Ryan Hsiang (項達均)

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Education

National Taiwan University *Sep 2022 – Present*

B.S. Electrical Engineering

- **Courses**: Deep Learning for Computer Vision, Reinforcement Learning, Web Programming, Quantum Information and Computation

Research Experiences

AI + Science Lab *California Institute of Technology*

Summer Undergraduate Research Fellowship | Advisor: Prof. Anima Anandkumar *Feb 2025 – Present*

- Developed **LeanDojo-v2**, a comprehensive framework for AI-assisted theorem proving in Lean.
- Built an LLM fine-tuning framework for tactic generation that supports SFT, LoRA, and GRPO.
- Implemented a proof search algorithm by traversing a goal–tactic graph with DFS and the shortest-path algorithm.

Reinforcement Learning and Games Lab *Institute of Information Science, Academia Sinica*

Advisor: Prof. Ti-Rong Wu *June 2024 – Aug 2024*

- Conducted Research related to AlphaZero and Reinforcement Learning.
- Developed a reinforcement learning environment for Chess in C++.
- Trained AlphaZero, MuZero on chess endgame positions.

Projects

Curiosity and Memory in POMDP Imitation Learning *Nov 2024 – Dec 2024*

[report]

- Investigated the problem of incomplete information in a partially observable MDP.
- Integrated memory-based architectures with behavior cloning.
- Proposed a framework to facilitate exploration for the agent in partially observable environments.

Multimodal Perception and Comprehension of Corner Cases in Autonomous Driving *Nov 2024 – Dec 2024*

[poster]

- Participated in the ECCV 2024 Challenge.
- Fine-tuned the LLaVA-1.5-7b Vision-Language Model with Weight-Decomposed Low-Rank Adaptation (DoRA).
- Trained the DoRA Fine-tuned LLaVA model using Direct Preference Optimization (DPO).

Learning to Predict Quantum Dynamics *Jun 2025*

[report]

- Final project for the Quantum Computation and Information course in Spring 2025.
- Surveyed recent machine learning approaches for quantum dynamics simulation, including FNO, REFF, and classical shadows.
- Compared ML algorithms for predicting quantum dynamics in Heisenberg chains against traditional methods.

Teaching Experiences

EE3035 Web Programming *Fall 2025*

Instructor: Prof. Chung-Yang Huang

Extracurricular Activities

2025 NTUEE LightDance Software Team Leader *Oct 2023 – Mar 2025*

- Development of the LightDance Editor for light choreography using Blender, Rust, and MySQL.
- Managed a team of 13 members and a codebase of over 30000 lines of code.
- Implemented dynamic LED light effects with JavaScript.

NTUEE Student Association Information Department *Sep 2023 – Dec 2024*

- Helped maintain and develop web services for the student association, including a game for NTU's EE week and the Department's course map.
- Gave lectures on programming and backend development in Rust.

2022 IPHO National Selection Reserve Member *Mar 2022 – May 2022*

- Selected as an Alternate for the 2022 APHO national team, ranking 9th in the national selection camp.

Skills

Languages: C++, Python, Rust, JavaScript, MATLAB
Machine Learning: PyTorch
Web Programming: React.js, Next.js, Tailwind CSS, Node.js, Express.js, GraphQL, MongoDB, MySQL

Awards & Honors

BaBar SURF Fellowship, California Institute of Technology *2025*

Reviewers

NeurIPS MATH-AI Workshop *2025*