Hua-Hsuan Liang

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Education

Columbia University **Aug. 2024 – Dec. 2025**
Master of Science in Computer Science *New York, NY*

- Appointed as a Course Assistant for the Artificial Intelligence course 2025 summer.

National Cheng Kung University **Sep. 2019 – Jun. 2023**
Bachelor of Science in Computer Science and Information Engineering *Tainan, TW*

- GPA: 4.08/4.3
- Awarded the Academic Excellence Award (2019)
- Served as Class President for four years

Experience

Research Assistent, Columbia University **Sep. 2024 – Present**
Robotic Manipulation and Mobility Laboratory (ROAM Lab) *New York, NY*

- VibeCheck | *Python, ROS2, Machine Learning, Data Analysis*
  - Designed and implemented a ROS2-based framework to integrate an acoustic sensor, computer, and UR5 robotic arm for real-time data collection and processing.
  - Developed and optimized machine learning models for acoustic data analysis, achieving 90% classification accuracy in object recognition tasks.
  - Built a high-fidelity simulation environment to train robotic policies using reinforcement learning and imitation learning, improving system performance before deployment.
- Roam Hand 3 | *Python, ROS2, Reinforcement Learning, Imitation Learning, Data Analysis*
  - Trained reinforcement learning policies in simulation for finger gaiting manipulation with a multi-finger robotic hand.
  - Collected expert rollouts using the base RL policy and trained a behavior cloning (BC) policy via imitation learning.
  - Fine-tuned the policy with Soft Actor-Critic (SAC) to achieve stable manipulation of fragile objects through precise finger gaiting.

Research Assistant, National Cheng Kung University **Sep. 2023 – Jun. 2024**
Dependable Computing and Networking Research Lab *Tainan, TW*

- Implemented deep reinforcement learning (DRL) models, including DQN, DDPG, and MP-DQN, for computational resource management
- Built a scalable Python server as a Docker image and managed it with Kubernetes (K8s) and Docker Swarm
- Stabilized the experimental environment, achieving a 90% success rate in reliability

Publications

VibeCheck: Using Active Acoustic Tactile Sensing for Contact-Rich Manipulation

- Author list: K. Zhang*, D. Kim*, E. T. Chang*, **H. Liang**, Z. He, K. Lampo, P. Wu, I. Kymissis, M. Ciocarlie.
- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2025)

Extracurricular activities

Delegate Reviewer, IEEE Robotics and Automation Letters (RA-L) **Jun. 2025**
New York *NY, US*

President, Federation of Taiwanese Student Associations in New York **Jun. 2025 – May. 2026**
New York *NY, US*

Graduation Ceremony Deputy Chairperson **Oct. 2022 – Jun. 2023**
National Cheng Kung University *Tainan, TW*