**Yimian Liu**

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| EDUCATION |

**Cornell University**  Aug. 2022 - Dec. 2023

Master of Engineering in ComputerEngineering **GPA: 3.94/4.00** Ithaca, NY

Relevant coursework: Deep Learning (A+), Computer Vision (A+), Machine Learning, Distributed Computing Principles, Computer Networks, Embedded Operating System, Digital Systems with Microcontrollers, UNIX Tools and Scripting

**University of Liverpool**  Sept. 2017 - July 2021

Bachelor of Engineering with Honors in Electrical and ElectronicEngineering **GPA: 3.83/4.00** Liverpool, UK

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| TECHNICAL PROFICIENCIES |

* Programming Languages:Python, TypeScript/JavaScript, C, C++, HTML/CSS, Java, Go, Rust, SQL, Bash/Shell
* Frameworks: React, Node.js, NestJS, FastAPI, TensorFlow, MySQL, Redis, MongoDB
* Tools / Skills: Git, TCP, gRPC, Docker, Kubernetes, Nginx, Kafka, AWS, Linux, OOD, DevOps

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| WORK EXPERIENCE |

**Full Stack Software Engineer** | **Elseware Capital** | New York, NY (Remote) Jan. 2024 - Present

[Web Development, TypeScript, Python, React, MySQL, AWS (EC2, RDS, S3), RESTful API, DevOps]

* Led full-stack development of a real estate trading web platform using React, NestJS, FastAPI, and MySQL.
* Collaborated with UI/UX designers, engineered a responsive frontend using React and Less, supporting both desktop and mobile screens, integrating trading data visualization with Chart.js and map features using Leaflet.
* Designed and implemented a robust user system with optimized database schema and JWT-based authentication.
* Proposed and developed highly efficient RESTful APIs using asynchronous Python, resulting in a 60% reduction in response times and supporting 1000+ concurrent users.
* Established CI/CD pipelines using GitHub Actions, reducing deployment time by 75% and achieving 99.9% uptime.

**Software Engineer Intern** | **Guzman Energy** | New York, NY July 2023 - Dec. 2023

[App Development, TypeScript, React Native, Redux, Redis, RESTful API]

* Developed a cross-platform (iOS & Android) AI scribing mobile APP from scratch using React Native, based on the UI/UX team’s design on Figma.
* Architected state management system using Redux, reducing API calls by 60% and enhancing app responsiveness.
* Optimized app performance using custom hooks and caching techniques, achieving 80% render time reduction.
* Implemented a two-factor authentication system using email and SMS, with temporary passcodes stored in Redis.
* Led intern team, established a Git workflow and configured TypeScript ESLint for improved team collaboration.

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| PROJECTS |

**Full-stack Development of Access Control System**|Cornell University

[Embedded System, Linux, Python, JavaScript, React, HTML, CSS, MariaDB, Multi-threading, Multi-processing]

* Engineered a Raspberry Pi access control system with facial recognition, remote management, and activity logging.
* Implemented multi-processing architecture across 4 CPU cores, achieving 5x improvement in facial recognition speed (10 fps).
* Developed a full-stack solution: React-based frontend (self-taught in 1 week), Flask API gateway, and MariaDB database, featuring real-time video streaming, remote control, and activity monitoring.
* Integrated hardware components (Pi camera, servo motor, PiTFT) and created an object-oriented touchscreen UI using Pygame for local system interaction.

**Kubernetes-Based Microservices Platform with Advanced Observability** | Personal Project

[Cloud Infra, Linux, Docker, Kubernetes, Nginx, Prometheus, Kafka, Elasticsearch]

* Architected a high-availability Kubernetes cluster (3 Debian servers) for containerized web services using Helm.
* Implemented Nginx Ingress with DNS-based routing for load balancing, configured Prometheus with Grafana for real-time metric monitoring and alerting.
* Established centralized logging system using Filebeat to collect node and Docker logs, Kafka for data streaming, Logstash for filtering before storage in Elasticsearch, and Kibana for log visualization and analysis.

**Distributed, Linearizable, Sharded Key-Value Database**|Cornell University

[Distributed Computing, Database, Java, Paxos, Raft]

* Developed a fault-tolerant, sharded key/value store in Java, implementing Multi-Paxos and then evolving it to an optimized Raft-like consensus algorithm for enhanced performance.
* Engineered a two-phase commit mechanism for atomic cross-shard transactions, ensuring strong consistency in a horizontally scalable system.

**Plant Disease Detection using Deep Learning** | Cornell University

[Machine Learning, TensorFlow, Keras, Pandas, NumPy]

* Designed and fine-tuned a DenseNet121-based CNN using transfer learning and data augmentation, achieving 99% accuracy in classifying 9 tomato diseases from 54K images.
* Trained on GPU with caching and prefetching; evaluated with ROC curves, precision-recall, and confusion matrices.

**Boid Flocking Simulation on RP2040** **with VGA Output** | Cornell University

[Microcontroller, C, C++, Multi-threading]

* Engineered a 550-agent boid flocking algorithm on RP2040, rendering real-time VGA output at 30 FPS.
* Optimized performance through dual-core parallelization and overclocking, implementing multi-threading, inter-core communication, concurrent UI, and fine-tuned PIO/DMA for VGA output.