

Sarim Aleem

281-904-5071 | sarimaleem99@gmail.com | [linkedin.com/in/sarim-aleem](https://www.linkedin.com/in/sarim-aleem) | github.com/sarimaleem

EDUCATION

University of Texas at Austin

Bachelor of Science in Computer Science, Minor in Arabic

Austin, TX

Aug. 2020 – Dec 2023

EXPERIENCE

Software Development Intern

Adobe

May 2023 – Aug 2023

San Jose, CA

- TODO: Make this not garbage
- Developed a real-time model management system (MMS) for efficient parameter fine-tuning of machine learning models, improving storage and load efficiency.
- Implemented an asynchronous Python web server using FastAPI to accept, process, and update the status of training jobs, enhancing system responsiveness and user experience.
- Integrated the server with PostgreSQL to store job information, and employed Gunicorn for scalable multi-worker support.
- Designed a system allowing users to upload custom code for training their models and storing fine-tuned layers into the MMS.
- Created a Python library, mms-sdk, providing four primary functions for uploading and retrieving model layers either as binary data or from a folder.
- Utilized Azure Blob Storage for binary storage, alongside file system and shared memory cache for efficient data handling and retrieval.
- Introduced Docker and Docker-compose for ease of startup and ensured system deployment using Kubernetes.
- Leveraged Redis cache for efficient file retrieval, reducing dependency on Azure Blob Storage and enhancing system performance.
- Benchmarked various caching strategies to optimize data retrieval performance given diverse file sizes and concurrent access in Redis and the file system, presenting the results via Matplotlib.
- Authored comprehensive documentation for the MMS and mms-sdk, aiding in system understanding and usage.
- Constructed Miro diagrams to illustrate code workflows, state changes, and error handling scenarios, facilitating team communication and code comprehension.

Software Development Intern

Fujitsu Network Communications

Jun 2022 – Aug 2022

Dallas, TX

- Developed web client in Java Spring to migrate network element data to CPS database from MongoDB
- Created CPS database schema to store NETCONF/RESTCONF data in YANG
- Configured network bridge in Docker files to enable cross-communication between 15+ microservices
- Migrated southbound interface from direct drivers to a software defined network controller
- Wrote bash scripts to automate container deployment and test REST endpoints

Teaching Assistant

University of Texas at Austin

Aug 2022 – Dec 2022

Austin, TX

- TODO

Research Intern

Baylor College of Medicine

Jan 2021 – Aug 2021

Houston, TX

- Built computer vision model in C++ to analyze mice pupil dilation size, 50x faster than deep learning model
- Programmed Tkinter GUI to edit audio files based on signal patterns and spectrogram
- Developed Python library to analyze and visualize pupil dilation of mice using Pandas and Matplotlib

PROJECTS

Fluid Simulator | *C++, OpenGL*

- TODO

Ray tracer | *C++*

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Neural Network Transformer | *Python, PyTorch*

- Implemented transformer encoder from scratch using pytorch
- Measured performance of transformer by creating perplexity

Distributed Key-Value Store with Load Balancing | *Java, Distributed Systems*

- Created linearizable key value store with replicates data with fault tolerance using paxos
- Load balanced key/value workloads using sharded paxos replica groups

PintOS Operating System | *C, Concurrency, Operating Systems*

- Implemented operating system with thread priority scheduling, system calls, virtual memory, and an EXT file system
- Debugged race conditions, deadlocks, memory errors, and other bugs using GDB

Multiplayer Gomoku with AI | *Javascript, Express, Web Sockets*

- Created a multiplayer website with communication through websockets
- Implemented single player mode with AI using minimax with alpha beta pruning

TECHNICAL SKILLS

Languages: Java, Typescript/Javascript, C, C++, Python, Bash, SQL, HTML/CSS

Technology: MongoDB, Postgres, Docker, Kubernetes, Spring

Libraries: SQLAlchemy, Numpy, PyTorch :

ACTIVITIES

Texas Wrestling: Competed in wrestling tournaments

Central Texas Model UN: Helped organize Model UN conference for high schoolers

Advancing UT Technology: Team leader for social media website to connect UT students