Selina Li

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Education

University of Michigan–Ann Arbor Apr 2024 (Expected)

Bachelor of Science in Computer Science & Neuroscience *GPA: 3.98/4*

- **Coursework**: Operating Systems, Web Systems, Machine Learning, Database Management Systems, Data Structure and Algorithms

Technical Skills

Languages: Python, C/C#/C++, JavaScript, SQL/NoSQL, Shell Bash, Verilog, Java, MATLAB
Tools: PyTorch, Docker, React, RESTful APIs, Node.js, MongoDB, MySQL, GraphQL, AWS, Git, Linux/Unix

Research & Work Experience

Research Assistant (Software/Machine Learning) May 2023 – Present

UMich Electrical and Computer Engineering, Lab of Integrated Brain Imaging *Ann Arbor, MI*

- Developed a **Python** framework for foundation models in representation learning of fMRI medical images, accepted to OHBM 2024.
- Designed and implemented interfaces for 5+ **PyTorch** models, including Transformers (BERT) and AutoEncoders, based on training scripts from ML engineer, streamlined usage and training via **object-oriented APIs**.
- Built **Docker** container to deliver package, integrating existing CLI tools, core models, and data management.

Machine Learning Research Intern Jan 2021 – Aug 2021

Chinese Institute for Brain Research, Cui Lab (Computational Neuroimaging) *Beijing, China*

- Scaled unsupervised matrix decomposition models to generate brain networks for precision health project, applied NMF on 1,200+ human participants in **MATLAB**, submitted to **Nature BME** (IF=29) as lead author.
- Automated analysis of 80TB timeseries data on GPU cluster by creating custom **Shell** scripts for **Slurm** batches.

Simulation Intern Aug 2020 – Oct 2020

TuSimple – Autonomous Driving *Beijing, China*

- Built and verified 250+ edge case simulations on Triton, identified safety risks in 70% of cases as **JIRA** tickets.
- Troubleshooted 7 **frontend** bugs in beta version simulator, and created a user **documentation**.
- Enhanced self-driving reliability by 14% for scenarios like highway merges and grouped obstacles in road tests.

Technical Projects

Search Engine | *Python, Hadoop, React, RESTful APIs, SQLite, AWS*

- Implemented a fault-tolerant **Hadoop MapReduce** framework via **TCP/UDP sockets**, designed a **MapReduce** pipeline of text (tf-idf) and link analysis (PageRank) to generate an Inverted Index.
- Developed an Index Server to process queries and send **JSON**-format results via **REST APIs**, and a Search Server making **parallel API requests** to display results using **React** and **SQLite**, deployed on **AWS EC2**.

Instagram Clone | *React, Flask, REST API, AWS, SQL, MongoDB*

- Developed a full-stack social media web app with real-time feed using **React**, **Flask**, and **REST APIs**.
- Engineered the app's **relational database**, designed a schema of 13 tables and built **SQL** queries in Python API to power 9 features like friend suggestions, top-trending posts, and nearby events.
- Migrated app data to **MongoDB Atlas** for flexibility, translated queries to **NoSQL** in **JavaScript** syntax.

Network File Server | *C++* | Multi-threaded file system with file-grained locking supported by TCP sockets

Threading Library | *C++* | User-level infrastructure for thread-safe, high-throughput CPU scheduling

Pipelining CPU | *Verilog* | Multi-cycle CPU supporting 50+ MIPS instructions, capable of executing C programs

Activities & Leadership

Brakes Lead - AERO Racing, Designed and manufactured **FSAE** electric car pedals (National Top 10). 2019-2020
Course Assitant for EECS 484 (Database Management Systems) 2023
Member of Grace Hopper Celebration 2023, Rewriting the Code, Girls in EECS.