YuJia Liang

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Education

National Taiwan Ocean University Keelung, Taiwan

B.S. in Computer Science and Engineering - GPA: 3.6/4.0 *Sep. 2022 – Present (EST. May 2026)*

Relevant Courses: Data Structures, Algorithms, Graph Theory Algorithms, Operating Systems, Computer Networks, Computer Organization, Digital Logic, Database Systems, Introduction to AI, Machine Learning, Generative AI, Information Security, Programming Design, iOS Development, Flutter Development, Linear Algebra, Discrete Mathematics, Probability Theory, Object-Oriented Programming

Research & Projects

Volleyball Officiating and Analytics System Nov. 2024 – present

OpenCV, Python, PyTorch — Advisor: Prof. Pei-Yi, Ding *Team size: 3*

- Designed and developed a comprehensive volleyball officiating and analytics system that not only determines accurate in/out calls but also analyzes game statistics including player scores, turnovers, and ball pass quality.
- Engineered a computer vision pipeline using OpenCV to capture and process real-time court imagery, identifying ball position relative to court boundaries and tracking player movements to enhance officiating accuracy and provide detailed game analytics.

Archon RWA Tokenization DApp 2025

React, TypeScript, Solidity, Hardhat, Ethers.js, Tailwind CSS *Team size: 1*

- Developed a comprehensive DeFi platform for Real-World Asset (RWA) tokenization featuring role-based access control (ADMIN, VERIFIER, MINTER).
- Implemented secure smart contracts for identity verification, asset lifecycle management, and dynamic ERC20 token creation, with automated deployment scripts.
- Built a modern, responsive frontend using React and TypeScript, integrating real-time wallet connectivity with MetaMask and dynamic account switching.

Image Processing Project 2025

Python, OpenCV, NumPy, scikit-image *Team size: 1*

- Implemented a complete Image Signal Processing (ISP) pipeline and developed robust 3A algorithms (Auto Exposure, Auto Focus, Auto White Balance).
- Engineered a suite of computer vision features, including edge detection, feature detection, image enhancement, noise reduction, and image segmentation.

ASL Hand Gesture Recognition App 2024

SwiftUI, CreateML *Team size: 1*

- Trained and deployed a custom machine learning model using CreateML to classify 28 distinct American Sign Language hand gestures (A-Z, Space, Delete) with high accuracy.
- Integrated a real-time camera feed into a native SwiftUI iOS application, allowing users to construct sentences from recognized gestures.
- Designed a clean, accessible, and user-friendly interface focused on improving communication for users.
- WWDC2025 Submission

SyncUp - Social Calendar App 2025

Flutter, Dart, Firebase, Google API, LLM API, RAG *Team size: 1*

- Developed a modern social calendar app with real-time sharing and friend management using Flutter and Firebase.
- Implemented location-based event suggestions and interactivity with Google Maps integration.
- Integrated Firebase Authentication, Cloud Firestore, and real-time chat features with read receipts.
- Built an AI-powered chatbot API connected with Google Gemini to intelligently generate schedules and suggest meetup opportunities based on user preferences and availability.
- Implemented RAG system to provide contextual calendar recommendations and smart event planning assistance.

Experience

ITRI Jun. 2025 – Aug. 2025

AI Image Recognition Intern, Electronics and Optoelectronics Research Laboratories *Hsinchu, Taiwan*

- Optimized a multi-task YOLO model for autonomous driving applications, achieving high-performance metrics including 99% driving area accuracy, a 97% detection recall rate (R), and a mean Average Precision (mAP@0.5) of 84%.
- Implemented image streaming and detection result transmission protocols via Ethernet using ROS to enable real-time data processing and analysis.
- Optimized YOLO object detection models for performance and efficiency using advanced pruning techniques and successfully transplanted models to target hardware.
- Supported research initiatives by reproducing and exploring other state-of-the-art (SOTA) models to benchmark and identify potential improvements.

Technical Skills

Programming Languages: Python, Java, C++, C, JavaScript, TypeScript, Swift, Dart, PHP, Solidity, SQL, HTML/CSS, MATLAB
Frameworks & Libraries: React, Node.js, Flutter, SwiftUI, PyTorch, OpenCV, NumPy, Pandas, Ethers.js, Hardhat
Tools & Platforms: Git, Docker, Firebase, Google Cloud Platform (GCP), Jupyter Notebook, Linux/Windows/MacOS, MongoDB
Languages: English (Fluent), Mandarin (Native), Japanese (JLPT N3)

Extracurricular Activities

National Taiwan Ocean University Tennis Team Member 2022 - 2023

Keelung, Taiwan

Volleyball Department Team Captain 2022 - present

Keelung, Taiwan

Hackathon Participant 2022 - present