

# Andy Liu

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## EDUCATION

### University of California, Irvine

*Master of Embedded and Cyber-physical Systems*

Coursework: IoT Systems & Software, Embedded System Modeling and Design, Wireless Sensors and Actuator Networks

Irvine, CA

Sep. 2024-Present

### National Yang Ming Chiao Tung University

*Bachelor of Science in Computer Science and Industrial Engineering & Management*

Hsinchu, Taiwan

Sep. 2018-Jun. 2023

- GPA: 3.6/4.3 | Last 3 years GPA: **4.0/4.3** | CS GPA: **4.13/4.3**

## EXPERIENCE

### AdvanTech, Inc.

*Software R&D Intern, Vision AI Team, Industrial Cloud Video Group (ICVG)*

Taipei, Taiwan

Jun. 2023-Jan. 2024

- Led development of a data augmentation module using **diffusion model** and **deep generative models** on the company's ML platform, revolutionizing high-quality training data generation from industrial datasets.
- Successfully achieved improvements in AOI (Automated Optical Inspection) system for PCB, reducing false negatives by 15% and false positives by 50% on defect detection performance.

### The Information Research Lab of Industrial Technology Research Institute

*Software Engineer Intern*

Hsinchu, Taiwan

Nov. 2022-May 2023

- Developed **shell scripts** to **automate service deployment** for Docker containers within GCP Kubernetes clusters, significantly reducing manual intervention and minimizing deployment errors.
- **Diagnosed and resolved errors** during deployment, leading to **smoother CI/CD pipelines**.
- Compiled documentation on common deployment issues and solutions. ([Report Page](#))

## STARTUP INITIATIVE

### LipoOut!

*AI & Backend Engineer*

Taipei, Taiwan

Sep. 2024-Present

- Engineered an AI fitness platform leveraging **FastAPI**, **PostgreSQL**, and a Telegram bot driven by **LLM** to provide personalized nutrition guidance, automated food analysis, and health-to-earn engagement models.
- Collaborated with cross-functional teams to refine product vision, streamline user flows, and chart future growth through IoT integration, token rewards, and Web2.5 accessibility for sustained retention. ([Link](#))

## SKILLS

**Programming:** C/C++, SystemC, Python, Java, ShellScript, JavaScript, Bash, Solidity

**Framework & Tools:** Linux, OpenCV, Git, GDB, Powershell, Pytorch, Node.js, Postgres, TCP/IP, GCP, AWS, Kubernetes, Jenkins, FastAPI, Distributed System, Multi-threaded/Object-Oriented Programming

## PROJECTS

### GenAI Conditional Image Generation w/ Multi-ControlNet ([Github Link](#))

Mar. 2023-Jun. 2023

- Enhanced the ControlNet framework by adding an input feature to manipulate character poses, significantly expanding the model's capabilities in generating diverse and complex visual outputs.
- **Incorporated ControlNet with Dreambooth**, enabling the encoding of unique identifiers in text-to-image models to recognize new subjects and styles.

### Real-Time Environmental Data Monitoring System ([Github Link](#))

Apr. 2023-Jun. 2023

- Developed a full-stack Meteorological Platform with frontend **React**, backend **RESTful API** and **Selenium** crawler, working with **TSMC** engineers to monitor water levels, electricity loads, and seismic activities.
- Managed deployment on **GCP** by **Kubernetes** to 99.8% uptime and utilized **Grafana** for **real-time monitoring**.

### Instruction-Level Debugger ([Github Link](#))

Mar. 2023-May 2023

- Implemented a C debugger using the ptrace interface, enabling step-through debugging at the assembly level.
- Developed a 'Time Travel' feature with 30% decrease in debug time via Checkpoint/Restore In Userspace (CRIU).

### Movie Recommendation System ([Github Link](#))

Oct. 2022-Dec. 2022

- Utilized **Matrix Factorization via ALS**, **item-based collaborative filtering**, and achieved a 15.9% efficiency boost over the baseline KNN model.