# 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, Quantum Information and Computation, Quantum Mechanics, Web Programming

## 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.

## Publications

**LeanDojo-v2: A Comprehensive Library for AI-Assisted Theorem Proving in Lean**

*NeurIPS MATH-AI Workshop 2025* [paper]

**Ryan Hsiang**, William Adkisson, Robert Joseph George, Anima Anandkumar

## Projects

**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.

**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).

## Extracurricular Activities

**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.

**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.

## Teaching Experiences

**EE3035 Web Programming** *Fall 2025*
*Instructor: Prof. Chung-Yang Huang*

## 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*