

# YuJia Liang

+886 965 160 695 | [ch993115@gmail.com](mailto: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, OpenCV, React, TypeScript, FastAPI, Celery, Redis, Docker, pytest* 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 distributed microservices with FastAPI backend, Celery task queue, and Redis message broker; implemented WebSocket endpoints for real-time analysis progress tracking
- Built multi-model deep learning pipeline: VballNet (U-Net ONNX) for ball tracking at 200+ FPS, YOLOv11m for action detection, YOLOv8+Norfair for player tracking with 87.6% ID consistency
- Developed React/TypeScript frontend with Video.js player, Recharts analytics dashboard, interactive timeline with frame-level seeking, and real-time bounding box overlays
- Implemented trajectory filtering pipeline with velocity-based outlier removal, Gaussian smoothing, and polynomial interpolation; action consolidation algorithm reducing fragmented events by 45%
- Containerized application with Docker Compose orchestrating 5 services; configured GitHub Actions CI/CD with flake8 linting and automated builds
- Wrote comprehensive test suite using pytest with async support, achieving coverage across API endpoints, database operations, and ML inference pipelines

### Ghote Notes – Local-First AI Note-Taking App for macOS

Dec. 2024 – Present

*Tauri 2.0, Rust, React 19, TypeScript, Lexical, D3.js, Supabase, PartyKit, Yjs, Vitest*

*Individual Project*

- Built privacy-focused macOS note-taking app using Tauri 2.0 (Rust) with React 19 frontend, featuring vault-based storage with Obsidian-compatible markdown files
- Implemented rich text editing with Facebook's Lexical framework, supporting slash commands, KaTeX math equations, Mermaid diagrams, and bidirectional markdown sync
- Developed interactive knowledge graph using D3.js with wiki-style `[[link]]` parsing, enabling visual exploration of note relationships
- Built local RAG system using Transformers.js with all-MiniLM-L12-v2 embeddings (384-dim) for semantic search, featuring smart chunking and cosine similarity ranking
- Implemented real-time collaboration via PartyKit WebSocket server with Yjs CRDT for conflict-free concurrent editing and cursor presence
- Integrated Supabase cloud sync with "Local Wins" conflict resolution, PostgreSQL RPC functions, and multi-device vault synchronization
- Achieved 88.75% test coverage with 521 unit tests using Vitest; built comprehensive Tauri API mocks for file system, dialogs, and path utilities

### 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)

**TECHNICAL SKILLS**

**Programming Languages:** Python, Java, C++, JavaScript/TypeScript, Rust, Swift, Dart, SQL  
**ML/AI:** PyTorch, TensorFlow, OpenCV, ONNX Runtime, scikit-learn, NumPy, Pandas, CreateML, Transformers.js, Norfair  
**Frameworks:** React, Flutter, FastAPI, Node.js, SwiftUI, Tauri, Lexical, Celery, Video.js, Recharts, D3.js  
**DevOps & Tools:** Git, Docker, GitHub Actions, pytest, Vitest, Redis, PostgreSQL, SQLite, Supabase, Firebase  
**Languages:** Mandarin (Native), English (Fluent TOEFL 110), Japanese (JLPT N3)

**LEADERSHIP & ACTIVITIES**

<b>Volleyball Department Team Captain</b>	2022 – present <i>Keelung, Taiwan</i>
<b>NTUFC Kronos Quantitative Reading Club</b>	Sep. – Dec. 2025
<b>Hackathon Participant</b>	2022 – present