

Lu-Ching Wang

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Research Interests

Rescue Robots, Vision-Language Navigation, Quadruped Robots, Reinforcement Learning, Visual Servoing, Control Theory.

Education

- **National Taiwan University (NTU)** Taipei, Taiwan
Sep. 2022 - Aug. 2024
Master of Science, Department of Electrical Engineering (GPA: 4.1/4.3)
[Networked Control Systems Lab \(NCS Lab\)](#), Advisor: Dr. [Feng-Li Lian](#)
Master's thesis: [Hybrid Visual Servo Manipulation for Isotropic Target Using Individual Spatio-Temporal Image Feedback](#)
- **National Yang Ming Chiao Tung University (NYCU)** Hsinchu, Taiwan
Sep. 2016 - Jun. 2021
Bachelor of Science, Department of Mechanical Engineering (GPA: 3.9/4.3)

Research & Working Experience

- **Inventec Corporation** Taipei, Taiwan
Aug. 2024 - Present
Robotics Research Engineer, [AI Center, Group of Robotics](#), Advisor: Dr. [Wei-Chao Chen](#)
 - **Feasibility-Guided Planning over Multi-Specialized Locomotion Policies**
 - Developed a learning-based planning system that selects the optimal path and locomotion policy for traversing diverse terrains.
 - Maintained interpretability while adding new policies; achieved a success rate of 99.8% in simulations and 70% in experiments.
 - Conducted CNN deployment on Feasibility-Net and out-of-distribution (OOD) analysis for heightmap inputs.
 - Executed real-world experiments involving mapping, navigation, and policy switching; results published at [1].
 - **Quadruped Robots SDK Development / Sim-to-Real Deployment**
 - Built a quadruped robot interface for customized actuators and sensors through LCM communication.
 - Trained locomotion policies in IsaacGym and IsaacLab; deployed in C++ with parameters tuning (action scales, motor gains).
 - Assembled a quadruped robot with actuators, sensors and computing unit into a compact design.
 - **Quadruped Robot Challenges (QRC)**
 - Team leader. Operator during the competition.
 - Deployed the planner based on *Feasibility-Guided Planning* research.
 - Integrated ROS2 for navigation, locomotion, manipulator teleoperation, and image detection.
- **National Taiwan University (NTU)** Taipei, Taiwan
Sep. 2022 - Aug. 2024
Master's Student, [Networked Control Systems Lab \(NCS Lab\)](#), Advisor: Dr. [Feng-Li Lian](#)
 - **Mobile Armed Robot for Tomato Harvesting**
 - Built a tomato harvesting wheeled-mobile robot for greenhouse scenario, achieving a 68.4% harvesting success rate.
 - Proposed a novel dual-camera image-based visual servoing control algorithm to solve the dislocation problem.
 - Proved the system's asymptotical convergence properties using Lyapunov stability analysis.
 - Reduced the harvesting time from 21.2 to 6.26 seconds under a 60kg payload; results published at [2] and [3].
 - **Teaching Assistant**
 - Teaching assistant of course "Control System" (EE 3024). Supervision of students' assignments and exams.
- **Academia Sinica (National Academic Institution)** Taipei, Taiwan
Jan. 2022 - Aug. 2022
Research Assistant, [Research Center for Information Technology Innovation](#), Advisor: Dr. [Yennun Huang](#)
 - **Autonomous Patrol System for Greenhouse Farming**
 - Designed a patrol robot for soil, humidity, and disease monitoring in greenhouse environment.
 - Transferred and continued this work at NTU.

Publications

- [1] **Lu-Ching Wang***, Guilherme Christmann*, Ying-Sheng Luo*, Hanjaya Mandala* and Wei-Chao Chen, "Feasibility-Guided Planning over Multi-Specialized Locomotion Policies", in 2026 IEEE Int. Conf. Robot. Autom. ICRA, under review. (*denotes equal contribution)
- [2] **Lu-Ching Wang**, Yu-Cheng Chang and Feng-Li Lian, "A Perception and Alignment Framework for Fruit Harvesting Using Spherical Object Modeling and Hybrid Visual Servoing", in 2025 IEEE/ASME (AIM) Int. Conf. on Advanced Intelligent Mechatronics, July 2025. ([link](#))
- [3] **Lu-Ching Wang**, Yen-Cheng Chu, Yennun Huang, and Feng-Li Lian, "Enhancement on Target-Gripper Alignment: A Tomato Harvesting Robot with Dual-Camera Image-Based Visual Servoing", in 2024 IEEE Int. Conf. Robot. Autom. ICRA, May 2024. ([link](#))

Awards & Competitions

- **2025 ICRA Quadruped Robot Challenge (QRC) – Participation Certificate, Autonomous** ([link](#))
- **2024 IROS Quadruped Robot Challenge (QRC) – 3rd Placement, Teleoperation** ([link](#))
- **2024 ARIS Best Student Paper Award – 1st Place**, 2024 Int. Conf. on Advanced Robotics and Intelligent Systems (ARIS) ([link](#))
- **2024 Master Thesis Award – Distinction Award** from Robotics Society of Taiwan (RST) ([link](#))

Technical Skills

- **Software**
 - Python (NumPy, Pytorch, OpenCV, Matplotlib), C++, CMake, MATLAB (Simulink), Git, Autodesk Fusion 360, Blender
 - IsaacSim, IsaacLab, IsaacGym, ROS1 & ROS2 (Fast-LIO, RTAB-Map, Navigation2, MoveIt, URDF)
- **Hardware**
 - Real-time operating system, multi-threading, RS-485, Serial, Lightweight communications and marshalling (LCM), UDP