

ICIM2026

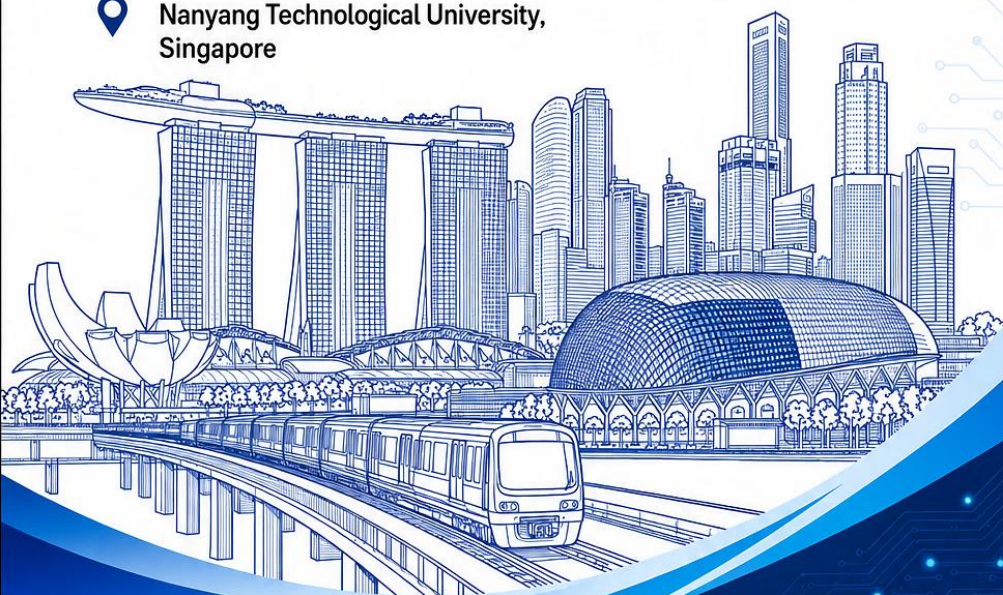
2nd International Conference on Intelligent Manufacturing *Physical AI in Manufacturing*



27 – 31 July 2026



Nanyang Technological University,
Singapore



CONFERENCE PROGRAMME

Organizer:



Co-organizers:



Singapore Institute
of Manufacturing
Technology
A*STAR SIMTech



www.icim.world



ICIM2026

About ICIM 2026

The 2nd International Conference on Intelligent Manufacturing (ICIM 2026) provides a premier interdisciplinary platform for researchers, practitioners, industry leaders and innovators from around the world to share the latest advances and applications in intelligent manufacturing and Physical AI.



Theme

Physical AI in Manufacturing



Date

27 – 31 July 2026



Venue

Nanyang Technological University,
Singapore



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our website!

www.icim.world

Highlights



Keynotes & Plenary Talks



Technical Sessions



Special Symposia



Industry Showcase

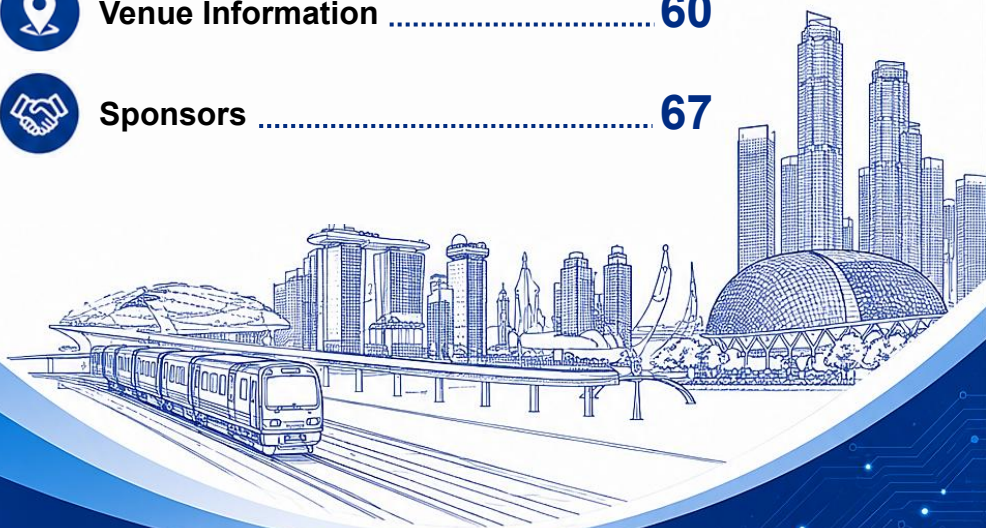


Networking Events



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Message from the Conference General Chair



On behalf of the Organizing Committee, it is my great pleasure to welcome you to ICIM 2026 – the 2nd International Conference on Intelligent Manufacturing.

With the theme “Physical AI in Manufacturing”, ICIM 2026 brings together leading researchers, industry experts, and practitioners to exchange ideas, share innovations, and explore future directions in intelligent and sustainable manufacturing.

We have exciting programme featuring world-class plenary keynote speakers, high-quality technical presentations, special workshop and symposia, and networking events.

I hope you will find the conference inspiring, productive, and enjoyable.

Welcome to Singapore and ICIM 2026!

Prof Wei Zhou
Conference General Chair
ICIM 2026



Organizing Committee

General Chair

Prof Wei Zhou, President, International Society for Intelligent Manufacturing

Co-Chairs

Prof I-Ming Chen, Director of Intelligent Systems Centre, Nanyang Technological University, Singapore; Fellow of Singapore Academy of Engineering; Fellow of IEEE

Dr Wei Wang, Centre Director, Sectoral AI Centre of Excellence for Manufacturing (AIMfg); Deputy Executive Director of Singapore Institute of Manufacturing Technology (SIMTech), A*STAR, Singapore

International Organizing Committee

Chair

Prof Jay Lee, Clark Distinguished Professor & Director of Industrial AI Center, University of Maryland, USA

Local Organizing Committee

Chair

Prof Xuan Liang, Nanyang Technological University, Singapore

Co-Chair

Prof Marvin Carl May, Nanyang Technological University, Singapore

Programme at a Glance

	Mon 27 Jul	Tue 28 Jul	Wed 29 Jul	Thu 30 Jul	Fri 31 Jul
Morning 9.00 am – 12.30 pm	—	Welcome Speech & Plenary Sessions	Plenary Sessions	Technical Sessions	Visit to SIMTech and ARTC
Afternoon 1.30 pm – 5.00 pm	Lab Visits at NTU (Invited Guests only)	Technical Sessions	Technical Sessions	Technology Competition	Post-tour Discussion
Evening 6.30 pm onwards	Welcome Reception	—	Banquet	—	—

● Opening
 ● Technical
 ● Technology Competition
 ● Lab Visits
 ● Social Events



Monday, 27 July 2026

1:30 pm – 5:30 pm

**Visit to Labs in Nanyang Technological University (for
Invited Guests only)**

6:30 pm – 8:30 pm

Welcome Reception

Venue: SQUE Rotisserie & Alehouse

Plenary Sessions **in the morning of** **28 July 2026**

in the Lecture
Theatre

Tuesday, 28 July 2026

9:00 am – 9:05 am

Welcome Speech by Conference General Chair

Prof Wei Zhou

President, International Society for Intelligent Manufacturing

9:05 am – 10:30 am

Plenary Session 1

Chaired by Prof Wei Zhou

9:05 am – 9:20 am

Plenary Keynote 1

Prof Jay Lee

Clark Distinguished Professor, University of Maryland, USA
Director, Industrial AI Center, University of Maryland, USA
Editor-in-Chief, IOP Journal of Machine Learning: Engineering

Industrial Physical AI System

9:20 am – 9:40 am

Plenary Keynote 2

Mr Zhang “Mercy” Huize

Vice President, SUPCON International Business (SIB), Singapore
Director, R&D Department, SIB, Singapore
Founder, FREEZONEX, Singapore

How AI Optimization is Transforming Manufacturing Operations?

Tuesday, 28 July 2026

9:40 am – 10:10 am

Plenary Keynote 3

Prof I-Ming Chen

Professor, School of Mechanical and Aerospace Engineering, NTU, Singapore

Director, Bachelor's Degree Program in Robotics, NTU, Singapore

Co-Director of CARTIN, NTU, Singapore

Fellow of Singapore Academy of Engineering (SAEng), IEEE and ASME

Robotics, Physical & Industrial AI – Big Integration for Solving Real World Challenges

10:10 am – 10.30 pm

Plenary Keynote 4

Dr Leon Chan

Chief Executive Officer (CEO),
Alpha X Technology, Singapore

Advances of Industrial AI for Semiconductor Manufacturing

Tuesday, 28 July 2026

10:30 am – 11:00 am

Morning Coffee/Tea Break

11:00 am – 12.10 pm

Panel Discussion

AI and Smart Manufacturing Transformation Issues and Roadmap

Moderated by Prof Jay Lee

Panelists:

- | | |
|---------------------|--|
| Li Wang | Director, Singapore Operations, Rockwell Automation Asia Pacific Business Center Pte Ltd |
| Ser Yong Lim | Former Executive Director, Singapore Institute of Manufacturing Technology, A*STAR |
| Forest Hou | Partner, McKinsey & Company |

Tuesday, 28 July 2026

12:10 pm – 12:30 pm

Plenary Session 2

Chaired by Prof Xiaoyan Li

Southwest Jiaotong University, China

12:10 pm – 12:30 pm

Plenary Keynote 5

Dr Zhenying Liu

**Empowering Physical AI in Manufacturing Through
Standards, Talent Cultivation and Innovation Cooperation**

12:30 pm – 1:30 pm

Conference Lunch Buffet

Poster Session during the Lunch Buffet

Mr Feihong Ma

Foshan University, China

**A Generic AI-Driven Closed-Loop Architecture for 3D Space
Monitoring in Managed Operational Environments**

Workshop on Industrial Vision and Intelligent Robotics (IVIR2026)

**Chaired by:
Prof Guijin Wang
Tsinghua University
China**

Afternoon of 28 July 2026

in Tutorial Room TR+23

Tuesday, 28 July 2026

1:30 pm – 3.00 pm

Technical Session 1 – TR+23

Mr Haoran Zhu

Tsinghua University, China

Depth-Free Dual-Arm Active Perception for Target-Oriented Grasping in Cluttered Industrial Scenes

Sr Engineer Nan Su

Tsinghua University, China

A Category-Agnostic Industrial Anomaly Detection Model Based on Qwen3-VL-Embedding

Dr Yonglong Li

Sichuan Energy Internet Research Institute, Tsinghua University, China

Quadruped Intelligent Inspection Robot System for Seepage Detection in Hydraulic Structures

Dr Tengyue Han

Beijing Botsing Tech Co Ltd, China

VLA-Based Seam Tracking for Crawling Robots

Dr Tianyu Sun

Nanyang Technological University, Singapore

From Pixels to Physics: A World Model Perspective on Human-Robot Interaction for Smart Manufacturing

3:00 pm – 3:30 pm

Afternoon Coffee/Tea Break

The 2nd International Symposium on Materials, Intelligent Manufacturing and Structural Integrity for Railway Transportation

**Chaired by:
Prof Hui Chen and
Prof Yan Liu
Southwest Jiaotong
University, China**

Afternoon of 28 July 2026

in Tutorial Room TR+23

Tuesday, 28 July 2026

3:30 pm – 5:30 pm

TR+23

田爱琴，副主任，正高级工程师

中车青岛四方机车车辆股份有限公司工程中心
轨道车辆用镁合金应用技术研究

Prof Guoqing Gou

Southwest Jiaotong University, China

Research on Ultrasonic Method for Online Monitoring of Corrosion Status in High-Speed Train C-Type Grooves

Prof Zhenlin Zhang

Southwest Jiaotong University, China

Hot Cracking Behavior during Laser Repairing of Nickel-based Alloy

Prof Chuang Cai

Southwest Jiaotong University, China

Multi-field Collaborative Laser Welding and Quality Intelligent Diagnosis Technology

Prof Yunfei Meng

Southwest Jiaotong University, China

High-power Laser-arc Hybrid Welding of Aluminum Alloy via Beam Oscillation

Symposium on AI-Driven Simulation, Design and Control for Manufacturing Process

**Chaired by:
Prof Xuan Liang &
Prof Marvin May, Nanyang
Technological University
and
Prof Jikai Liu, Shandong
University**

Afternoon of 28 July 2026

in Tutorial Room TR+24

Tuesday, 28 July 2026

1:30 pm – 3.00 pm

Technical Session 1 – TR+24

Prof Somyot Kaitwanidvilai

King Mongkut's Institute of Technology Ladkrabang, Thailand
An Automated Machine Learning Framework for Wafer Defect Density Classification in HDD company

Dr Siyi Chen

Schaeffler Hub for Advanced Research, NTU, Singapore
Physics-guided graph learning for proprioceptive contact sensing in humanoid robots

Mr Bohan Zhang

Schaeffler Hub for Advanced Research, NTU, Singapore
Fiber Bragg Grating-Based Drill-Bit Condition Monitoring Using STFT Spectrograms and ResNet18

Prof Yun-Fei Fu

Shandong University of Science and Technology, China
SEMDOT: An Open Topology Optimization Platform for Research and Engineering Applications

Prof Lang Hu

Foshan University, China
Application of Artificial Intelligence in Materials Research

3:00 pm – 3:30 pm

Afternoon Coffee/Tea Break

Tuesday, 28 July 2026

3:30 pm – 5.30 pm

Technical Session 2 – TR+24

Prof Xuan Liang

Nanyang Technological University, Singapore

Artificial Intelligence-Driven Framework for Structural Design and Additive Manufacturing

Prof Marvin May

Nanyang Technological University, Singapore

Circular Manufacturing Implementation, Planning and Control: from Resource to Value Recovery

Prof Binyang Song

Nanyang Technological University, Singapore

Diffusion Models Beat Optimization in Manufacturability-Aware TPMS Heat Exchanger Design

Prof Chenyang Lai

Nanyang Technological University, Singapore

Unsupervised Degradation Evolution Tracking of IGBTs Using S-Parameters Based on Convolutional Neural Network Autoencoders

Dr Yifan Tang

A*STAR SIMTech, Singapore

Sensor-informed Artificial Intelligence for Metal Additive Manufacturing: from Process Modeling to Adaptive Digital Twin

Competition of Skills Development and Technology Innovation (Singapore)

in the afternoon of 28 July 2026

in Tutorial Room TR+25

Tuesday, 28 July 2026

1:30 pm – 5.30 pm

TR+25

Mostafa Elsayed Mostafa Abdelhamid Shalaby

Delta Technological University, Egypt

EBoosterX

Mohamadreza Zamanian

Tehran Business School (DBA Program), Islamic Republic of Iran / MCI

Smart Wound Care Platform

Dr. Pariya Tork

Bumbusly Polyclinics, New Zealand

SUNBERELLA® – Intelligent Skin Interface for Detection, Delivery, and Adaptive Protection

Fang Kunyang, Zhuang Fang, Lu Dongsheng

Guangzhou Information Technology Vocational School, China

Digital Smart Elderly Care – Full-Cycle Health Connectivity and Emergency Response System

Octaviana Galuh Pratiwi, MD.

PT. Nexus Global Niaga, Indonesia

LukaHeal: Digital Wound-Triage and Home-Care Guidance Platform with Image-Supported Assessment

3:00 pm – 3:30 pm

Afternoon Coffee/Tea Break

Tuesday, 28 July 2026

1:30 pm – 5.30 pm

TR+25

Farai Chigaru

University of Malawi

Growth Identification and Facilitation tool (GIFt)

Pan Zhenhuan

Fujian Dertran New Materials Technology Co., Ltd., China

Industrial Application of High-Purity Electronic-Grade Xenon Difluoride

Andualem Asmamaw

Federal TVTI, Ethiopia

Designing of knit stripe fabric spreading machine

Mohamed elsayed ghareb

Delta University of Technology, Egypt

Mohamed elsayed ghareb

Le Thuy Anh, Tran Van Thai, Du Hejun

Nanyang Technological University, Singapore

“MiniDelta: A 3D-Printed Electromagnetic Robot for Precision Micromanipulation”

Tuesday, 28 July 2026

1:30 pm – 5.30 pm

TR+25

Fang Ziyu

Nanyang Technological University, Singapore

A Manufacturability-Oriented Redesign of a Compact FBG Microvibration Sensor for Condition Monitoring of Robotic Manipulators

Dr Zaixin Wei

Nanyang Technological University, Singapore

Additively Manufacturable Superior-Strength SiC Ceramics via Vat Photopolymerization

Space Challenge

Ideia Space, Brazil

Designing of knit stripe fabric spreading machine

Plenary Sessions **in the morning of** **29 July 2026**

in the Lecture
Theatre

Wednesday, 29 July 2026

9:00 am – 10:30 am

Plenary Session 3

Chaired by Prof I-Ming Chen

Nanyang Technological University, Singapore

9:00 am – 9:30 am

Plenary Keynote 6

Prof Seunghwa Ryu

Professor of Mechanical Engineering, KAIST, South Korea
Director, KAIST InnoCORE PRISM-AI Center, South Korea
Head, Department of AX, KAIST, South Korea

**Toward Uncertainty-Aware Physical AI for Manufacturing:
From Digital Twins to Multi-Agent Intelligence**

9:30 am – 10:00 am

Plenary Keynote 7

Prof Forest Hou

Partner, McKinsey & Company
Founder and Leader, Tsinghua McKinsey Digital Capability Center
Guest Professor, Tsinghua University
Guest Professor, Shanghai Jiao Tong University

**Industrial Use Cases, Commercialization Barriers and
Pathways of Humanoid Robots**

Wednesday, 29 July 2026

10:00 am – 10:30 am

Plenary Keynote 8

Prof Yasushi Umeda

Professor, University of Tokyo, Japan

Director, JSPE (Japan Society for Precision Engineering)

Fellow, CIRP (International Academy for Production Engineering)

Fellow, JSME (Japan Society of Mechanical Engineers)

How Shall Human and Physical AI Collaborate in a Manufacturing System? – A Digital Triplet Approach

10:30 am – 11:00 am

Morning Coffee/Tea Break

Wednesday, 29 July 2026

11:00 am – 12:00 pm

Plenary Session 4

Chaired by Prof Wei Zhou

International Society for Intelligent Manufacturing

11:00 am – 11:30 am

Plenary Keynote 9

Prof Dr Dimitris Kyritsis (Kiritsis)

Professor Emeritus of ICT for Sustainable Manufacturing, EPFL,
Switzerland

Academic Director, Sustainable Resilient Value Chains (SRVC), EPFL,
Switzerland

Senior Advisor, Department of Informatics, University of Oslo, Norway

**Information Modeling Framework for Cognitive Digital
Industrial Solutions**

Wednesday, 29 July 2026

11:30 am – 12.00 pm

Plenary Keynote 10

Prof Yongfeng Lu

Lott Distinguished University Professor, University of Nebraska-Lincoln
Fellow of SPIE, LIA, OSA and IAPLE

Editor-in-Chief, Journal of Laser Applications

**Nanofabrication and Characterization of Fuel Capsules
for Laser Inertial Confinement Fusion**

12:00 pm – 12.30 pm

Discussion

Moderated by Prof Wei Zhou

12:30 pm – 1:30 pm

Conference Lunch Buffet

Technical Session on Materials and Manufacturing Processes

Chaired by:

Dr Aprilia

**Nanyang Technological University,
Singapore**

&

Dr Yujing Ting

Foshan University

**Afternoon of 29 July 2026
in Tutorial Room TR+23**

Wednesday, 29 July 2026

1:30 pm – 3.00 pm

Technical Session – TR+23

Prof Jikai Liu (1:30 pm – 1:55 pm)

Shandong University, China

Topology Optimization for Multi-Axis Hybrid Additive-Subtractive Manufacturing

Dr Wei Liu (1:55 pm – 2:15 pm)

Shandong University of Science and Technology, China

Parameter Identification and Deformation Elongation Prediction of Chain Drive Systems under Nonlinear Load Conditions

Mr Zhuocheng Tian (2:15 pm – 2:30 pm)

Wuhan University of Technology, China

3D Hierarchical Copper Substrates With Homogenous Anode-Electrolyte Interphase for Highly Reversible Aqueous Zinc Batteries

Wednesday, 29 July 2026

1:30 pm – 3.00 pm

Technical Session – TR+23

Dr Aprilia (2:30 pm – 2:40 pm)

Nanyang Technological University, Singapore

Localized Stress Relief of Laser-Welded Titanium Alloy by Controllable Electropulsing Treatment

Mr Sean Teoh (2:40 pm – 2:50 pm)

Nanyang Technological University, Singapore

Powder mixing guided by predictive statistical modelling for tailoring carbon content and hardness in directed energy deposition of SS 431L

Ms Yuhe Liu (2:50 pm – 3:00 pm)

Nanyang Technological University, Singapore

Piston Crown Ring-Groove Remanufacturing by Laser Directed Energy Deposition: A Comparative Evaluation against Hard Chrome Plating

3:00 pm – 3:30 pm

Afternoon Coffee/Tea Break

Workshop on Industrial Vision and Intelligent Robotics (IVIR2026)

**Chaired by:
Prof Guijin Wang
Tsinghua University, China**

Incorporating

The 2nd International Symposium on AI-Powered Machine Vision for Intelligent Manufacturing and Quality Control

**Chaired by:
Prof Huabin Chen
Shanghai Jiao Tong University, China**

**Afternoon of 29 July 2026
in Tutorial Room TR+23**

Wednesday, 29 July 2026

3:30 pm – 5.30 pm

Technical Session 2 – TR+23

Prof Shujun Chen

Beijing University of Technology, China

Embodied Intelligent Robots for On-Site Welding: State of the Art, Key Technologies, and Future Prospects

Prof Huabin Chen

Shanghai Jiao Tong University, China

Embodied AI for Intelligent Robotic Welding: Perception Planning, and Quality Control

Prof Jun Xiao

Beijing University of Technology, China

A New Framework for Human-Robot Collaborative Welding

罗宇教授

上海交通大学

数字孪生与智能焊接技术

张晨，境外事业部 副总经理

城通随安地下工程有限公司

基于智能设备应用的隧道结构安全运维体系介绍

时光

博清科技

智能焊接分析系统在厚壁结构件焊接中的应用

6:30 pm – 10:30 pm

Conference Banquet at Marina Bay Sands

Bus leaving from NTU at 5:40 pm

Symposium on Laser Manufacturing

**Chaired by:
Dr Joan Xie
JD Union Pte Ltd**

**in the afternoon of 29
July 2026**

in Tutorial Room TR+24

Wednesday, 29 July 2026

1:30 pm – 2:30 pm TR+24

Distinguished Lecture of International Society for Intelligent Manufacturing

Prof Yongfeng Lu

University of Nebraska-Lincoln, USA

Spectrally, Spatially, and Temporally Controlled Laser Processing and Characterization

2:30 pm – 3:00 pm

Dr Naien Wu (and Hatim)

Precision Laser Solutions Pte Ltd, Singapore

The Continuum of Laser Machining R&D: Precision Micro-Scale Laser Processing Machine Customization

3:00 pm – 3:30 pm

Afternoon Coffee/Tea Break

Wednesday, 29 July 2026

3:30 pm – 5.30 pm TR+24

Prof Yicha Zhang (3:30 pm - 4:00 pm)

Université Polytechnique Hauts-de-France, France

AI Practices and Emerging Opportunities in Industrial Remanufacturing by Laser

Dr Joan Xie (4:00 pm – 4:30 pm)

JD Union Pte Ltd

Why and How DMC Boosts Your Micromachining Performance

Ms Shirley Jiang (4:30 pm to 4:50 pm)

Coherent - Singapore

Laser Manufacturing Applications for AI Hardware

Prof Wei Xiong (4:50 pm to 5:10 pm)

Huazhong University of Science and Technology

Ultrafast Laser Additive Nanomanufacturing and its Potential Applications in CPO

Prof Guoxing Lu (5:10 pm to 5:30 pm)

Zhejiang University

Dynamic Properties of Laser Additively Manufactured Parts

6:30 pm – 10:30 pm

Conference Banquet at Marina Bay Sands

Bus leaving from NTU at 5:40 pm

Competition of Skills Development and Technology Innovation (Singapore)

in the afternoon of 29 July 2026

in Tutorial Room TR+25

Wednesday, 29 July 2026

1:30 pm – 5.30 pm

TR+25

Roy Ling

FollowTrade Pte. Ltd., Singapore

ChatLearning: AI-Facilitated Collaborative Learning

Masume Seifollahi Targhi

Nano Fan avari ettellaat Farad, Iran

**AI-Enhanced ERP System for International Market Expansion
– An Integrated T-O-E Framework Approach**

Tang Derui, Kang Liang

Jiangxi Institute of Fashion Technology, China

Zhi Huan Mu Ce

Fang Kunyang, Zhuang Fang, Lu Dongsheng

Guangzhou Information Technology Vocational School, China

**Low- Compute AI- Empowered Holistic Five- Domains
Education Management Platform for Secondary Vocational
Schools**

Shahnaz Shaikh

AI-GENIX INTERNATIONAL PVT LTD., india

**Smart AI-Driven next generation Insect communication
technologies for crop protection and sustainable farming.**

3:00 pm – 3:30 pm

Afternoon Coffee/Tea Break

Wednesday, 29 July 2026

1:30 pm – 5.30 pm

TR+25

Dr Tara Zarei

Tarbiat modars university (TMU), Iran

Food freshness nano sensor with mobile app

Vitor Santos de Oliveira

Federal Institute of São Paulo (IFSP) - Campinas Campus, Brazil

Farmind: Autonomous Environmental Monitoring and Prediction System with Artificial Intelligence for Marine Farms

Vitor Gabriel Cagol Escobar

Independent project - Pbotic Life (future startup), Brazil

Pietra "a social robot"

Harsh Patel

Under process, India

SolarZ, more

Merga Gemechu Dega

FDRE Technical and Vocational Training Institute, Ethiopia

Community Biomass Waste-to-Energy Cogeneration Systems for Rural

Wednesday, 29 July 2026

1:30 pm – 5.30 pm

TR+25

Siddhartha Durairajan

Hylenr Technologies Private Limited, India

HYLENR – Lattice Confinement Fusion Reactor for Carbon-Free Industrial Heat and Distributed Power

Mahtab Khalilifar

Shahrtash Research and Innovation Center, Tehran, Iran

Building the Trusted Health Layer for Digital Twins of Critical Power Infrastructure

Ziad Tawfiq Ali Abu Awad

Delta Technology University, Egypt

Smart Solar Bin

Yousef Zahran

Delta Technological University, Egypt

Smart wheelchair powered by solar energy

Shibam Mandal

Sister nivedita university, west bengal Country, India

Competition of Skills Development and Technology Innovation (Singapore)

in the morning of 30 July 2026

in the Lecture Theatre

Industrial AI Workshop 2026

**In the morning and afternoon of
Thursday, 30 July 2026**

**in The Arc, Learning Hub North (LHN)
Level 1, Tutorial Room TR+15**

Thursday, 30 July 2026

TR+15

8:10 am – 8:50 am

Registration & Light Breakfast

8:50 am – 9:00 am

Opening Speech by Prof Yeong Wai Yee (School Chair)

Host: A/P Li Hong (Assistant Chair of Research)

Nanyang Technological University, Singapore

9:00 am – 9:30 am

Recent Advances of Industrial AI Systems: Technologies, Tools, and Talents

Jay Lee

University of Maryland

9:30 am – 10:00 am (Virtual on Zoom)

Application of AI/ML Tools for Part Specific Qualities of AM Components

Sudarsanam Suresh Babu

University of Maryland

Thursday, 30 July 2026

TR+15

10:00 am – 10:30 am

Information Modelling Framework for Cognitive Industrial Applications

Dimitrios Kyritsis

EPFL and Oslo University

10:30 am – 11:00 am

Tea Break & Networking

11:00 am – 11:30 am

Generating Product-Specific Eco-Design Guidelines Using Large Language Models

Yasushi Umeda

University of Tokyo

11:30 am – 12:00 am

From Lean Expertise to Industrial AI: Making Manufacturing Knowledge Executable

Yu Zhao

SilverCore Intelligence - A.BRAIN Group

Thursday, 30 July 2026

TR+15

12:00 am – 1:00 pm

Lunch

1:00 pm – 1:30 pm

AI Agents Practices and Values from the Learning of Global Lighthouse Network

Forest Hou

McKinsey & Company Shanghai

1:30 pm – 2:00 pm

Physics-Informed AI Agents for Intelligent Manufacturing: From Data Scarcity to Autonomous Manufacturing

Seunghwa Ryu

KAIST, South Korea

2:00 pm – 2:30 pm

Digitalizing Industrial Operations: Inside Rockwell Automation's Transformation Journey

Pit Wee Yeoh

Rockwell

Thursday, 30 July 2026

TR+15

2:30 pm – 3:00 pm

AI Practices and Emerging Opportunities in Industrial Remanufacturing

Yicha Zhang

INSA-Hauts-de-France, LAMIH

3:00 pm – 3:30 pm

Tea Break & Networking

3:30 pm – 4:00 pm

Key Enabling Technologies for Software Defined Factory

Seung Ki Moon

Hyundai-A*Star-NTU Joint Lab, NTU

4:00 pm – 4:30 pm

Robotics, Physical & Industrial AI Integration for Solving Real World Challenges

I-Ming Chen

Nanyang Technological University

Thursday, 30 July 2026

TR+15

4:30 pm – 5:15 pm

Round-table Panel Discussions

5:15 pm – 5:30 pm

**Closing Remarks Wrap-up Discussion – Professor Jay Lee
& A/P Li Hong (Assistant Chair of Research)**

Attendance: around 70 in total – 30 external and 40 internal roughly.

Plenary Keynote Speakers

Plenary Keynote Speaker



Prof Jay Lee

Clark Distinguished Professor, University of Maryland, USA.

Director, Industrial AI Center, University of Maryland, USA.

Editor-in-Chief, IOP Journal of Machine Learning: Engineering.

Trends in Industrial Physical AI Research

Prof Jay Lee is the Clark Distinguished Chair Professor and Director of the Industrial AI Center at the University of Maryland, College Park, USA. An internationally recognized pioneer in Industrial AI and smart manufacturing, Prof Lee has spent over three decades transforming industrial operations from “fail-and-fix” to “predict-and-prevent” paradigms. From 2019 to 2021, Prof Lee served as Vice Chairman and Board Member of Foxconn Technology Group, where he led the digital transformation of the world’s largest contract manufacturer. During this tenure, he spearheaded the development of several World Economic Forum (WEF) Lighthouse Factories, demonstrating the scalable impact of Industrial AI in high-volume production.

His current research focuses on next-generation machine learning—including Stream-of-X AI, Industrial Large Knowledge Models (ILKM), and Physical AI—a field he recently advanced through the World Economic Forum’s 2025 report on resilient operations. He leads the Data Foundry, a premier repository of over 100 industrial datasets, and the AI Factory initiative, an open laboratory designed to cultivate industry-ready engineering talent.

Prof Lee’s global leadership includes serving on the World Economic Forum’s Global Future Council on Advanced Manufacturing, the Board of Governors of the Manufacturing Leadership Council (NAM), and as a Senior Advisor to McKinsey. He is the Editor-in-Chief of the IOP Journal Machine Learning: Engineering and a Fellow of ASME, SME, ISEAM, and the PHM Society. His numerous honours include the SME Eli Whitney Productivity Award (2022) and the SME/NAMRC S.M. Wu Research Implementation Award (2022). His 2020 book, *Industrial AI: Applications with Sustainable Performance*, is widely considered the seminal text defining the field as a systematic engineering discipline.

Plenary Keynote Speaker



Dr Leon Chan

Chief Executive Officer (CEO)
Alpha X Technology
Singapore

Advances of Industrial AI for Semiconductor Manufacturing

Dr Leon Chan is the Chief Executive Officer of Alpha X Technology where he leads the company's global vision to become a trusted partner for intelligent, sustainable and AI-driven transformation. With more than 20 years of leadership experience across artificial intelligence, healthcare, digital transformation and high-tech manufacturing, Leon is widely recognized for bridging advanced technologies with real-world operational impact.

Prior to joining Alpha X, Leon held executive and strategic leadership roles at Siemens Healthineers, Fosun Group, Philips, and McKinsey, where he drove large-scale innovation initiatives, digital strategy execution and enterprise transformation programs across international markets. His work consistently focuses on translating complex technologies into measurable business outcomes, including productivity improvement, quality optimization and sustainable growth.

At Alpha X, Leon oversees end-to-end AI transformation initiatives that integrate data infrastructure, intelligent automation and decision intelligence across industries. He is a strong advocate of Industry 4.0 adoption, championing the convergence of hardware, software and AI to enable organizations to operate with transparency, traceability, and trust in an increasingly data-driven world.

Leon holds a PhD in Biomedical Informatics from Columbia University. His multidisciplinary academic foundation complements his executive leadership, allowing him to align scientific rigor with commercial strategy and innovation execution.

Plenary Keynote Speaker



Prof I-Ming Chen

Professor, School of Mechanical and Aerospace Engineering, NTU, Singapore
Director, Bachelor's Degree Program in Robotics, NTU, Singapore
Co-Director of CARTIN, NTU, Singapore
Fellow of Singapore Academy of Engineering (SAEng), IEEE and ASME

Robotics, Physical & Industrial AI – Big Integration for Solving Real World Challenges

Prof I-Ming Chen received BS degree from National Taiwan University in 1986, and MS and PhD degrees from California Institute of Technology, Pasadena, CA in 1989 and 1994 respectively. He is currently Full Professor in the School of Mechanical and Aerospace Engineering, Director of Bachelor's Degree Program in Robotics, and Co-Director of CARTIN (Center for Advanced Robotics Technology and Innovation) in Nanyang Technological University (NTU), Technical Advisor to National Robotics Program Office in Singapore, and Certified Patent Valuation Analyst (CPVA). He was Editor-in-chief of IEEE/ASME Transactions on Mechatronics from 2020 to 2022, and Director of Robotics Research Centre (NTU) from 2013 to 2017. Professor Chen is Fellow of Singapore Academy of Engineering (SAEng), Fellow of IEEE and Fellow of ASME, General Chairman of 2017 IEEE International Conference on Robotics and Automation (ICRA 2017) in Singapore. His research interests are in Robot AI & perception, reconfigurable industrial AI, logistics and construction robots and human-robot interaction. He founded and managed Transforma Robotics Pte Ltd – a pioneer in construction robotics and Hand Plus Robotics Pte Ltd – a logistics robot and AI company. He has mentored many robotics-related startups and entrepreneurial teams in Singapore and China.

Abstract: Global industries face critical pressures, including acute manpower shortages and aging populations, necessitating a transition from manual robotic programming to a holistic system perspective. This keynote explores the integration of robotics and AI through a hierarchical structure, moving from top-level business and supply chain planning down to autonomous, machine-level execution. Central to this framework is Physical AI, which differs from digital-only models by requiring a sophisticated, inseparable bond between hardware and software. Successful real-world deployment relies on "Domain Data"—the specialized expertise and field experience accumulated within specific industries—to ensure robustness in non-standardized environments. We will discuss practical applications in sectors such as food handling, intelligent logistics, hospital supply and cleaning automation, where AI-driven 3D perception and grasp planning enable robots to navigate high-mix tasks previously reserved for human workers. These systems represent a "Hybrid Automation" approach, combining AI's high-level decision-making with deterministic, safety-critical motion control.

Looking forward, the next frontier in Embodied AI involves pushing intelligence down to the most granular level. Our future work conceptualizes Embedded AI for robotic joint actuators, introducing a "neuromuscular-inspired" reflex layer. By embedding fast-real time intelligence directly into the robot's "muscles," we aim to create actuators that are self-aware and proactive, capable of responding to electrical or mechanical shocks and adapting to their own fatigue states independent of a central controller. Drawing on 30 years of R&D and entrepreneurial experience, I will outline how this systematic integration allows robots to complement human skills. While the journey toward AGI and widely deployed humanoids continues, our immediate focus remains on building a robust, hierarchical intelligence framework to ensure industrial systems are reliable, cost-effective, and sustainable

Plenary Keynote Speaker



Prof Forest Hou

Partner, McKinsey & Company

Founder and Leader, Tsinghua McKinsey
Digital Capability Center

Guest Professor, Tsinghua University

Guest Professor, Shanghai Jiao Tong
University

Industrial Use Cases, Commercialization Barriers and Pathways of Humanoid Robots

Forest leads McKinsey's Manufacturing & Supply Chain and Consumer Operations practices in Greater China. He joined McKinsey & Company in 2011, with a core focus on end-to-end AI transformation—including strategy development, diagnostic assessment, solution design/deployment, and full-scale implementation—as well as IoT ecosystem development and digital talent capability building.

Before joining McKinsey, Forest accumulated 17 years of senior operations leadership experience across the automotive, semiconductor, machining industries. During 15+ years at McKinsey, he has worked with, served, and collaborated with over 500 enterprises worldwide, spanning multinational corporations, state-owned enterprises, and private-sector companies of varying scales and industries. His client portfolio covers key sectors including automotive, high-tech, new energy, machinery, and basic materials.

A recognized expert appointed by the World Economic Forum (WEF), Forest has helped more than 80 global companies in achieving Global Lighthouse status. He is also the founder and leader of the Tsinghua-McKinsey Digital Capability Center, and serves as a Guest Professor at both Tsinghua University and Shanghai Jiao Tong University.

Abstract: Humanoid robots will first realize scaled application in manufacturing, thanks to structured factory environments and clear labor substitution value. They integrate capacities of industrial, collaborative and mobile robots to conduct assembly, sorting, inspection and equipment maintenance. Nevertheless, large-scale rollout is hindered by four core hurdles: human-machine co-working safety, insufficient battery endurance, poor cross-scenario generalization of world models, and prohibitive hardware costs. Technical upgrades on dexterous hands, bipedal mobility and embodied AI will cut costs and unlock huge industrial productivity opportunities.

Plenary Keynote Speaker



Prof Dimitris Kyritsis

Professor Emeritus of ICT for Sustainable Manufacturing, EPFL, Switzerland
Academic Director, Sustainable Resilient Value Chains (SRVC), EPFL, Switzerland
Senior Advisor, Department of Informatics, University of Oslo, Norway
Editor-in-Chief, Frontiers in Manufacturing Technology

Information Modeling Framework for Cognitive Digital Industrial Solutions

Prof Dr Dimitris Kyritsis (Kiritsis) is Professor Emeritus of ICT for Sustainable Manufacturing at EPFL, Lausanne, Switzerland, Academic Director of the EPFL Extension School program on Sustainable Resilient Value Chains, Senior Advisor at the University of Oslo, Norway, and Senior Advisor at the Swiss Smart Factory, Biel/Bienne, Switzerland. His research interests are Closed Loop Lifecycle Management, Industrial Ontologies, Knowledge Graphs and Cognitive Digital Twins. Dimitris is involved in EU projects in the areas of Digital Manufacturing, Zero Defect Manufacturing, Circular Manufacturing, etc. He has more than 250 publications. From 2013 to 2019 Dimitris was the Chair of IFIP WG5.7-Advances in Production Management Systems. He is co-founder of the Industrial Ontologies Foundry and of the Knowledge Graph Alliance. Dimitris was Member of the WEF Global Future Council on Advanced Manufacturing and Value Chains from 2019 to 2022. Since 2022 he is Editor-in-Chief of the Open Access journal Frontiers in Manufacturing Technology.

Abstract: An innovative strategy created to tackle the difficulties of the digital and green transition in industrial sectors is the Information Modelling Framework (IMF): <https://www.sciencedirect.com/science/article/pii/S29505550X25000081> and <https://www.dnv.com/digital-trust/recommended-practices/asset-information-modelling-dnv-rp-0670/>. In order to achieve sustainability and resilience targets and accommodate digital transformation and new business models, IMF seeks to revolutionize the planning, building, and operation of physical industrial assets. Effective use of AI and Digital Twin technologies in industrial applications is made possible by the IMF approach, which offers engineers easily navigable information modelling tools. IMF's key features include encapsulating model-based systems engineering principles into ontology-based classification systems, transforming system models into ontologies and knowledge graphs that capture entity meanings across design phases, and resolving information fragmentation issues in a variety of industries. The IMF methodology helps the industrial sector overcome the twin problems of the digital and green transition by facilitating dependable data integration, enhancing decision-making, and promoting the digitization of industrial processes. In this talk, IMF will be presented with use case examples from the Digital Europe project SM4RTENANCE: <https://sm4rtenance.eu/>.

Plenary Keynote Speaker



Dr Liu Zhenying

**Empowering Physical AI in
Manufacturing Through
Standards, Talent Cultivation and
Innovation Cooperation**

Plenary Keynote Speaker



Prof Yongfeng Lu

Lott Distinguished University Professor, University of Nebraska-Lincoln, USA

Fellow of SPIE, LIA, OSA and IAPLE

Editor-in-Chief, Journal of Laser Applications

Nanofabrication and characterization of fuel capsules for laser inertial confinement fusion

Prof Yongfeng Lu is the Lott Distinguished University Professor in the Department of Electrical and Computer Engineering at the University of Nebraska-Lincoln (UNL) since September 2002, with a courtesy appointment in Mechanical and Materials Engineering since 2018. A globally recognized leader in laser-based micro/nanoscale material processing, his research focuses on femtosecond laser nanofabrication, laser resonant vibrational excitation, nanophotonics, optical spectroscopy, and advanced material synthesis (diamond films, graphene, 2D materials) for clean energy, fusion targets, sensing, and manufacturing. He pioneered resonant laser-assisted CVD growth of high-quality diamond and GaN, laser desensitization/peening for U.S. Navy aluminum alloys, two-photon polymerization for inertial confinement fusion fuel targets, and cryo-CARS microscopy for fusion diagnostics. With 604 journal articles, 524 conference papers, 28 patents, over 31,000 citations (h-index 86), and more than \$45 million in funding, he ranks among the world's top 2% of scientists. Honored with the 2024 SPIE 3D Printing Award and LIA Schawlow Award, and a Fellow of SPIE, LIA, OSA, and IAPLE, Prof. Lu has mentored 38 PhD graduates and 53 postdocs while serving as Chairperson of IAPLE, past President of LIA, and Editor-in-Chief of the Journal of Laser Applications.

Abstract: Three-dimensional nanofabrication via two-photon polymerization (TPP) offers a unique and highly versatile capability for creating complex structures. It enables the flexible design and fabrication of intricate features across one to three dimensions, spanning length scales from micrometers to centimeters, while achieving spatial resolutions finer than 100 nm. Over the past 15 years, the Laser-Assisted Nano Engineering Group at the University of Nebraska-Lincoln (UNL) has collaborated with the Laboratory for Laser Energetics (LLE) at the University of Rochester. We focused on developing practical, reliable TPP-based approaches for fabricating a wide variety of high-precision target structures required for inertial confinement fusion (ICF) experiments. At the same time, thorough inspection and quality control of ICF fuel capsules remain critical to experimental success. These capsules are commonly fabricated from plastic materials such as polystyrene (PS). However, the manufacturing process frequently introduces embedded defects in the form of small voids known as vacuoles within the shell walls. These vacuoles, typically ranging in size from 100 to 2000 nm, can distort the implosion symmetry, disrupt uniform compression, and significantly degrade the overall performance and energy yield of the capsules during ICF experiments. To address this challenge, coherent anti-Stokes Raman scattering (CARS) microscopy has proven to be a powerful, and non-destructive imaging technique capable of detecting, characterizing, and mapping both surface and internally embedded defects with excellent spatial resolution and chemical specificity.

Plenary Keynote Speaker



Prof Seunghwa Ryu

Professor of Mechanical Engineering,
KAIST, South Korea

Director, KAIST InnoCORE PRISM-AI
Center, South Korea

Head, Department of AX, KAIST, South
Korea

Toward Uncertainty-Aware Physical AI for Manufacturing: From Digital Twins to Multi-Agent Intelligence

Prof Seunghwa Ryu is an Endowed Chair Professor of Mechanical Engineering and Head of the Department of AX (AI+X) at KAIST. He also serves as Director of the KAIST InnoCORE PRISM-AI Center, a national research initiative dedicated to AI-driven intelligent design and manufacturing integration. He received his PhD in Physics from Stanford University (2011) and his BS in Physics from KAIST (2004). He has held visiting professorships at the University of California, Berkeley (2024) and Stanford University (2018). Prof Ryu's research focuses on developing knowledge-guided and physics-informed AI frameworks that enable data-efficient inverse design, multiscale material modeling, and intelligent process optimization. His work bridges fundamental mechanics, machine learning, and industrial deployment. He has published over 180 papers in leading international journals, including Science, Nature Communications, Advanced Materials, npj Computational Materials, and Computer Methods in Applied Mechanics and Engineering. He is a recipient of the APACM Award for Young Investigators in Computational Mechanics (2019) and was elected to the Young Korean Academy of Science and Technology (Y-KAST) in 2022.

Plenary Keynote Speaker



Prof Yasushi Umeda

Professor, Department of Precision Engineering, University of Tokyo, Japan
Director, JSPE (Japan Society for Precision Engineering)
Fellow, CIRP (International Academy for Production Engineering)
Fellow, JSME (Japan Society of Mechanical Engineers)

How Shall Human and Physical AI Collaborate in a Manufacturing System? – A Digital Triplet Approach

Prof Yasushi Umeda is a Full Professor at Department of Precision Engineering, School of Engineering, the University of Tokyo, Japan. He holds BE, ME, and Dr Eng in Precision Machinery Engineering from the University of Tokyo. He authored/edited 29 books, over 150 peer-reviewed articles, and has 19 patents granted/pending. Five of his papers won best paper awards in scientific journals and international conferences. He is a Fellow of CIRP (International Academy for Production Engineering), a Fellow of JSME (Japan Society of Mechanical Engineers), a director of JSPE (Japan Society for Precision Engineering), and a member of ASME (American Society of Mechanical Engineers). His research interests include smart manufacturing systems, circular economy, life cycle engineering, eco-design, maintenance, and design theory.

Plenary Keynote Speaker



Mr Zhang “Mercy” Huize

Vice President, SUPCON International
Business (SIB), Singapore

Director, R&D Department, SIB, Singapore

Founder, FREEZONEX, Singapore

The Next Frontier: AI Closed-Loop Process Optimization

Zhang “Mercy” Huize graduated from the University of Illinois Urbana-Champaign. At SUPCON, he leads the International R&D Center and founded FREEZONEX. He is dedicated to the research and practice of software-defined control systems, AI-driven process optimization, and industrial data integration technologies.

Abstract: Every chemical and energy company needs a large amount of closed-loop process optimization software to improve throughput and product quality while reducing human error. For decades, this field has been dominated by first-principles, control-theory-based approaches. Today, combining AI with first-principles models has become a new best practice. In this talk, I will introduce how to integrate reinforcement learning with MPC to achieve performance beyond pure first-principles methods in real plants and complex control scenarios.

Venue Information

Conference Venue



Lecture Theatre at The Arc (LHN-LT)

 Nanyang Technological University
The Arc, Learning Hub North
LHN-B1-15
63 Nanyang Drive
Singapore 636922



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**Tutorial Rooms
TR+23, TR+24,
and TR+25**
(for breakout
sessions on 28
and 29 July 2026)
**are just one floor
above the
Lecture Theatre
in the same
building**

Tutorial Room TR+15

**(for the Workshop
on 30 July 2026)
is located on the
same floor as
TR+23, TR+24
and TR+25.**

Networking Events

**for Registered Participants
and Invited Guests only**



Welcome Reception

Date : Monday, 27 July 2026
Time : 6.30 pm – 8.30 pm
Venue : SQUE Rotisserie & Alehouse
Eu Tong Sen St,
#01-70 Clarke Quay Central,
Singapore 059817



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Banquet

Date : Wednesday, 29 July 2026
Time : 6.30 pm – 10.30 pm
Venue : Marina Bay Sands Expo & Convention Centre
Level 3, Begonia Junior Ballroom 3011–2
10 Bayfront Avenue,
Singapore 018956



Bus from The Arc, NTU to Marina Bay Sands is provided.

Pickup point: Singapore Centre for 3D Printing
(Outside The Arc building at Basement 4,
63 Nanyang Drive, Singapore 637460)

Leaving at 5.40 pm

Sponsors

Platinum Sponsor

Goertek Singapore Pte Ltd ([website](#))

Goertek

Goertek Singapore Pte Ltd is the Singapore subsidiary of Goertek, a global technology company specializing in the research, development, and manufacturing of precision components, smart hardware, and intelligent manufacturing solutions. As part of Goertek's worldwide innovation network, the Singapore office supports research and business development in advanced electronics, strengthening collaborations with industry and research institutions across Southeast Asia. With expertise spanning acoustics, optics, microelectronics, and intelligent manufacturing, Goertek is committed to driving innovation in next-generation consumer electronics and smart devices.

Key Aspects of Goertek:

Core Products & Services: Develops and manufactures precision acoustic, optical, and microelectronic components, smart wearable devices, hearables, VR/AR hardware, AI-enabled smart home products, and intelligent manufacturing equipment.

Market Position: Recognized as a global leader in intelligent hardware and precision manufacturing, Goertek serves many of the world's leading consumer electronics brands through vertically integrated design, engineering, and manufacturing capabilities.

Applications: Its technologies are widely applied in virtual and augmented reality (VR/AR), wearable electronics, smart audio devices, AI-powered smart home systems, consumer electronics, and advanced manufacturing.

Technology & Innovation: Maintains a global network of R&D centers focused on acoustics, optics, microelectronics, and intelligent manufacturing, delivering integrated hardware and system-level solutions that combine advanced design, automation, and precision engineering.

Global Reach & Partnerships: Operating across Asia, North America, and Europe, Goertek collaborates with world-renowned technology companies, suppliers, and research institutions while providing end-to-end innovation and manufacturing solutions through its global network.

Platinum Sponsor

Qingdao Haizhichen Industrial Equipment Co., Ltd. ([website](#))



Haizhichen (Qingdao Haizhichen Industrial Equipment Co., Ltd.), founded in 2011, is a leading Chinese high-tech enterprise specializing in industrial AI vision, 3D robotic vision, and precision inspection technology. Headquartered in Qingdao, the company provides advanced intelligent manufacturing solutions, including high-precision 3D cameras and laser tracking systems, serving industries such as electronics and advanced manufacturing.

Key Aspects of Haizhichen:

Core Products: High-precision 3D cameras, 3D laser vision sensing systems, AI-powered industrial quality inspection platforms, and 3D robotic guidance solutions.

Market Position: Recognized as a national “Little Giant” enterprise in industrial AI, Haizhichen has demonstrated strong innovation capability and industry leadership, including championship recognition in the 2025 China-ASEAN Innovation Competition.

Applications: Its technologies are widely applied in seam tracking, robotic grabbing, surface defect inspection, and precision measurement. Solutions have been deployed in projects supporting leading global companies such as Huawei, Samsung, and Haier.

International Presence: The company operates internationally through Haizhichen Vietnam Artificial Intelligence Co., Ltd., actively promoting industry–education integration and cross-border technological collaboration.

Technology & R&D: Haizhichen maintains strong research and development capabilities, holding numerous invention patents, utility model patents, and software copyrights in 2D and 3D machine vision technologies.

Gold Sponsor

Beijing Botsing Technology Co, Ltd ([website](#))



Beijing Botsing Technology Co, Ltd is a National High-Tech Enterprise recognized in China. The company specializes in the research and development, manufacturing, sales, and service of industrial embodied intelligence solutions for specialized welding applications. Since its establishment, Botsing Tech has been committed to advancing the automated welding of large structural components through technological innovation. Driven by innovation and committed to customer success, the company aims to become a leading provider of industrial embodied intelligence solutions for welding applications.

Key Aspects of Botsing Tech:

Core Products & Services: Develops and manufactures Wall-climbing Welding Robot System, Standardized Intelligent Welding Robot Workstation, Intelligent Vision Sensor and Intelligent Welding Analysis System, while providing related sales and services. Its flagship trackless all-position crawling welding robot was originally developed in China and is the first product of its kind worldwide.

Market Position: Recognized as a National High-Tech Enterprise in China, Botsing Tech has contributed to the development of a number of Chinese national and industry standards for welding automation.

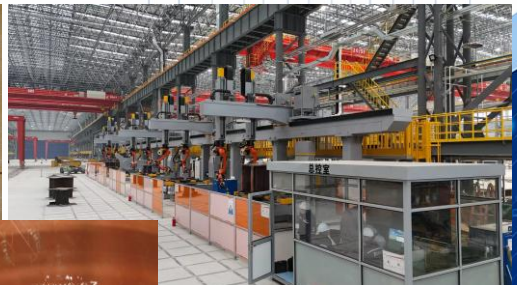
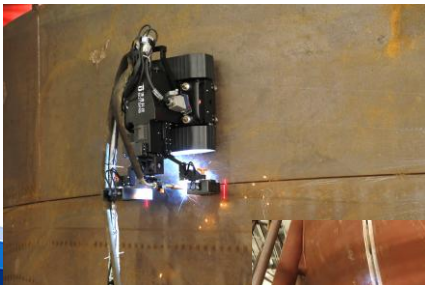
Applications: Its robots have been successfully deployed in welding applications involving storage tanks, spherical tanks, and offshore equipment.

Technology & Innovation: Led by its founder, Dr. Feng Xiaobing, the company has built an experienced R&D team with strong capabilities in independent innovation. It has developed proprietary core technologies for high-precision robotic welding.

Research Collaboration: The company has established an academician-led research collaboration platform involving Academician Pan Jiluan, professors from Tsinghua University, and senior industry experts. Its trackless all-position crawling welding robot was developed from research conducted over more than 20 years by Academician Pan Jiluan and his team.

Industry Focus: Botsing Tech serves the oil, gas and petrochemical, shipbuilding, offshore engineering, energy and power, and rail transportation sectors.

Corporate Mission: "Let intelligent robots reach every dangerous corner. Trackless Welding is safer and more enjoyable."



Gold Sponsor

Brightsun Marine Pte Ltd ([website](#))



Brightsun Marine Pte Ltd, established in 1988, is a premier Singapore-based marine engineering specialist providing comprehensive ship repair and maintenance services. With over 25 years of industry experience, the company has evolved from a small team into a major service provider with over 550 skilled professionals. Headquartered in the Tuas industrial hub, Brightsun Marine serves as a “one-stop solution” for global ship owners and leading shipyards, emphasizing safety, reliability, and innovative engineering.

Key Aspects of Brightsun Marine:

Core Products & Services: Specializes in main and auxiliary engine overhauling (2-stroke and 4-stroke), robotic laser cladding, engine component reconditioning (pistons, cylinder covers, valves), and marine electrical/automation services (motor rewinding and switchboard calibration).

Market Position: A preferred contractor for major Singapore shipyards and global vessel managers. The company is ISO 9001:2015 and ISO 45001:2018 certified, reflecting its commitment to international quality and occupational health and safety standards.

Applications: Its expertise covers a wide array of maritime needs, including afloat and voyage repairs, in-situ machining (line boring, flange machining), propeller and shafting repairs, and structural steel and piping works.

Technical Innovation: Utilizes state-of-the-art additive manufacturing technology, such as robotic laser cladding, to replace traditional chrome plating on piston ring grooves, significantly enhancing component longevity and operational efficiency.

Global Reach & Partnerships: While rooted in Singapore, the company maintains an international presence through specialized service hubs (e.g., in India) and is an authorized service partner for major brands like Akasaka Diesels and Niikura Kogyo.

Silver Sponsor

JD Union Pte Ltd ([website](#))



JD Union Pte Ltd is a responsible distributor of photonic products specializing in laser material processing for over 10 years in Singapore. Beyond lasers, scanners and optics, we deliver the software layer that makes them intelligent — DMC (Direct Machining Control), a hardware-independent laser machine and process control platform that runs a job from CAD to finished part in a single environment. Our collaboration with major suppliers in R&D enables us to create tailor-made laser solutions for unique use cases, which are rigorously tested in our dedicated application lab. We take pride in offering one-stop solutions to system integrators across SMEs and MNCs, emphasizing professional service and long-term commitment.

Key Aspects of JD Union:

Core Products & Services: Supplies a comprehensive portfolio of photonic products, including fiber lasers, DPSS lasers, CO₂ lasers, laser scanners, optics, DMC laser machine control software, and customized laser material processing systems for industrial manufacturing and scientific applications.

Intelligent Machine Control – DMC: As DMC's partner in Singapore, JD Union provides a hardware-independent machine control platform that integrates lasers, galvo scanners, motion stages, vision systems, and I/O into a single environment. Key features include automatic calibration, CAD alignment, 3D surface mapping, recipe management, and process data logging for intelligent laser manufacturing.

Market Position: Headquartered in Singapore, JD Union is a trusted global distributor and solution provider in the photonics and advanced manufacturing industry. With over 10 years of experience, we serve multinational corporations (MNCs), SMEs, and research institutions across Asia and beyond, delivering professional technical expertise, application-driven solutions, and responsive long-term customer support.

Silver Sponsor

JD Union Pte Ltd ([website](#))



Applications: Its laser technologies are widely applied in precision cutting, welding, marking, drilling, micro-processing, semiconductor manufacturing, solar cell and photovoltaic (PV) manufacturing, additive manufacturing, PCB processing, and advanced materials processing across industrial and research sectors.

Technical Innovation: Working closely with leading international laser manufacturers and software developers, JD Union develops tailor-made laser solutions in which hardware and DMC control software are optimized and validated together in its in-house application laboratory, enabling customers to efficiently adopt advanced laser processing technologies.

Global Partnerships: The company partners with internationally renowned photonics manufacturers, including IPG and Luxinar, as well as leading providers of intelligent machine control solutions such as DMC, to deliver world-class laser systems and advanced automation technologies. These solutions are supported by comprehensive technical services, application development, training, and after-sales support. As our global business continues to grow, JD Union is actively recruiting talented engineers and professionals to join our expanding team.

Welcome to Symposium on Laser Manufacturing, 29 July 2026, Tutorial Room TR+24 — “Why and How DMC Boosts Your Micromachining Performance”, Dr Joan Xie, Mr Chen Changhuan, JD Union Pte Ltd