MAO LI

(+1) 619-381-1639 | maoli@berkeley.edu | https://li-mao.net

EDUCATION

University of California, Berkeley   **08/2021 – 05/2022**

Master of Engineering in EECS, Data Science and System track, GPA: **3.91/4.0**

Honors: Received **20,000 dollars** Fung Institute Leadership Scholarship

Selected Coursework: System Design, Parallel Computing, Data Analysis and Machine Learning

University of California, San Diego   **09/2016 – 06/2020**

Bachelor of Science in Computer Science, GPA: **3.96/4.0**, ranked **top 2%** of the class

Honors: **Summa Cum Laude**, member of Tau Beta Pi and Phi Beta Kappa

Selected Coursework: Data Structure and Algorithm, Software Engineering, Network, Operating System, Database

EXPERIENCE

Research Assistant | UC Berkeley ACCDA Capstone Project   **08/2021 – 05/2022**
- Researched on adapting neural networks to unseen domains, guided by prof. Alberto Sangiovanni-Vincentelli
- Implemented entropy-weighted, multi-anchor sample selection strategies that yield informative unseen target data
- Designed continuous, continual adaptation algorithms with replay-buffer to accumulate learned knowledge
- Achieved **25%** mIoU improvement and built the project website with **Bootstrap**/AWS to showcase results

Software Engineering Intern | SV Summit Inc.   **07/2019 – 09/2019**
- Developed an online learning management system for technical training and job placement following MVC
- Designed data scheme, managed platform data in MS **SQL**, and implemented ORM with **SQLAlechmy**
- Implemented backend data server using Python **Flask** and built **REST** APIs for front end client
- Built modularized user interface with **React** and Material UI and handled data flow with Redux State Container
- Deployed on **AWS** EC2 with **Nginx**, configured reverse proxy load balancer to improve QPS by **37%**

President | UC San Diego Triple C   **03/2019 – 06/2020**
- Led Triple C, one of UCSD's largest student incubators which consists of **100**+ members and **12**+ CS/DS projects
- Organized coding parties, tech workshops and internal career fairs to foster geek and entrepreneur culture
- Collaborated with leadership team to tunnel academic, industrial, and financial resources for each project's needs

PROJECTS

Parallel QPSK Demodulator (C++, Python)   **01/2022 – 05/2022**
- Optimized a BLAS-inspired matrix multiply kernel through blocking, copy optimization and SIMD instructions
- Utilized **OpenMP**, MPI, and **CUDA** GPU to parallelize waves multiplication and mapping in QPSK algorithms
- Analyzed the performance and efficiency of these approaches and demonstrated CUDA achieved **600x** speed up

Simple Router (C++, Mininet)   **03/2020 – 06/2020**
- Built an internet router in C++ that routes packets between Mininet's emulated hosts, and tested with Wireshark
- Developed logic to handle Ethernet packets, forwards UDP/TCPs, generates ICMPs, sends, and replies to ARPs
- Designed and implemented a queue-based ARP cache with timed invalidation, improving performance by **50%+**

CNN Optimization (C++)   **01/2020 – 03/2020**
- Performed memory and runtime optimization for a simplified version of a deep neural network named AlexNet
- Used gprof profiler to measure each layer's runtime and analyzed the assembly compiled by varied C compilers
- Applied OpenMP multi-threading, loop re-ordering and tiling, and vectorization to achieve over **7x** speedup

UMIX OS (C)   **01/2019 – 03/2019**
- Implemented context switch, scheduler, synchronization, and thread management for prof. Pasquale's UMIX OS
- Built FIFO, LIFO, Proportional and Round Robin schedulers with customized list- and map-based structures
- Designed Semaphores and shared memory for processes to avoid busy waiting and prevent race conditions
- Developed thread initiation, yielding, scheduling, and exiting mechanisms to support general multi-threading

SKILLS

Programming Languages: Java, Python, C++, SQL, HTML/CSS, JavaScript

Skills and Framework: Web development with Flask, Node.js, MySQL, AWS, React and HTML/CSS/JavaScript;
Machine Learning with Pandas, NumPy, PyTorch and Scikit-learn; Proficient in Unix environment and Git workflow