Hua-Hsuan Liang

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Education

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

Research Assistant **Sep. 2023 – Jun. 2024**
National Cheng Kung University *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

Equipment Intelligence Engineering Intern **Jul. 2023 – Aug. 2023**
Lam Research *Hsinchu, TW*

- Leveraged machinery data for dimensionality reduction and visualization, assisting process engineers in troubleshooting
- Developed automation tools in Python with Pandas and NumPy, saving 5 hours per use in data analysis

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). Under review.

Projects

Newsbie | *Python, Flask, React Native, Expo, MongoDB, Docker* **Mar. 2024 – Aug. 2024**

- Developed and deployed a full-stack mobile application using Flask (REST API) and React Native, enabling seamless user interaction.
- Integrated AI-powered news summarization and procast generation using ChatGPT, enhancing content personalization.
- Designed and implemented a MongoDB database to efficiently store user data and generated procasts, ensuring scalability.

Extracurricular activities

Graduation Ceremony Deputy Chairperson **Oct. 2022 – Jun. 2023**

Awards

- **Taipei Metro 2024 Hackathon** - Second Place Award & Best Creative Award

Technical skills

OS: Windows, Ubuntu
Languages: Java, Python, C/C++, JavaScript, HTML, CSS
Developer Tools: PyTorch, Linux, Git, Docker, Kubernetes, Docker Swarm, VS Code, Bash, Vim
Libraries: Pandas, NumPy, Flask, Matplotlib, Expo, React Native, ROS2