Hsin-Jui Lin (Ryan Lin)

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EDUCATION

National Taiwan Normal University (NTNU) Taipei, Taiwan
B.S. in Computer Science and Information Engineering (CSIE) *Sep. 2021 - Present*

EXPERIENCE

Research Assistant Taipei, Taiwan
Dept. of Economics, NTU by Prof. Chen-Ying Huang *Mar. 2025 - Present*

- Exploring musical rhythm's influence on economic behavior through neural oscillatory analysis.

Full-stack Developer Remote
Institute of Information Science (IIS), Academia Sinica by Dr. Ling-Jyh Chen *Sep. 2024 – Jul. 2025*

- Collaborated with a team to develop **"Hinagiku"** 🔗, an intelligent system designed to support educational discussions where **LLM chatbot agents** actively participate in Think-Pair-Share strategy in classrooms; successfully deployed with **100+ concurrent users** and this **open-source project adopted by Academia Sinica**.
- Built full-stack architecture with **SvelteKit + TypeScript**, **Firebase Firestore NoSQL** database, **Cloudflare R2 (S3-compatible) & Firebase Storage** for resource management, integrating **OpenAI Whisper & GPT** for ASR and discussion analysis.

Teaching Assistant 🎗[2] Taipei, Taiwan
National Taiwan Normal University *Sep. 2023 – Jun. 2024*

- Served for **NTNU CSIE Computer Programming I/II** courses (covering **C and Linux**), designing programming assignments and conducting weekly TA hours with team of 5 TAs.
- Developed **"cpGrader"** 🔗, reducing grading time from **8 hours to 30 minutes** for **130+ submissions** biweekly.

Research & Development Intern Taipei, Taiwan
Taipei Exchange (Information Department) *Jul. 2023 – Aug. 2023*

- Developed a **C++ QA automation framework** for financial trading systems using **QuickFIX** and **GoogleTest**, achieving **2.4x performance improvement**, optimizing FIX messages processing and routing mechanisms.
- Implemented **30+ test cases** covering multi-asset scenarios (stocks, funds, gold) with **mutex-based synchronization** to prevent race conditions on shared data structures in **concurrent FIX sessions**.
- Authored technical documentation and configuration templates with **Docker** setup for **project handover**.

Student Researcher Remote
Lin Brain Lab (UofT) x AI & Scientific Computing Lab (NTUST) by Prof. Fa-Hsuan Lin and Prof. Teng-Yi Huang *Feb. 2023 – Jun. 2023*

- Collaborated to develop **"BCGunet"** 🔗 with team for suppressing ballistocardiography (BCG) artifact from EEG-MRI data; contributed to implement **BiGRU architecture model**.

PROJECTS

Darkchess Robot: A self-learning robotic arm plays Darkchess with you in Real-World 🔗 🎗[1] **[1]**

- Implemented α-β **pruning (60% win rate vs. human)** and **self-play MCTS with DRL** Darkchess AI strategies.
- Developed **VGGNet-based model** achieving **98.9% accuracy** for Darkchess board state recognition.
- Designed **3-axis robotic arm with 3D printing, PCB design, and ESP8266** integration, achieving **85.155% operational reliability** with Flask-based WiFi remote control.

Menu Text Detection: Extract structured menu information from images into JSON 🔗

- Developed **Fine-tuned Vision Encoder-Decoder model** for document understanding task, using **PyTorch** with custom datasets and tokenizer, achieved **67.8% TED accuracy and 60.8% F1-score** on test datasets.
- Developed **"FoodMap"** 🔗 **MVSU SwiftUI + SwiftData native iOS app** to auto-generate restaurant notes.

AWARDS

🎗[1] **Merit Award (Top 3%)** in 19th Macronix Science Awards, known as the High School Nobel Prize in Taiwan.
🎗[2] **Outstanding TA Award 2× (team of 5-TAs)** from NTNU CSIE Computer Programming I & II courses.
🎗[3] **Finalist (team of 4)** at 2025 TSMC IT CareerHack: Developed AI DevOps Assistant as competition theme.

PATENTS

[1] DARK CHESS ROBOT (TWI748780B) & Robot arm gripper (TWM608235U)