TIANYI LI

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EDUCATION

Carnegie Mellon University, Pittsburgh, PA *Expected: May 2024*
Master of Science, Mobile and IoT Engineering *(**Concentration:** Machine Learning Systems)* **GPA:** 4.00/4.00

- ***Coursework:*** *Computer Systems, Storage Systems, Deep Learning Systems, Software Construction, Distributed Systems, Computer Graphics, Large-Scale Machine Learning*

University of Michigan, Ann Arbor, MI *Jul. 2022*
Bachelor of Science Engineering, Computer Science | Minor in Mathematics **GPA:** 3.95/4.00

- ***Coursework:*** *Data Structures & Algorithms, Machine Learning, Operating Systems, Database Management, Web Systems, Parallel Programming, Computer Vision, Computer Architecture*

Shanghai Jiao Tong University, Shanghai, China *Jul. 2022*
Bachelor of Science Engineering, Electrical and Computer Engineering **GPA:** 3.63/4.00

SKILLS

Programming Languages: *(Proficient)* C, C++, Java, Python; *(Familiar)* Go, HTML, JavaScript, SQL
Framework and Tools: AWS, Linux, Shell, Git, PyTorch, LaTeX, Unity, CUDA, Hadoop

SELECTED PROJECTS

Distributed System Implementation, *Term Project* *Jan. 2023 - Mar. 2023*

- Implemented a transparent RPC interface for remote client file operations.
- Developed a **distributed file-caching proxy** that ensures data consistency for concurrent clients.
- Built an AWS-alike **elastic machine registry** that distributes resources for scalable web services.

Graphics Software (Scotty3D) Implementation*, Term Project* *Jan. 2023 - Mar. 2023*

- Constructed a **Rasterization Pipeline** to render super-sampled images in a framebuffer.
- Established an interactive tool that supports half-edge **mesh edits** and global mesh operations.
- Developed a high-quality **path tracing** renderer with ray-scene queries and light bounces.

Deep Learning System Implementation, *Term Project* *Sep. 2022 - Dec. 2022*

- Implemented **Auto-differentiation** operators with integrated support for gradient descent.
- Developed a Naïve **PyTorch** handling parameterized layers, loss functions, data loaders and optimizers.
- Built from scratch a **NumPy** library with **GPU accelerations** as a backend for the deep learning modules.

Operating System Implementation, *Team Leader* *Jan. 2022 - Apr. 2022*

- Implemented threads, mutex, and semaphores on multiprocessor systems using **C++**.
- Developed a **Pager System** to manage virtual memory in a POSIX simulated infrastructure.
- Created a hierarchical **Network File Server** handling concurrency, user security, and malicious attacks.

Web System Design, *Team Leader* *Jan. 2021 - Apr. 2021*

- Designed an **Instagram clone**, consisting of a frontend client-dynamic page interface with **JavaScript**, **HTML**, and **CSS**, along with a backend database and privacy management system via **Flask** and **SQLite**.
- Established a **Search Engine** based on **TF-IDF** with web data processed by a self-designed **MapReduce**.
- Applied **IaaS** and **PaaS** to scale the web applications.

WORKING EXPERIENCE

Shanghai Jiao Tong University, *Intern* *May 2021 - Aug. 2021*

- Accomplished a De Bruijn decoder utilizing **Computer Vision** for orientation of 1mm resolution.
- Engineered a **VR Simulator** with a six DOF coordinate resolver within millisecond response.

Shanghai Jiao Tong University*, Vice Minister of Alliance Department* *Jun. 2019 - May 2020*

- Organized events and investigations to speak up for students and minorities.