Saad Mufti

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Objective

Computer fanatic with an appetite for hard problems. Highly adaptive, stress tolerant. Diverse background in embedded/web/cloud software development, ML applications. **Interest in silicon engineering, RTL design, reinforcement learning.**

Education

Georgia Institute of Technology | Atlanta, GA   *Aug 2022 – Present*
Bachelor of Science in Computer Engineering, GPA 4.0   *Expected Graduation (After MS): May 2025*

Worcester Polytechnic Institute | Worcester, MA   *Aug 2021 – Jun 2022*
Transfer with 90 Credit Hours, GPA 4.0 / 4.0

Skills

Programming: Python, C/C++, SystemVerilog/Verilog/VHDL, Tcl, JavaScript/Node.js, MATLAB, Java, SQL, Swift, Kotlin
Platforms: RISC-V, Intel x86, AWS (EC2, Load Balancing), GCP (Cloud Run, Firebase, Cloud Functions, App Engine)
Hardware: Nvidia Jetson, Raspberry Pi, ARM mbed microcontroller, FPGAs, oscilloscope, logic analyzer, TI MSP430, Arduino
Software: Vivado, Altera Quartus, PyTorch/Tensorflow, Synopsys VCS/DVE, Docker, Cadence Virtuoso, Android Studio, Git, Flask

Experience

Georgia Tech | Atlanta, GA
RISC-V Processor Design + Tapeout   *Aug 2023 – May 2024*
- Design and verification of an SoC including RISC-V processor, UART, SPI, CORDIC modules, using 65 nm TSMC PDK.
- Theory, design, verification, test of fabricated synchronous CMOS digital circuit. Using synthesis, autoplace and route (SAPR) as industry standard tools.

Tektronix Inc. | Beaverton, OR   *Jun – Aug 2023*
Applications Engineering Intern
- Researched and validated a framework (using mmWave FMCW + CNNs) for federated learning on beam prediction using low power devices (Nvidia Jetson) for test + measurement.
- Optimized training routine (in PyTorch) to accommodate resource constrained devices, enabling inspection of model performance relating to different layer types, using GPU acceleration (CUDA + TensorRT).
- Identified possible solutions to improve model accuracy and performance, increasing model metrics by 5-10% with 20% smaller memory footprint.
- Helped pitch solution for object tracking using Bispectral NNs (Sanborn, 2023), flexible replacement over conventional FFT.

Yousefi Lab @ WPI | Worcester, MA   *Jun – Aug 2022*
Reinforcement Learning and Data Pipeline Researcher
- Researched and validated a reinforcement learning model that fit design requirements, assisted in its development using TensorFlow, producing a proof-of-concept.
- Orchestrated development of a data pipeline using GCP tools (Pub/Sub, Dataflow, BigQuery, Vertex AI) to ingest, preprocess, and store neural data for training and running inference on a developed RL model, demonstrating scalability.

Shoptaki Inc. | New York City, NY *(Remote)*   *Aug 2021 – Aug 2022*
Fullstack Engineer (Began as SWE Intern)
- Led full-stack (frontend + backend) development of a demo website for newcomers in data science, using ReactJS, Flask, Express, and Arango DB.
- Implemented CD pipelines in various development workflows using GitHub Actions and GCP Cloud Run/Build, reducing errors in manual deployment to <5% of deployments.
- Assisted cloud migration of various AWS services to GCP with minimal impact on service or user experience.

Relevant Coursework

Data Structures + Analysis of Algorithms: Implementing and evaluating time complexity of arrays, Binary Search Trees (BSTs), Linked Lists, stacks, graph algorithms, searching/sorting, Dynamic programming, NP-Completeness, Linear Programming, Cryptography.
Machine Learning (WPI, Graduate Level): Markov Chains, Maximum Likelihood Estimation, Graphical Models, Gaussian Processes, Neural Networks, Reinforcement Learning, and building a deep mathematical foundation to understand them.