Sarim Aleem

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Education

University of Texas at Austin Dec 2023

Bachelor of Science in Computer Science, Minor in Arabic *GPA: 3.86/4.0*

- **Relevant Coursework**: Distributed Computing, Operating Systems, Computer Graphics, Natural Language Processing, Machine Learning, Computer Networks, Algorithms, Compilers, Computer Architecture
- **Teaching Assistant**: Elements of Computers and Programming (2022), Elements of Software Design (2023)

Experience

Adobe May 2023 – Aug 2023

Software Engineer Intern *San Jose, CA*

- Created and deployed a real-time distributed ML pipeline to store and retrieve fine-tune layers for 15,000+ models
- Developed a FastAPI webserver to execute training and inference jobs, achieved performance and resilience against connection outages via asynchrony and multithreading
- Integrated PostgreSQL to store metadata about asynchronous jobs and fine-tune layers
- Benchmarked multiple caching strategies for efficient storage and retrieval of fine-tune layers, including: Redis, Azure Blob Storage, native file system, and interprocess shared memory buffer
- Containerized application using Docker and deployed scalably with Kubernetes

Fujitsu Network Communications Jun 2022 – Aug 2022

Software Engineer Intern *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 shell scripts to automate container deployment and test REST endpoints

Baylor College of Medicine Jan 2021 – Aug 2021

Research Intern *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, Computer Graphics*

- Created interactive 2D fluid simulator for incompressible fluids
- Implemented fast iterative solver of simplified Navier-Stokes equations
- Visualized velocity fields by creating real-time vector field graph

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

- Created linearizable key value store that replicates data with fault tolerance using paxos
- Load balanced key-value workloads using sharded paxos replica groups
- Verified correctness of algorithm with exhaustive model checking

Neural Network Transformer Encoder | *Python, PyTorch*

- Implemented transfomer encoder from scratch using PyTorch
- Measured entropy of transformer by using perplexity

Fine-tuned Natural Language Inference Model | *Python, PyTorch*

- Fine-tuned pre-trained ELECTRA language model for natural language inference
- Used dataset cartography to optimize training examples and increase accuracy
- Created contrast sets to evaluate robustness of model

Skills

Languages: Java, Typescript/Javascript, C, C++, Python, Bash, SQL, HTML/CSS
Technology: MongoDB, PostgreSQL, Azure, Docker, Spring, Numpy, PyTorch
Activities: Texas Wrestling, Central Texas Model UN