TING-LUN SU

Intelligent Automation Engineer

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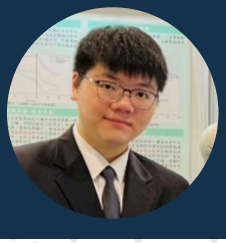

EDUCATION

B.S. in Intelligent Automation Engineering

National Chin-Yi University of Technology (NCUT)

06/2022 - Present

PUBLICATIONS

Journal Papers

Automated spray path planning based on Bayesian optimization and ant colony optimization

The International Journal of Advanced Manufacturing Technology, Springer,vol. 139, pp. 5491–5509, Aug. 2025

Ta-Jen Peng • Peng-Jen Chen • Ting-Lun Su • Chung-Chieh Lin

05/2025 https://doi.org/10.1007/s00170-025-16162-x

Optimization of Automated Forging Release Agent Spray Path Based on Ant Colony Algorithm

Journal of Automation Intelligence and Robotics,TAIROA, No.51, pp.114–120,Dec. 2024

Ta-Jen Peng • Peng-Jen Chen • Ting-Lun Su • Chung-Chieh Lin

12/2024 Taiwan Automation Intelligence and Robotics Association

Conference Papers

Green Machining Optimization and Burr Treatment in Mill-Turn Operations

27th Annual Meeting of the Chinese Society of Mechanism and Machine Theory,2024

Ze-Lin Sun • Tzyy-Shiun Liaw • Ching-Li Liu • Ting-Lun Su • Cheng-Chi Wang • Ta-Jen Peng

11/2024 CSMMT Abstract No. 039

Development of a Contactless AIoT Smart Data Management Hybrid Vending System

The 17th Intelligent Living Technology Conference,2023

Ting-Lun Su • CHENG-HAO DU • Chia-Hung Lai

06/2023 ILT Paper No. 3C009

The function analysis of green electric automatic weeder

Conference on Green Technology Engineering and Applications,2023

Ting-Lun SU • Qing-Li LIU • Yuan-Han Lin• Chia-Hung Lai

05/2023 GTEA Paper No. GEES012 pp.214

INDUSTRY-ACADEMIA COLLABORATION PROJECT

Visual measurement inspection station and generative AI navigation assistance system

TURVO INTERNATIONAL CO., LTD.

2025 - Present Taichung, Taiwan

- **Lead and manage project planning**, technical design and communication with industrial stakeholders.
- Developed core software integrating **LLM** and **MCP** for intelligent navigation assistance.

AWARDS

2025 National Vocational and Technical College Student Practical Project Competition
Second place

2024 Intelligent Automation Equipment Invention Awards 13th
First place

2024 Taiwan Society of Precision Engineering's 113th Precision Engineering Project and Paper Award
Third place

2024 Mitsubishi Electric Contest of Automation 1st
Honorable Mention Award

2024 Mitsubishi Electric CNC Smart App Creative Development Competition
Honorable Mention Award

2023 The 27th TDK Cup National Collegiate Creative Design and Production Competition
Science and Technology Humanities Award

Early Achievements (2020–2022)
Achieved *3 Gold, 2 Silver ,4 Honorable Mentionins* in National Project and Science Fair Competitions.

CERTIFICATES / LICENSES

Photovoltaic System Installation - Licensed Technician Class B
Ministry of Labor - WDA

SAKURA SCIENCE Exchange Program Member
Japan Science and Technology Agency

AI Application Planner - Licensed Technician
Ministry of Economic Affairs - iPAS

Industrial Wiring - Licensed Technician Class C
Ministry of Labor - WDA

Commercial Wiring - Licensed Technician Class C
Ministry of Labor - WDA

Master Of Computer Certificate - Class C
Chinese Computer Education Association

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INDUSTRY-ACADEMIA COLLABORATION PROJECT

Smart CNC Flexible Manufacturing Factory – (Phase 1 & Phase 2 & Phase 3)

IC STAR INDUSTRIAL CO., LTD.

2024 - 2025 Taichung, Taiwan

- Executed a three-phase Smart CNC Flexible Manufacturing Factory project, **redesigning Plant A** and **building Plant B**, deploying **20 CNC machines** and **10 robotic arms** with full system integration.
- **Led a 42-membe**r cross-disciplinary team covering robotics, CNC communication, software-hardware setup, and control design, achieving an **80% reduction** in manpower and significantly enhancing automation efficiency.

Automated Robot Arm Forging Spraying System with AI-Based Path Generation (Phase 1 & Phase 2)

IC STAR INDUSTRIAL CO., LTD.

2023 - 2024 Changhua, Taiwan

- Led project phases focusing on **AI-ant colony optimization** planning and robotic control for automated forging spraying.
- Achieved **27% higher production** throughput, **91% defect reduction**, and **21% cost savings** across three automated forging lines.
- Enabled flexible line switching with **83% shorter** setup time and **97.3% trajectory** matching accuracy.

Automatic CNC Chip Entanglement Detection System

Industrial Technology Research Institute(ITRI)

2023 Taichung, Taiwan

- Developed an AI-based YOLO vision system to **detect CNC tool chip** entanglement in real time.
- Implemented in **unmanned smart manufacturing lines**, reducing rework and maintenance costs while improving automation efficiency

Development and Commercialization of Automatic Mushroom Stem-Cutting System

University Social Responsibility Project with Local Farmers

2022 - Present Xinshe,Taiwan

- **Successfully mass-produced** the smart mushroom stem-cutting machine, adopted by three manufacturers.
- With **two patents** granted for the pressing and auto-sorting mechanisms, greatly improving cutting efficiency and quality.

3D Vision-Guided Picking and Robotic System Integration Development

LIEBHERR-Verzahntechnik GmbH & PONGI Gear Expert CO., LTD.

2022 - Present Taichung, Taiwan

- Integrated and optimized the Taiwan-distributed Liebherr LHRobotics.Vision **random picking system**, **developing 3D vision**-guided robotic coordination to enhance precision and flexibility.
- **Supported client implementation** and application testing, provided technical solutions and troubleshooting, accelerating system adoption and strengthening competitiveness in **smart automation**.

EXPERIENCE AS AN EXHIBITOR

2025 Taipei USR EXPO

09/2025

Presented a **smart mushroom stem-cutting system** developed under the USR project, demonstrating **sustainable agricultural automation** and AI-based cutting control.

2024 Taipei International Automation Exhibition

08/2024

Showcased an AI Automated Robot Arm Forging Spraying **System solution** and **initiated collaboration** with a local forging factory for potential joint development.

PATENTS

Invention Patent – Mushroom Stem Cutting Machine Application No.: I891383

An automated device designed to precisely cut mushroom stems, improving efficiency and consistency in agricultural processing.

05/2025 Taiwan

Utility Model Patent – Mushroom Stem Cutting Machine Application No.: M659734

A mechanical design enhancing the stability and cutting performance of the mushroom stem processing system.

08/2024 Taiwan

SUMMARY & SKILLS

Focused on AI-driven robotics and intelligent manufacturing, integrating LLM applications and automation research with practical industrial implementations.

PLC | Python | AI visual detection | Robot Arm | AI Algorithm | C#/C++ | SolidWorks | LLM - MCP | Matlab

KEY ACHIEVEMENTS

Research & Innovation

2 journal papers, 2 patents and **3 conference papers** in intelligent automation and AI robotics.

Collaboration & Public Demonstration

6 academia–industry projects and technical exhibitions at the 2024 Taipei Automation Exhibition and 2025 USR EXPO.

Recognition & Achievements

Multiple national awards in automation innovation and system design **during the Bachelor's program (2022–2025).**

Technical & Industrial Impact

Implemented large-scale automation projects: **20 CNC with 10 robot arm** across two plants (three phases) and **three forging lines** (two phases).

LANGUAGES

Chinese
Native

English
Proficient(actively learning)

Deutsch
Beginner(actively learning)