

Hua-Hsuan Liang

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EDUCATION

Columbia University <i>Master of Science in Computer Science</i>	Aug. 2024 – Dec. 2025 New York, NY
National Cheng Kung University <i>Bachelor of Science in Computer Science and Information Engineering</i>	Sep. 2019 – Jun. 2023 Tainan, TW

• GPA: 3.875 / 4.0
• Appointed as a Course Assistant for the *Artificial Intelligence* course (Summer 2025)

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

EXPERIENCE

Research Assistant, Columbia University <i>Robotic Manipulation and Mobility Laboratory (ROAM Lab)</i>	Sep. 2024 – Present New York, NY
• VibeCheck <i>Python, ROS2, Machine Learning, Data Analysis</i> ◦ 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 <i>Python, ROS2, Reinforcement Learning, Imitation Learning</i> ◦ 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 <i>Dependable Computing and Networking Research Lab</i>	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. Kymmissis, 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. Ballantine, Z. He, D. Kim, K. Jiang, H. Liang, J. Palacios, W. Wang, I. Kymmissis, 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
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