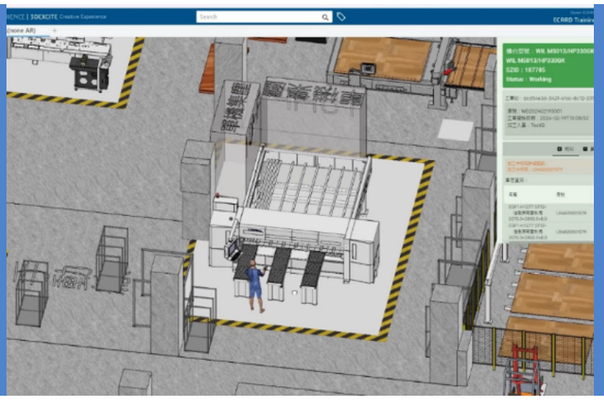
AIOT+5G+DigitalTwin+AR

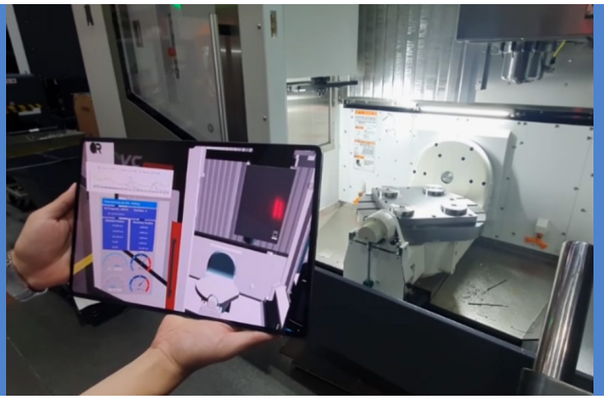
Technology Introduction

After uploading the operation data of the on-site equipment to the cloud database, 3DEXCITE can remotely retrieve the equipment data through the Web API and then transfer it to the embedded web page and 3D virtual system model.
3D virtual system model: According to actual monitoring needs, integrate various models in 3DEXCITE and accurately transfer cloud data to synchronize the operation of real and virtual machines.

Industry Applicability

Build a 3D model of the equipment and combine it with a real-time information dashboard to create a 3D scene of the digital factory.
Remote monitoring is achieved through cloud technology, and the equipment status is viewed through 3D scenes, making it convenient for managers to monitor factory operations at any time.
Use AR technology to combine real-time equipment data with 3D models and scenes.





Booth: GI16

Contact: Eva Shih
yunting_shih@ulvac.com.tw

◆ Affiliated Ministry: IDA

◆ Exhibitor: ULVAC,Inc. ◆ Nationality: Japan

Exhibited Technology

Compound Semiconductor High-Energy Ion Implantation Equipment

Technology Introduction

ULVAC has developed an advanced system for processing silicon carbide (SiC) materials. It enhances wafer stability, increases throughput, and reduces contamination, ensuring faster and cleaner production of high-quality SiC wafers. These wafers are ideal for high-temperature, high-frequency, and high-voltage applications, including EV chargers, industrial motors, and renewable energy systems.
ULVAC's high-energy ion implantation equipment for compound semiconductors is designed for industries needing advanced materials for high-performance devices. It supports mass production and prototyping, enabling devices with higher efficiency, reliability, and performance. Applications include automotive electronics, renewable energy, telecommunications, and industrial systems.

Industry Applicability

ULVAC's high-energy ion implantation equipment for compound semiconductors is designed for industries needing advanced materials for high-performance devices. It supports mass production and prototyping, enabling devices with higher efficiency, reliability, and performance. Applications include automotive electronics, renewable energy, telecommunications, and industrial systems.



Contact: Kitti Puppachart
kitti@nstda.or.th

◆ Affiliated Ministry: NSTC

◆ Exhibitor: EASTERN ECONOMIC CORRIDOR OF INNOVATION (EECi) ◆ Nationality: Thailand

Exhibited Technology

INNOVATION HUB OF THAILAND

Technology Introduction

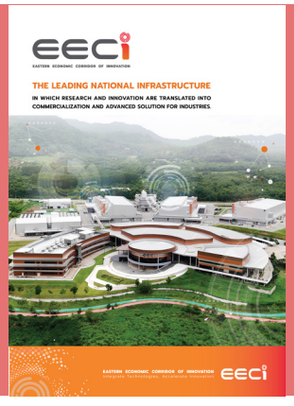
An innovation hub of Thailand under supervision of NSTDA. Aim to facilitate translational research and technology localization in a comprehensive innovation ecosystem to accommodate the innovation creation and commercialization.

Industry Applicability

1.Concentrated research and innovation that aims to address the needs of industries, both within the EECi and throughout the country, through a working integration of private-sector organizations, educational and research institutes, and the government.

2.Pilot scale production testing and development facilities (Scale-up, Testbeds & Living Lab, Greenhouse, Field Demo) to scale-up innovations to serve the growth of industries.

3.EECi has established a regulatory framework for research, development and innovation, effectively becoming a "sandbox" for regulatory adjustment, in order to serve as a testing ground for products, devices, platforms and associated applications.





國際區
INTERNATIONAL AREA

Asia

Contact: Joginder Tanikella
ceo@tworks.in

- Affiliated Ministry: NSTC
- Exhibitor: T-Works Foundation
- Nationality: India

Exhibited Technology

T-Works, India's Largest Prototyping Center

Technology Introduction

T-Works is India's Largest Prototyping Centre and Manufacturing Knowledge Partner, established as a non-profit by the State Government of Telangana to drive product innovation and support entrepreneurship across sectors. We enable market access through technology transfer and co-production in India. Through deep technical expertise, advanced prototyping facilities, and robust MSME linkages, we help Taiwanese firms co-develop, localize, and co-manufacture products in India, accelerating their entry into one of the world's fastest-growing markets.

Industry Applicability

Our prototyping centre supports diverse industries including electronics, semiconductors, aerospace, robotics, healthcare, agriculture, and consumer products. Taiwanese companies can leverage our expertise and infrastructure to co-develop, localize, and scale manufacturing for India's dynamic market across multiple sectors.





Booth: GI19 520

Contact: Lingyi Chang
ling@illumi.one

- Affiliated Ministry: NSTC
- Exhibitor: illumi one pte ltd
- Nationality: Singapore

Exhibited Technology

AI-native whiteboard for visual collaboartion

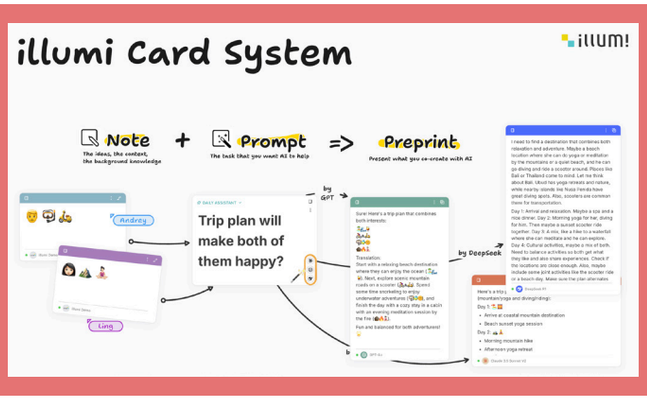
Technology Introduction

Current AI tools fail to enable structured, collaborative teamwork, resulting in wasted investment, underwhelming innovation, and a persistent competitive disadvantage for organizations. Our solution is a real-time collaborative workspace that merges multiple AI tools and agents, helping teams focus on context and co-create using cards and whiteboards. Imagine Miro, Notion, and ChatGPT combined for asynchronous, AI-powered teamwork.

Industry Applicability

Startup cross-team collaboration; workforce tool integration; company knowledge management





Contact: Daniel Gun
daniel.gun@revolab.ai

◆ Affiliated Ministry: NSTC

◆ Exhibitor: Revolab Sdn Bhd ◆ Nationality: Malaysia

Exhibited Technology

AI Call Agent for Contact Center

Technology Introduction

RevoCall transforms your contact center with enterprise-grade security that safeguards every interaction from AI manipulation and hyper-localized models that truly understand regional dialects—not just standard languages. Allow you to deliver safer, more natural customer support while significantly reducing operational costs.

Industry Applicability

Revolab provides secure, hyper-localized AI solutions for industries with complex administrative workflows. We build intelligent digital workforces for the financial services, healthcare, and telecommunications sectors, streamlining processes like loan applications, clinical documentation, and contract compliance. Our expertise also enhances customer service for BPOs, driving enterprise-wide efficiency and security.



Booth: GI21

Contact: KAMAGATA Noritoshi
noritoshi_kamagata@kk-grp.jp

◆ Affiliated Ministry: MND

◆ Exhibitor: Kokusai Kogyo Co., Ltd. ◆ Nationality: Japan

Exhibited Technology

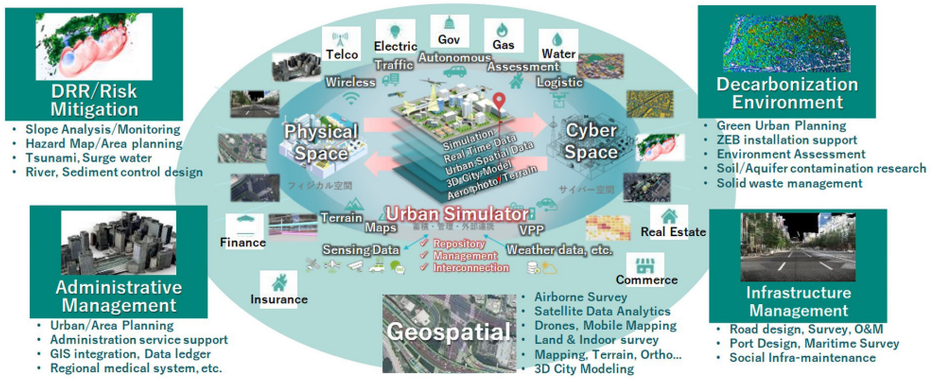
Various Solutions Utilizing Geospatial Information Technology

Technology Introduction

Kokusai Kogyo utilizes geospatial information to provide highly specialized technologies and services across a broad range of fields touching on many aspects of daily life.
We execute Geospatial data acquisition technologies covering from space, to the earth's surface, to underwater and underground; and provide Geospatial centric solution and consulting services.
We are deeply committed to solving the issues facing global society and passing on a sustainable society to future generations.

Industry Applicability

Geospatial Information
This service is widely applied in the field of smart agriculture in Japan, with numerous domestic users. It has demonstrated significant effectiveness in increasing productivity, reducing labor input, and lowering costs.



Contact: Wattanee U-Chupaj
wattanee@aiya.ai

◆ Affiliated Ministry: NSTC

◆ Exhibitor: AIYA - MeGenius Co., Ltd. ◆ Nationality: Thailand

Exhibited Technology

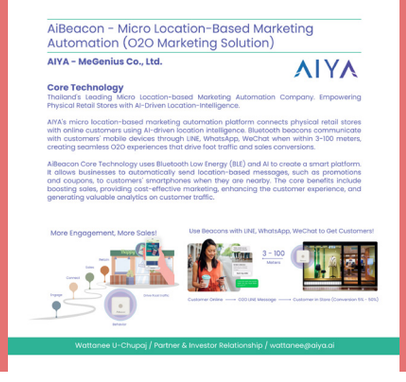
AiBeacon - Micro Location-Based Marketing Automation (O2O Marketing Solution)

Technology Introduction

Thailand's Leading Micro Location-based Marketing Automation Company. Empowering Physical Retail Stores with AI-Driven Location-Intelligence.

AIYA's micro location-based marketing automation platform connects physical retail stores with online customers using AI-driven location intelligence. Bluetooth beacons communicate with customers' mobile devices through LINE, WhatsApp, WeChat when within 3-100 meters, creating seamless O2O experiences that drive foot traffic and sales conversions.

AiBeacon Core Technology uses Bluetooth Low Energy (BLE) and AI to create a smart platform. It allows businesses to automatically send location-based messages, such as promotions and coupons, to customers' smartphones when they are nearby. The core benefits include boosting sales, providing cost-effective marketing, enhancing the customer experience, and generating valuable analytics on customer traffic.





Booth: GI23

Contact: Miho Tsujii
tsujii@seiwaopt.co.jp

◆ Affiliated Ministry: DOIT

◆ Exhibitor: SEIWA OPTICAL CO., LTD. ◆ Nationality: Japan

Exhibited Technology

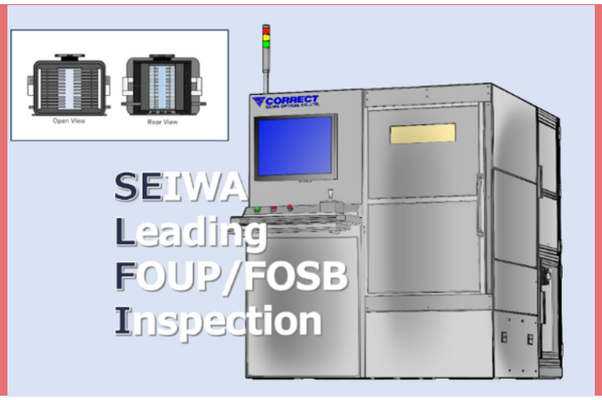
Wafer Cassette FOUP/FOSB Inspection System

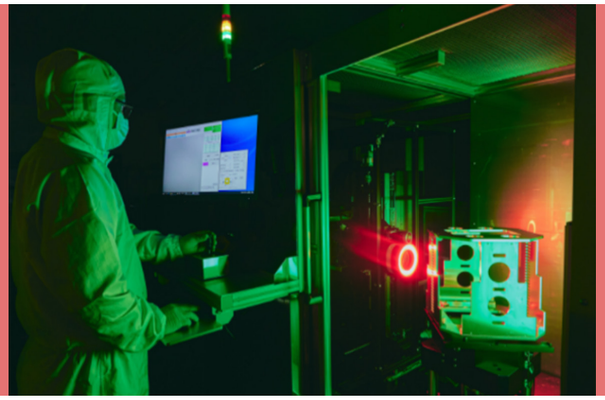
Technology Introduction

This system provides accurate dimensional measurements of 300mm wafer FOUP/FOSB. Automation includes FOUP/FOSB loading and simultaneous loading of 25 wafers, with measurements taken with the lid open and closed. It measures outer diameter, wafer protrusion, and all 25 wafer pitches. High-precision imaging using our optics allows for the measurement of diverse FOUP/FOSB/OC types, including non-standard 300mm and colored units.

Industry Applicability

The dimensional accuracy of FOUP/FOSB is a critical factor in the automation of wafer transfer and processing. The introduction of this equipment improves the reliability and efficiency of the manufacturing process. Highly accurate measurement data prevents the outflow of defective products and leads to improved yields. The flexibility to handle diverse FOUP/FOSB types is also effective in multi-product, small-batch production and research and development settings.





Contact: Daniel Huang
info@nattynites.club

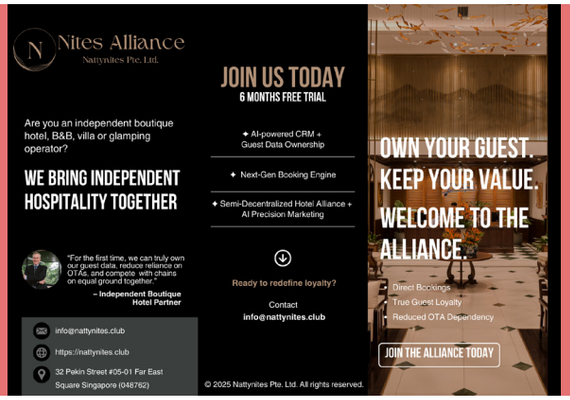
- Affiliated Ministry: NDC
- Exhibitor: Nattynites Pte. Ltd.
- Nationality: Singapore

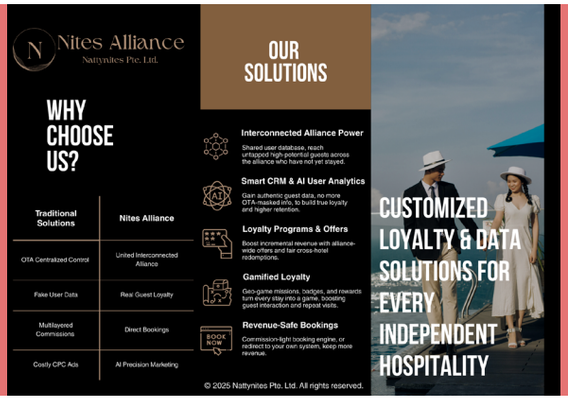
Exhibited Technology

Nites Alliance— AI Interconnected Hospitality Alliance

Technology Introduction

An AI-powered loyalty alliance for Asia's independent boutique hotels, B&Bs, and villas. With a shared AI database, smart CRM, gamified missions, and an interconnected hotel network, we help hotels cut OTA commissions and marketing costs while solving masked guest data issues. The platform drives direct bookings, builds true loyalty, and empowers hotels to regain control of data and marketing.





Booth: GI25 526

Contact: May
May.Kuan@cedarsdigital.io

◆ Affiliated Ministry: NDC

◆ Exhibitor: Cedars Digital ◆ Nationality: Singapore

Exhibited Technology

AI-Powered Net Zero Supply Chain

Technology Introduction

AI-Powered Net Zero Supply Chain
Fast · Accurate · Actionable Scope 3 Solution
At this critical moment in the net-zero transition, Scope 3 emissions from supply chains have become the greatest challenge for global brands and manufacturers.
The AI-Powered Net Zero Supply Chain Module, integrating AI and automation technologies, helps enterprises overcome the bottlenecks of fragmented data, massive datasets, and complex decarbonization decisions.
Our Core Value

· Data Integration Accelerator: Consolidate and standardize carbon data across systems and suppliers with one click.

· AI Data Engine: Automatically cross-check and complete missing data, precisely matching the right emission factors.

· Decision-to-Action: Instantly simulate "What-if" scenarios and generate the most suitable decarbonization strategy recommendations.

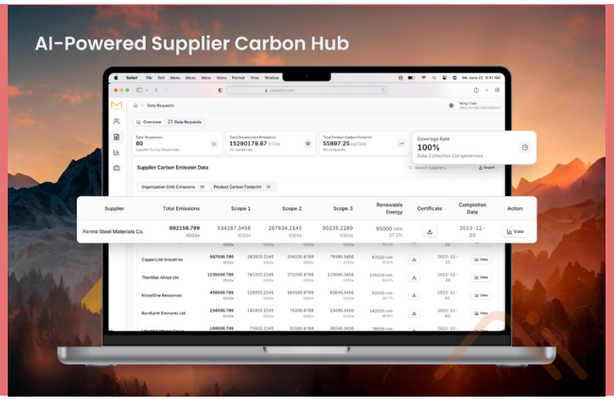
Industry Applicability

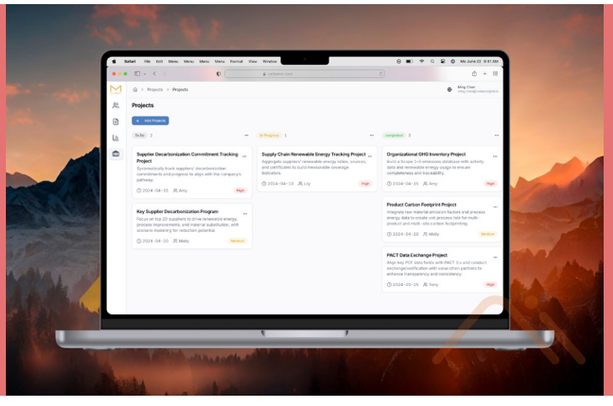
This AI module is designed for industries with highly complex, multi-tier supply chains.

· Global Brands: Easily comply with EU CBAM, ISSB, and various national regulatory requirements for disclosure and reduction.

· Electronics & Semiconductor Industries: With vast, multi-tier supply networks where Scope 3 emissions account for over 70%, AI helps pinpoint the critical levers for decarbonization.

Transform complex supply chain management into a visualized and actionable net-zero pathway.





Contact: Peng Kien Wei
kien.wei@ailytics.ai

◆ Affiliated Ministry: NSTC

◆ Exhibitor: Ailytics Pte Ltd ◆ Nationality: Singapore

Exhibited Technology

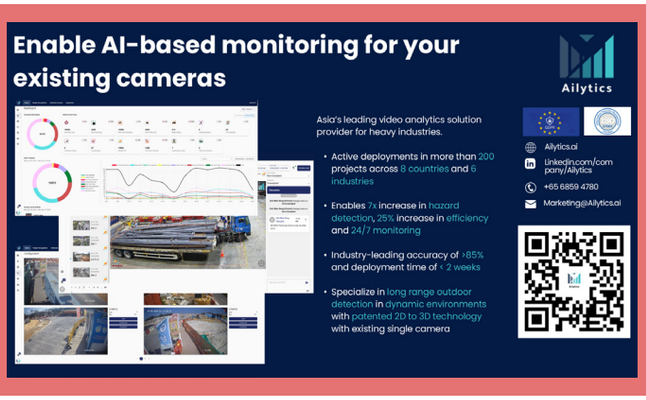
Scenario-based Video Analytics for Operational Safety and Productivity

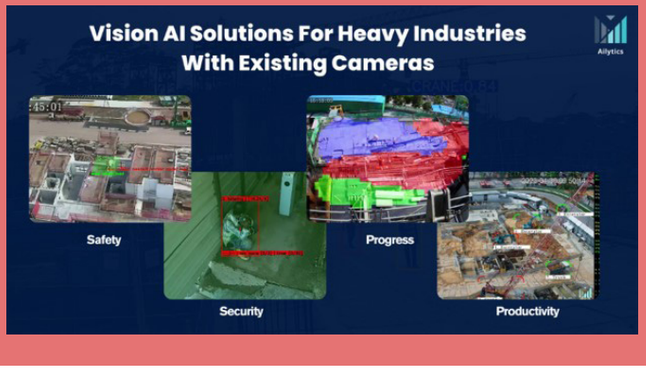
Technology Introduction

Ailytics is the ASIA leading Scenario-based video analytics solution provider for industrial operational safety and productivity monitoring. Our solution is hardware agnostic and able to operate in harsh ervironments (long-range, small object detection, external noises). Our patented technology is able to turn a normal low-specs camera into an intelligent camera which could simulate a 2D view to a 3D environment hence deliver better accuracy and more realistic outcome.

Industry Applicability

Suitable for heavy industrial and workplace safety monitoring. We have deployed in construction, maritime, oil & gas, manufacturing, factory, logistic & warehouse sectors.





Booth: GI27

528

Contact: Vivian Lai
vivianl@checkpoint.com

Affiliated Ministry: NSTC

Exhibitor: Check Point Software Technologies Limited Nationality: Israel

Exhibited Technology

A leading AI-powered, cloud-delivered cyber security platform provider

Technology Introduction

Check Point Software Technologies Ltd. (www.checkpoint.com) is a leading AI-powered, cloud-delivered cyber security platform provider protecting over 100,000 organizations worldwide. Check Point leverages the power of AI everywhere to enhance cyber security efficiency and accuracy through its Infinity Platform, with industry-leading catch rates enabling proactive threat anticipation and smarter, faster response times. The comprehensive platform includes cloud-delivered technologies consisting of Check Point Harmony to secure the workspace, Check Point CloudGuard to secure the cloud, Check Point Quantum to secure the network, and Check Point Infinity Core Services for collaborative security operations and services.

Industry Applicability

Cross industries



529

Booth: GI28

Contact: Terence Cheah
tc@neolt.sg

◆ Affiliated Ministry: IDA

◆ Exhibitor: NEOLT Asia Pte Ltd ◆ Nationality: Singapore

Exhibited Technology

NeoVision

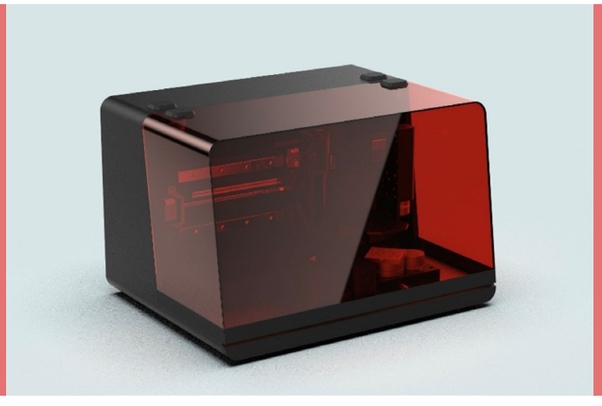
Technology Introduction

As consumer expectations shift toward customization, speed, and sustainability, traditional lens manufacturing processes are struggling to keep pace. This is especially true in the emerging field of AR and XR glasses, where optical precision and form factor are critical to user adoption. NeoVision's 3D prescription lens technology addresses these challenges with a revolutionary approach

Industry Applicability

In the ophthalmic sector, NeoVision's solution offers a high degree of customization, producing lenses with 0.01 diopter precision tailored to each individual's prescription. Unlike conventional lens grinding, our process eliminates inventory waste, reduces lead times, and delivers consistent optical quality. By removing the constraints of pre-cut lens blanks and batch production, eyewear providers can shift to a just-in-time model that responds directly to end-user needs.





Booth: GI29

Contact: Egor Khaidarov
egor@metaoptics.sg

Asia

國際區
INTERNATIONAL AREA

- Affiliated Ministry: IDA
- Exhibitor: MetaOptics Technologies
- Nationality: Singapore

Exhibited Technology

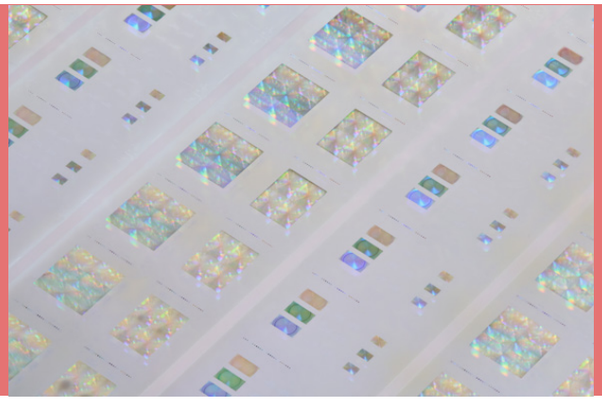
Metalens / Semiconductor Lens

Technology Introduction

Develops high-performance, ultra-thin metalenses for next-generation optical applications. These semiconductor lenses replace traditional bulky optics with nanostructured, flat-surface alternatives that offer reduced size and weight while maintaining or enhancing performance. Through strategic collaborations with A*STAR institutes, MetaOptics has developed scalable processes such as Direct Laser Writing and 300mm wafer-level metasurface fabrication.

Industry Applicability

MetaOptics metalenses are applicable across multiple industries including consumer electronics (smartphones, AR/VR), IoT cameras, automotive LiDAR, biometric authentication, and compact projection systems. Our pico projectors and color cameras serve emerging markets in AI-powered imaging, while our scalable manufacturing enables cost-effective integration into high-volume products.





Contact: Kolatat Katousano
contact@riffai.org

◆ Affiliated Ministry: IDA

◆ Exhibitor: RIFFAI Co., Ltd. ◆ Nationality: Thailand

Exhibited Technology

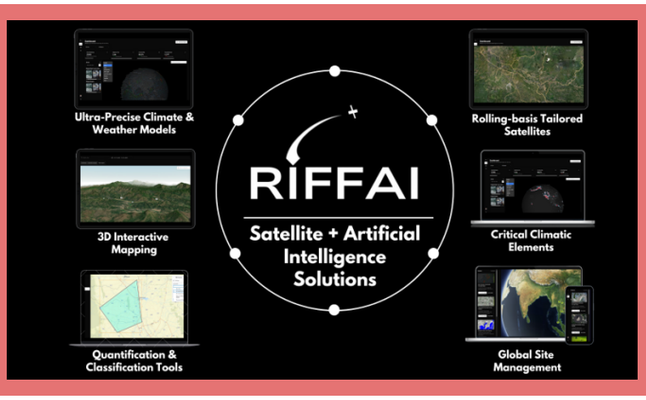
RIFFAI – AI-Powered Satellite Remote Sensing System

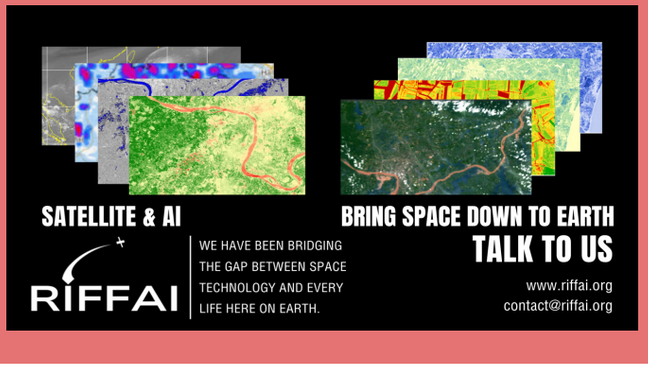
Technology Introduction

RIFFAI, a Satellite & AI company that utilizes AI technology for monitoring environmental changes in Earth Observation. Focusing on the multi-hyper spectral imaging satellite and AI in image processing and time series analysi including software business AI tech using satellite imagery and neural networks technique to detect environmental changes.

Industry Applicability

RIFFAI detects land use patterns, climate risks, and asset distribution with precision. Our AI models support continuous monitoring and predictive analytics for site development, macro-scale planning and infrastructure siting. RIFFAI's tech enables data-driven decisions across the industry landscape, transforming how industries work with critical intelligence to plan, deploy, and monitor in real time.





Booth: GI31

Contact: Sam Chen
sam.chen@genossen.co.jp

◆ Affiliated Ministry: IDA

◆ Exhibitor: Mejiro Genossen Inc ◆ Nationality: Japan

Exhibited Technology

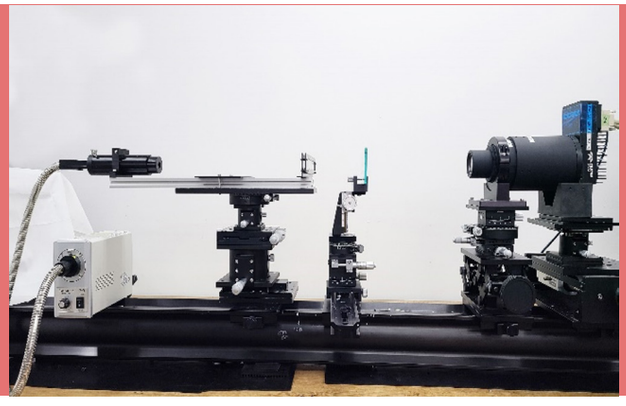
Laser expourse optical module

Technology Introduction

Industry 4.0 emphasizes the elasticity of production lines and rapid independent learning. Mejiro Genossen is committed to the integration of AOI and AI, combining the advantages of both to provide key technologies for automation upgrade. Image capture quality is the key driver of machine vision in smart products.

Industry Applicability

1: FA lens design and manufacturing
2: Fresnel lens module (patented) design and manufacturing
3: Exposure equipment optical module design and manufacturing for excimer laser processing
4: Can handle everything from lens polishing to lens assembly





Contact: Masafumi Watanabe
m.watanabe@memotechnos.co.jp

◆ Affiliated Ministry: SMESA

◆ Exhibitor: MEMO Technos Inc. ◆ Nationality: Japan

Exhibited Technology

MEMO Smart lock

Technology Introduction

Development of mobile manipulators using AGVs, AMRs and articulated robots.Proposal of a rack that can accommodate facility layouts that change daily based on production plans.
1. Mobile production cells with freely configurable layouts.
2. AGVs and AMRs (multiple manufacturers) can be used to sneak in and move production cells.
3. High-precision connection to existing equipment is possible.

Industry Applicability

Applicable to FA manufacturing.

Booth: GI33

Contact: Masafumi Watanabe
m.watanabe@memotechnos.co.jp

◆ Affiliated Ministry: SMESA

◆ Exhibitor: MEMO Technos Inc. ◆ Nationality: Japan

Exhibited Technology

Robot Announcer

Technology Introduction

This is a fixed-time broadcasting device with a timer that can output up to three types of broadcasts simultaneously.
1. Three-channel simultaneous broadcast function.
2. Scheduled broadcast and automatic warning function.
3. Environmental sensor cooperation.

Industry Applicability

Applicable to a wide variety of industries, including FA manufacturing and the social infrastructure industry.



Contact: Masafumi Watanabe
m.watanabe@memotechnos.co.jp

◆ Affiliated Ministry: SMESA

◆ Exhibitor: MEMO Technos Inc. ◆ Nationality: Japan

Exhibited Technology

Pitatto Time

Technology Introduction

This single unit can easily solve time discrepancies in devices controlled by PLCs, etc.
1. Uses a highly accurate real-time clock.
2. Palm-sized.
3. No need for radio reception or internet connection.

Industry Applicability

Applicable to a wide variety of industries, including FA manufacturing and the social infrastructure industry.



Contact: Cheng Shihheng
cheng.shihheng@g.softbank.co.jp

◆ Affiliated Ministry: SMESA

◆ Exhibitor: SoftBank Corp. ◆ Nationality: Japan

Exhibited Technology

1NCE IoT Lifetime Flat

Technology Introduction

• No Monthly Fee – One-time 10-year prepaid plan enables predictable, low-cost IoT deployments without recurring charges.
• Global Coverage – Available in 173 countries and regions with no additional roaming fees.
• Multi-Carrier Access – Supports multiple networks in many areas with a single SIM, including Taiwan, for improved connectivity.

Industry Applicability

1NCE provides cost-efficient, scalable IoT connectivity with a one-time 10-year prepaid SIM, usable in over 170 countries and regions. It supports industries like smart metering, asset tracking, healthcare, and smart cities by simplifying local or global operations. The service enhances industrial development by reducing TCO, streamlining device management, and accelerating digital transformation.



Contact: Cheng Shihheng
cheng.shihheng@g.softbank.co.jp

◆ Affiliated Ministry: SMESA

◆ Exhibitor: SoftBank Corp. ◆ Nationality: Japan

Exhibited Technology

Buddycom

Technology Introduction

Buddycom is a seamless, scalable communication tool available worldwide. It offers real-time voice sharing, translation, and transcription. Beyond traditional walkie talkies, Buddycom features speech-to-text and instant translation for clear, visible conversations. It supports group calls, live situation sharing, and lets you track users' locations on a map while communicating.

Industry Applicability

Buddycom is ideal for both on-site and remote communication across various industries. Key clients include airlines, railways, transportation, logistics, retail, security, healthcare, and manufacturing.



Booth: GI34 538

Contact: Kenshin Ikeda
k-ikeda@kyodo-inc.co.jp

◆ Affiliated Ministry: DOIT

◆ Exhibitor: Kyodo International, Inc. ◆ Nationality: Japan

Exhibited Technology

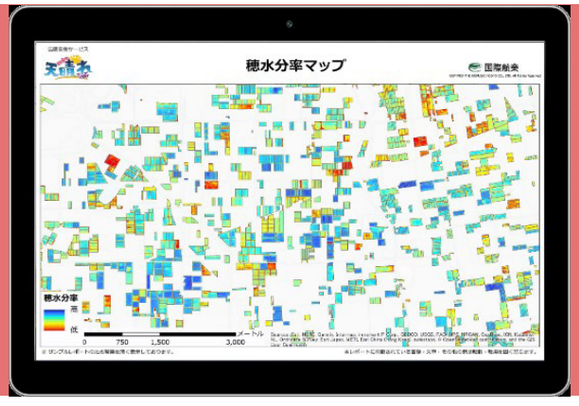
Nanoimprint system - TEX series

Technology Introduction

Enable to improve functionality (efficiency, optical properties, etc.) of products and materials by fine patterning using nanoimprinting. TEX series realizes high productivity and ease of use for R&D and volume production than the conventional photolithography method. It's a Easy to use nanoimprint system by integrating Master mold, soft mold, UV resin, and imprint equipment.

Industry Applicability

AR/VR/XR devices, 3D sensor, Metalens, Flexible MEMS, LSPR (Localised surface plasmon resonance), 3D hologram, Improved light extraction efficiency (LED, laser), Cell medium (medical, Lifescience)





國際區
INTERNATIONAL AREA

Asia

Contact: Kaori Ayabe
kayabe@synqroa.co.jp

◆ Affiliated Ministry: DOIT

◆ Exhibitor: Synqroa Co.,ltd. ◆ Nationality: Japan

Exhibited Technology

PHASERAY®

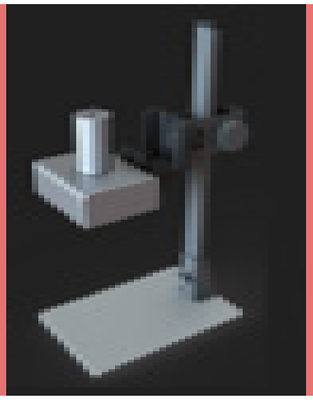
Technology Introduction

Synqroa's phase polarizing technology PHASERAY® is a revolutionary lighting device that can illuminates previously invisible scratches and foreign matter on any object by controlling light distribution using a special phase polarizing filters and medical lighting technology.

Industry Applicability

The technology is being introduced into foreign body inspection in the pharmaceutical and food industries, as well as into quality inspection processes in the automotive and semiconductor industries.





Booth: GI36

Contact: Yasunobu Honda
gyomu@triart.co.jp

◆ Affiliated Ministry: DOIT
◆ Exhibitor: TRIART Inc. ◆ Nationality: Japan

Exhibited Technology

MIIDEL – Document & Drawing Comparison System

Technology Introduction

MIIDEL is a document and drawing comparison solution that detects differences across versions automatically. It streamlines document reviews, enhances accuracy, and reduces engineering change management time.

Industry Applicability

Architecture, Engineering, Manufacturing, Legal, Software Development



國際區
INTERNATIONAL AREA

Asia

Contact: CEO Dr. MASARU NAGAI
m_nagai@f4.dion.ne.jp

◆ Affiliated Ministry: DOIT

◆ Exhibitor: Nano Organic Electronics Laboratory Co., Ltd. ◆ Nationality: Japan

Exhibited Technology

Two-step nano-splitting method

Technology Introduction

The two-step nano-splitting methodis a surfactant-free technique for synthesizing ultra-small (sub-10-50 nm) polymer nanoparticles. Originally developed for OLEDs to enable low-cost multi-layer coating, it leverages spontaneous droplet nano-splitting of O/W emulsions. This universal, additive-free method yields stable, pure nanoparticles applicable to various polymers and broader nanomaterial applications.

Industry Applicability

Our two-step nano-splitting method,initially developed for OLEDs, is now being applied to broader fields to build a business foundation. Potential applications include: 1) foods and supplements, where soap-free nanoparticles improve active ingredient absorption; 2) drugs and cosmetics, which require small particles for delivery and nanoemulsions; and 3) electronics, such as Li-ion batteries and odor sensors.



Booth: GI38

Contact: Ogura Manabu
m-ogura@zyrq-dc.com

◆ Affiliated Ministry: IDA

◆ Exhibitor: ZYRQ Co., Ltd ◆ Nationality: Japan

Exhibited Technology

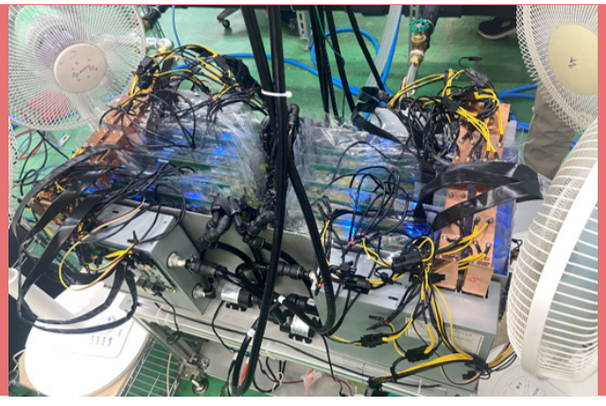
Immersive Water Cooling

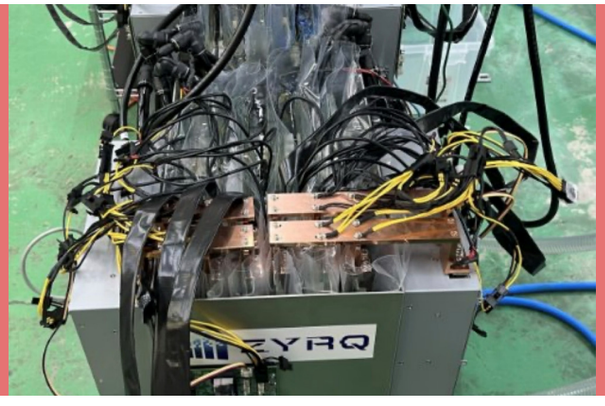
Technology Introduction

While current DLC systems require increasingly complex structures to achieve adequate thermal performance, our proprietary immersion cooling technology offers a more efficient and simplified solution. By enabling data centers to achieve a PUE as low as 1.05, our system not only delivers superior energy efficiency but also reduces equipment footprint. This contributes significantly to lowering both the initial capital expenditures and ongoing operational costs.

Industry Applicability

Our immersion cooling technology has broad applicability across multiple industries requiring high-density, energy-efficient computing. It is particularly suited for hyperscale cloud providers seeking to reduce PUE and operational costs, as well as AI and HPC sectors where traditional cooling methods struggle to manage high thermal loads. Financial institutions and high-frequency trading platforms benefit from its thermal stability and compact design.





國際區
INTERNATIONAL AREA

Asia

Contact: Mingo Hsu
mingo_hsu@transnet-si.com

◆ Affiliated Ministry: IDA

◆ Exhibitor: FUJITSU / 1 FINITY ◆ Nationality: Japan

Exhibited Technology

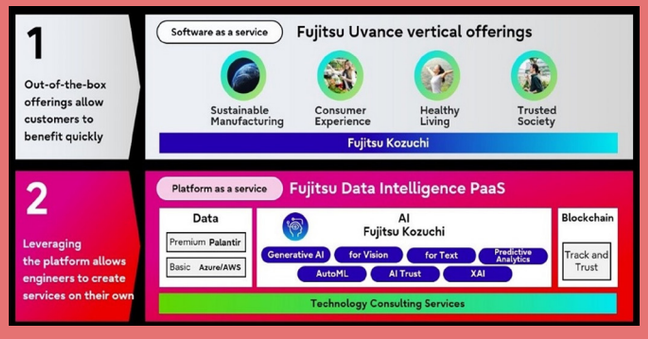
Next-generation communication all-optical network and AI solutions

Technology Introduction

Global telecom operators are committed to reducing network power consumption and actively promoting APN to reduce signal processing delay and energy consumption of photoelectric conversion.
With world-class 1.2 Tbps per optical wave and 800 Gbps long-distance transmission, the entire system can reduce carbon emissions by 60% compared to traditional equipment using liquid cooling technology.

Industry Applicability

In an era that requires a large number of AI data centers and a large amount of data transmission, the all-optical network system can reduce the power consumption of telecommunications networks to 1% of the current level, while increasing data transmission capacity by 125 times.
If enterprises adopt ACB, only half the number of GPUs are needed to complete the same computing processing, reducing GPU purchase costs and power consumption.





Booth: GI40 544

TAIWAN PATENT GO

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國家發明創作獎

NATIONAL INVENTION & CREATION AWARD

Organized by the Intellectual Property Office, Taiwan Patent Go will present 40 award-winning patents from the 113th National Invention and Creation Award. Covering fields such as 5G communications, smart healthcare, elderly assistive devices, agricultural sensing, and smart living, many have completed international deployment and proven market success, showcasing strong commercialization potential.

Through the exhibition platform, Taiwan Patent Go connects innovations with global buyers, fosters business matchmaking, and drives patent transactions—realizing the vision of “Taiwan Innovates, Prosperity Follows.”

Taiwan Innotech Expo
台灣創新技術博覽會

經濟部 Ministry of Economic Affairs

NSTC 國家科學及技術委員會 National Science and Technology Council

農業部 Ministry of Agriculture

中華民國國防部 Ministry of National Defense, R.O.C.

環境部 Ministry of Environment

Ministry of Digital Affairs 數位發展部 moda

國家發展委員會 National Development Council

教育部

衛生福利部 Ministry of Health and Welfare 促進全民健康與福祉

勞動部 Ministry of Labor

中央研究院 Academia Sinica