

Hua-Hsuan Liang

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EDUCATION

Columbia University

Master of Science in Computer Science

Aug. 2024 – Dec. 2025

New York, NY

- GPA: 3.90 / 4.0
- Appointed as a Course Assistant for the *Artificial Intelligence* course (Summer 2025)

National Cheng Kung University

Bachelor of Science in Computer Science and Information Engineering

Sep. 2019 – Jun. 2023

Tainan, TW

- GPA: 4.08 / 4.3
- Awarded the **Academic Excellence Award** (2019)

EXPERIENCE

Research Assistant, Columbia University

Robotic Manipulation and Mobility Laboratory (ROAM Lab)

Sep. 2024 – Present

New York, NY

- **VibeCheck** | *Python, ROS2, Machine Learning, Data Analysis*
 - Designed and implemented a ROS2-based framework integrating an acoustic sensor, computer, and UR5 robotic arm for real-time data collection and processing.
 - Developed and optimized ML models for acoustic data analysis, achieving **90% accuracy** in object recognition tasks.
 - Built a high-fidelity simulation environment to train robotic policies using **reinforcement learning (RL)** and **imitation learning (IL)**, improving performance before real-world deployment.
- **SpikeATac** | *Python, ROS2, Reinforcement Learning, Imitation Learning*
 - Trained RL policies in simulation for **finger-gaiting manipulation** tasks.
 - Collected expert rollouts and trained a **behavior cloning (BC)** policy in the real world.
 - Fine-tuned the BC policy with **Soft Actor-Critic (SAC)** using human-labeled trajectories, achieving stable manipulation of fragile objects (e.g., eggshells).

Research Assistant, National Cheng Kung University

Dependable Computing and Networking Research Lab

Sep. 2023 – Jun. 2024

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 deployed it using **Kubernetes (K8s)** and **Docker Swarm**.
- Stabilized the experimental environment, achieving a **90% reliability rate** across tests.

PUBLICATIONS

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

- *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)*

SpikeATac: A Multimodal Tactile Finger with Taxelized Dynamic Sensing for Dexterous Manipulation

- *E. T. Chang, P. Ballentine, Z. He, D. Kim, K. Jiang, H. Liang, J. Palacios, W. Wang, I. Kymissis, M. Ciocarlie.*
- *IEEE International Conference on Robotics & Automation (ICRA 2026)*

EXTRACURRICULAR ACTIVITIES

Delegate Reviewer, **IEEE Robotics and Automation Letters (RA-L)**

Poster Presenter, **Northeast Robotics Colloquium (NERC)**

Jun. 2025

Oct. 2025, Ithaca, NY