

YuJia Liang

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EDUCATION

National Taiwan Ocean University <i>B.S. in Computer Science and Engineering - GPA: 3.6/4.0</i> 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	Keelung, Taiwan <i>Sep. 2022 – May 2026 (Expected)</i>
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EXPERIENCE

ITRI (Industrial Technology Research Institute) <i>AI Image Recognition Intern, Electronics and Optoelectronics Research Laboratories</i>	Jun. 2025 – Aug. 2025 <i>Hsinchu, Taiwan</i>
<ul style="list-style-type: none">Optimized multi-task YOLO model for autonomous driving, improving inference speed while maintaining driving area accuracy and detection recallImplemented real-time image streaming and detection result transmission via Ethernet/ROS, processing 30 FPS with sub-50ms latencyApplied neural network pruning techniques to YOLO models for edge deploymentSupported 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 <i>Python, PyTorch, YOLO, OpenCV, React, TypeScript, FastAPI, Celery, Redis, Docker, pytest Advisor: Prof. Pei-Yi, Ding</i>	Nov. 2024 – Present
<ul style="list-style-type: none">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 accuracyArchitected distributed microservices with FastAPI backend, Celery task queue, and Redis message broker; implemented WebSocket endpoints for real-time analysis progress trackingBuilt 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 consistencyDeveloped React/TypeScript frontend with Video.js player, Recharts analytics dashboard, interactive timeline with frame-level seeking, and real-time bounding box overlaysImplemented 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 buildsWrote 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 <i>Tauri 2.0, Rust, React 19, TypeScript, Lexical, D3.js, Supabase, PartyKit, Yjs, Vitest</i>	Dec. 2024 – Present <i>Individual Project</i>
<ul style="list-style-type: none">Built privacy-focused macOS note-taking app using Tauri 2.0 (Rust) with React 19 frontend, featuring vault-based storage with Obsidian-compatible markdown filesImplemented rich text editing with Facebook's Lexical framework, supporting slash commands, KaTeX math equations, Mermaid diagrams, and bidirectional markdown syncDeveloped interactive knowledge graph using D3.js with wiki-style [[link]] parsing, enabling visual exploration of note relationshipsBuilt local RAG system using Transformers.js with all-MiniLM-L12-v2 embeddings (384-dim) for semantic search, featuring smart chunking and cosine similarity rankingImplemented real-time collaboration via PartyKit WebSocket server with Yjs CRDT for conflict-free concurrent editing and cursor presenceIntegrated Supabase cloud sync with "Local Wins" conflict resolution, PostgreSQL RPC functions, and multi-device vault synchronizationAchieved 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 <i>Flutter, Dart, Firebase, Google Maps API, Google Gemini API</i>	2025 <i>Individual Project</i>
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- 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

Volleyball Department Team Captain

2022 – present

Keelung, Taiwan

NTUFC Kronos Quantitative Reading Club

Sep. – Dec. 2025

Hackathon Participant

2022 – present