Chin Hao, Lo

Urbana, IL 61801
Email: hankluo6@gmail.com | Github: hankluo6 | LinkedIn: Chin Hao, Lo | Phone: +886931107620

Education

University of Illinois Urbana-Champaign — Champaign, IL
Professional Master of Computer Science — *Aug 2023 - present*

National Cheng Kung University — Tainan, Taiwan
B.S. in Computer Science and Information Engineering — *Sep 2018 - June 2022*

GPA: 4.17/4.3 (3.97/4.0) **Rank**: 1/56 in the class, 2/121 in the department
Awards: Outstanding Student for the Academic Achievement (2018 - 2022)

Work Experience

PAIA Technology Inc. — Tainan, Taiwan
Back-End Engineer Intern — *Sep 2021 - Feb 2022*

- Managed and maintained the back-end of a dynamic website serving **3500** registered users using Django and Docker.
- Developed around **30** major APIs to seamlessly connect the front-end interface with the back-end functionalities.
- Reduced **15%** of data transfer latency by means of updating the procedure of WebSocket in Docker containers.
- Ensuring the correctness of the application by achieving **85%** test coverage through comprehensive tests for APIs.
- Enhanced the scalability and robustness of the website to support concurrent execution of over **100** machine learning programs with shorter response times through integrating RabbitMQ with the back-end infrastructure.

Mediatek — Hsinchu, Taiwan
Software Engineer Intern — *Jun 2021 - Aug 2021*

- Reduced experiment time of performance analysis from **2 hours to 30 minutes** by developing a simulator that models the mechanism of load-tracking and CPU performance scaling used in MediaTek and Qualcomm's chips.
- Found the performance bottlenecks in the cell phone when running multiple tasks by conducting comprehensive benchmarks and experiments to compare load-tracking algorithms (WALT, PELT) implemented in different chips.
- Presented a **15 pages** technical report to other teams by explaining the detail of the load-tracking algorithm.

Project

Mimalloc [Linux Kernel / Valgrind / Performance Analysis] **[**Code**]**

- A contributor to Mimalloc, a general-purpose allocator used in **most of the services** in Microsoft (Bing, Azure).
- Increased flexibility by replacing hard-coded page size with a dynamic query for retrieving the large OS page size.
- Improve performance by over **80%** via utilizing virtual dynamic shared object (vDSO) to significantly reduce getcpu time.
- Pre-allocate memory using the Linux flag to reduce **96%** of page faults and optimize memory allocation during runtime.
- Fixed an issue about the installation path using the correct path in CMake and linking to the correct shared library.
- Wrote a report to present the advantages/disadvantages of Mimalloc and other allocators (tcmalloc, jemalloc).

Machine Learning Helicopter Simulator with VR [Unity3D / ML-Agents / Virtual Reality] **[**Code**]**

- Built an immersive helicopter simulator with Virtual Reality integration to visualize algorithm performance.
- Designed a real-time communication framework that can use models in the Python library to interact in Unity3D.
- Found a solution for helicopters by fine-tuning hyperparameters in ML algorithms (XGBoost, RandomForest) and RL techniques (Deep Q Learning, Proximal Policy Optimization) with **512 hidden nodes** in a compact network structure.

PitifulVM [C++ / Java Virtual Machine] **[**Code**]**

- Devised a Java Virtual Machine with **microsecond-scale** startup time, and support fundamental Java functionalities.
- Facilitating seamless execution of Java bytecode within the JVM by implementing critical components in JVM, such as the ClassLoader, Java Native Interface (JNI), Constant Pool, Bootstrap Method, and OOP characteristics.
- Guaranteed the reliability of the JVM's functionalities by achieving **81%** line coverage using gcov for coverage analysis.

Technical Expertise

Programming Language: C, C++, C#, Python, Java, JavaScript, SQL, Shell Script, Verilog, Matlab
Framework: Pytorch, NumPy, Pandas, Qt, Unity3D, Docker, OpenCV, OpenGL, CUDA, Django, Flask
Technologies: Machine Learning, Deep Learning, Reinforcement Learning, Computer Vision, Computer Graphics, Linux, Git, Database, Data Analysis