

Jung-Chun Liu

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Education

National Taiwan University (NTU)

Sep 2021 - Jun 2023

M.S. in Electrical Engineering (Track: **Computer Science**)

- Overall GPA: 3.96/4.0
- Thesis: Automatic Induction of Task Substructures from Expert Demonstrations via Genetic Programming
- Selected Courses: Robotics, Stochastic Control, Introduction to Logic, Advanced Algorithms

National Taiwan University (NTU)

Sep 2016 - Jun 2021

B.S. in **Electrical Engineering and Psychology**

- **Dean's list** (Top 5% based on GPA) for one semester
- Overall GPA: 3.76/4.0, last 60 GPA: 3.92/4.0
- Selected Courses:
 - **Computer Science:** Probability & Statistics, Data Structure & Programming, The Design & Analysis of Algorithms, Introduction to Artificial Intelligence & Machine Learning, Genetic Algorithm
 - **Cognitive Science:** Human Learning & Cognition, Perceptual Psychology, Physiological Psychology, Methods of Psychological Experiments, Psychological Testing

Publications

- **Jung-Chun Liu**, Chi-Hsien Chang, Shao-Hua Sun and Tian Li Yu. 2023. "Integrating Planning and Deep Reinforcement Learning via Automatic Induction of Task Substructures." *International Conference on Learning Representations (ICLR)*. (Under review)
- Wen-Zhong Fang, Chi-Hsien Chang, **Jung-Chun Liu** and Tian-Li Yu. 2023. "GP with Ranging-Binding Technique for Symbolic Regression." *Proceedings of the Companion Conference on Genetic and Evolutionary Computation (GECCO)*, 563–566.
- **Jung-Chun Liu** and Tsung-Te Liu. 2022. "Multi-Robot Formation Control using Collective Behavior Model and Reinforcement Learning." *IEEE International Symposium on Circuits and Systems (ISCAS)*, 2261–65.
- **Jung-Chun Liu**, Kuei-An Li, Su-Ling Yeh, and Shao-Yi Chien. 2022. "Assessing perceptual load and cognitive load by fixation-related information of eye movements." *Sensors* 22 (3): 1187.

Research Experiences

NTU Robot Learning Laboratory

Sep 2023 - Recent

Research Assistant with Prof. Shao-Hua Sun

- **Integrating Large Language Model with Reinforcement Learning**
 - Proposed a method to guide reinforcement learning agent with the instructions generated by LLM.
 - Implement DQN and PPO agents using TensorFlow and GPT-4 API.

Taiwan Evolutionary Intelligence Laboratory

Sep 2021 - Jun 2023

Graduate Student with Prof. Tian-Li Yu

- **Automatic Learning Framework with Planning and Deep Reinforcement Learning**
 - Proposed a framework to integrate classical planning and DRL for general MDP problems.
 - Design an approach leveraging action models and outperforms other SOTA methods, including PPO, DQN, GAIL, and the exploration-based method.
 - Demonstrated generalizability of the agents to learn various tasks.

Explorer of Perception and Attention Lab

Jan 2020 - Aug 2021

Research Assistant with Prof. Su-Ling Yeh

- **The Influence of Long-Term Behavior on Robot Acceptance in Human-Robot Interaction**
 - Programmed robot behaviors on the Android platform for psychological experiments.
 - Implemented face recognition and expression detection using Keras.

Ganzin Technology

Jun 2020 - Mar 2021

Research Intern with Prof. Su-Ling Yeh and Prof. Shao-Yi Chien

- **Workload Research using Eye Tracking Technology**
 - Designed the procedure and instructions of psychological experiments.
 - Implemented the interfaces and programs to assess workload using an eye tracker.
 - Collaborated with Explorer of Perception and Attention Lab.

Energy-Efficient Circuits and Systems Lab

Sep 2018 - Aug 2021

Undergraduate Researcher with Prof. Tsung-Te Liu

- **Distributed Multi-Robot Formation Control**
 - Incorporated collective behavior model and RL for distributed multi-robot formation control.
 - Devised a hardware architecture that reduces the area and power consumption by 12%.
 - Outperformed previous methods in JSSC and ISSCC.
- **Energy-Efficient Hardware Design of Elliptic Curve Cryptography**
 - Improved the window algorithm of ECC hardware methods which reduces the calculation by 10%.

Honors

Pan Wen Yuan Foundation Scholarship, \$1560 for one semester

May 2023

Dean List, Top 5% based on GPA

Sep 2019

Teaching Experiences

Cornerstone EECS Design and Implementation

Feb 2021 - Jun 2023

Teaching Assistant

- Taught 72 first-year students to design Arduino autonomous cars using various electronic components.
- Gave speeches to teach students how to write progress reports in the STAR format.
- Built a website to visualize algorithm searches, enhancing students' understanding on algorithm design.

Computer Programming

Sep 2021 - Jan 2022

Teaching Assistant

- Taught 50 first-year students in lab and helped them learn C++ programming.
- Designed the course assignments, exams, and projects.

Leadership & Extracurricular Activities

Lighting System Officer

Sep 2019 - Jun 2020

Public Address Team, NTU Student Association

- Managed and arranged the auditorium stage lighting system, including the power system, digital communication networks, and more than 30 stage lighting instruments.
- Trained 15 team members to be proficient in the lighting system.
- Voluntarily provided technical support as a lighting designer for student activities and performances.