Jung-Peng (Bruce) Lin

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EDUCATION

Purdue University **West Lafayette, IN**

Master of Science, Electrical and Computer Engineering *Aug 2025 - Expected May 2027*

- Coursework: Computer Architecture, Introduction to Operating Systems

National Taipei University of Technology **Taipei, Taiwan**

Bachelor of Science, Mechanical Engineering *Sep 2019 - Jun 2023*

- Coursework: Introduction to Robotics, Intelligent Robots and Lab, Data Structures, Computer Algorithms.

SKILLS

Programming Languages: C/C++, Python, MATLAB, Shell Scripting

Robotics: ROS/ROS2, SLAM/VSLAM, Sensor Fusion, Motion Planning, Control Theory, Perception

Embedded: Embedded Linux, Yocto Project, Kernel/Driver Development, RTOS, I2C, SPI, CAN Bus

Tools: Git, Docker, GDB, NVIDIA Isaac Sim, Airsim, PCB Design

EXPERIENCE

MIT City Science Lab @ Taipei Tech **Taipei, Taiwan**

Researcher *Jul 2023 - Mar 2025*

TSMC Industry-Academia Research Project: Large-Scale Inspection System for Boston Dynamics' Spot

- Developed autonomous navigation for Spot's patrol of a 5,000m² factory with 50+ inspection points.
- Architected a dynamic map-switching system to overcome hardware memory constraints, reducing map loading time from 10 seconds to 1 second and enabling persistent localization across multiple zones.
- Led the team in validating a mission planner in NVIDIA Isaac Sim before its deployment on hardware.

Foxconn Technology Industry-Academia Research Project: Autonomous Vehicle

- Integrated Foxconn's automotive-grade middleware (HHEV.OS) with ROS2 to create a robust cybersecurity testbed, handling all LiDAR, camera, and control signal data streams between the two systems.
- Engineered an electronics overhaul, creating custom PCBs to replace unstable wiring and improve resilience.

Pioneer Material Precision Technology Industry-Academia Research Project: Quadruped Bionic Robot

- Owned circuit design and control system development to replicate the pangolin's curling defense mechanism.
- Achieved centimeter-level localization via VSLAM, performing real-time 3D reconstruction and state estimation.

MIT City Science Lab @ Taipei Tech **Taipei, Taiwan**

Undergraduate Researcher *Feb 2023 - Jun 2023*

- Corrected LiDAR odometry drift for a hexapod robot by implementing an AprilTag-based vision correction system, improving navigation precision to lower than 10 cm.

Aeroprobing Inc., a drone solutions startup **Taipei, Taiwan**

Software Engineer Intern *Oct 2022 - Jan 2023*

- Implemented a hardware upgrade by replacing the legacy control board with a Xilinx KV260, boosting visual recognition performance by 3x (from 10 to 30 FPS) using the Vitis AI development environment.
- Constructed a high-fidelity simulation environment using Airsim, ROS, and YOLOv5 to validate drone inspection algorithms, reducing the risk of hardware damage and cutting testing costs.

SELECTED PROJECTS

Embedded Linux Smart Home Hub *Apr 2025 - Jul 2025*

- Engineered a full-stack embedded system by developing custom Linux kernel drivers for low-latency peripheral communication (I2C/SPI/GPIO) and integrating MQTT/Wi-Fi stacks for robust remote control.
- Built a minimal, secure, custom Linux system from scratch using the Yocto Project, reducing the final image size by 70% and minimizing potential attack surfaces.