YuJia Liang

+886 965 160 695 | ch993115@gmail.com | LinkedIn | GitHub | Taipei, Taiwan

Education

National Taiwan Ocean University Keelung, Taiwan

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

Relevant Courses: Data Structures & Algorithms, Graph Theory Algorithms, Operating Systems, Database Systems, Computer Networks, Machine Learning, Natural Language Processing, Generative AI, Object-Oriented Programming, Cyber Security, Linear Algebra, Discrete Mathematics, Probability Theory

Experience

ITRI (Industrial Technology Research Institute) Jun. 2025 – Aug. 2025

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

- Optimized multi-task YOLO model for autonomous driving, improving inference speed while maintaining driving area accuracy and detection recall
- Implemented real-time image streaming and detection result transmission via Ethernet/ROS, processing 30 FPS with sub-50ms latency
- Applied neural network pruning techniques to YOLO models for edge deployment
- Supported research initiatives by reproducing and exploring state-of-the-art (SOTA) models to benchmark performance and identify potential improvements

Research & Projects

Volleyball Performance Analysis System – Senior Capstone Nov. 2024 – Present

Python, PyTorch, YOLO, U-Net, OpenCV, React, FastAPI, ONNX Runtime, Norfair *Advisor: Prof. Pei-Yi, Ding*

- Developed comprehensive volleyball analytics system achieving 94.49% mAP@0.5 for action recognition (5 classes: serve, spike, block, receive, set) and 79.5% ball tracking accuracy
- Architected multi-model deep learning pipeline integrating U-Net for real-time ball tracking at 200+ FPS, YOLOv11m for action detection, and YOLOv8+Norfair for player tracking with 87.6% ID consistency
- Trained YOLOv11m model on 24,806-image dataset with data augmentation, achieving 94.46% precision and 91.52% recall across all action classes
- Built full-stack web application with React frontend and FastAPI backend, featuring interactive video player with drag-to-seek timeline, real-time bounding box overlays, and comprehensive analytics dashboard
- Implemented intelligent action consolidation algorithm reducing fragmented events by 45%, temporal filtering, and automated landing point detection
- Optimized model inference using ONNX Runtime for ball tracking, achieving sub-10ms latency per frame, and designed modular architecture supporting CPU/GPU/MPS execution

Ghote – AI-Powered Learning Assistant Platform Sep. 2025 – Present

Flutter, FastAPI, PostgreSQL, Firebase, Google Gemini API, Celery, Redis, RAG *Team Lead (5 members)*

- Led 5-person team building AI study platform that auto-generates notes, quizzes, and flashcards, reducing study material creation time by 90%
- Architected full-stack solution with Flutter frontend, FastAPI backend, and async document parsing pipeline using Celery workers
- Integrated Google Gemini API with RAG system for context-aware content generation, optimizing prompts to maintain free tier limits while ensuring high-quality output
- Implemented Firebase Authentication, PostgreSQL database, Cloudflare R2 storage, and deployed on Render with CI/CD via GitHub Actions

SyncUp – Social Calendar App 2025

Flutter, Dart, Firebase, Google Maps API, Google Gemini API *Individual Project*

- Developed social calendar app with real-time sharing and friend management using Flutter and Firebase
- Implemented location-based event suggestions with Google Maps integration and Firebase Authentication
- Built AI-powered chatbot connected with Google Gemini to intelligently generate schedules and suggest meetup opportunities based on user preferences

Archon RWA Tokenization DApp Jun. 2025

React, TypeScript, Solidity, Hardhat, Ethers.js, Tailwind CSS *Individual Project*

- Developed DeFi platform for Real-World Asset tokenization with role-based access control (ADMIN, VERIFIER, MINTER)

- Implemented smart contracts for identity verification, asset lifecycle management, and dynamic ERC20 token creation
- Built responsive frontend using React and TypeScript, integrating wallet connectivity with MetaMask and account switching

ASL Hand Gesture Recognition App 2024

SwiftUI, CreateML *Individual Project*

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

Image Processing Project 2025

Python, OpenCV, NumPy, scikit-image *Individual Project*

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

Technical Skills

Programming Languages: Python, Java, C++, JavaScript/TypeScript, Swift, Dart, SQL
ML/AI: PyTorch, TensorFlow, OpenCV, scikit-learn, NumPy, Pandas, CreateML
Frameworks: React, Flutter, FastAPI, Node.js, SwiftUI, Celery
Tools: Git, Docker, Firebase, AWS, GCP, PostgreSQL, Redis, Linux, Windows, macOS, ROS
Languages: Mandarin (Native), English (Fluent TOEFL 110), Japanese (JLPT N3)

Leadership & Activities

Volleyball Department Team Captain 2022 – present

Keelung, Taiwan

NTUFC Kronos Quantitative Reading Club Sep. – Dec. 2025

Hackathon Participant 2022 – present