Muhammad Yousuf

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Education

Georgia Institute of Technology **May 2027**
BS/MS Computer Science (Intelligence and Information/Internetworks) – ***GPA: 4.00 - SAT 1590*** *Atlanta, GA*
Relevant Coursework: Data Structures & Algorithms, Computer Architecture, Discrete Mathematics, Probability & Statistics, Software Development Design, Design & Analysis of Algos, Computer Systems, Differential Equations, Linear Algebra, Artificial Intelligence, Machine Learning, Computer Networking, Operating Systems, Deep Learning, Databases, GPU Hardware Software Codesign Teacher's Assistant for Computer Architecture (C, Assembly, Docker/Autograder), GT Create-X Startup Incubator

Experience

Meta **May 2025 – Aug 2025**
Software Engineering Intern *Menlo Park, CA*
- Developed verfication tool for MTIA Graph Compiler Inductor backend and integrated it into PyTorch infrastructure to automate model e2e runtime, accuracy, and compilation testing and validate Triton kernel generation for several in-prod models.
- Implemented local telemetry data serialization to reduce network dependency and submodule runtime analysis with local caching and deduplication, speeding up verification runtime by 30% for hundreds of submodules
- Improved operator coverage by 4% and reduced compilation time by 10% through targeted enhancements to the Inductor/Triton backend, including C++ Pybinds and efficient compiler outlining and inlining, minimizing overhead and optimizing code generation

John Deere Financial **May 2024 – Aug 2024**
Software and Data Engineering Intern *Johnston, IA*
- Used Spark and Databricks to develop an Asset Valuation Index spanning 10-year period to illustrate economic trends
- Integrated projection models for economic forecasting of 18-months with LightGBM and XGBoost for probable values
- Wrote and tested several custom R scripts to automate dataflow of critical files through Databricks, S3, EFS, and DASH
- Implemented simple automatic monitoring and deployment workflow using MLFlow to sustainability beyond summer
- Leveraged PySpark to implement seasonality algorithm to eliminate extraneous factors, reducing instability by 34%

Johnson & Johnson **May 2023 – Aug 2023**
Software and Data Engineering Intern *Raritan, NJ*
- Used Python to developed pattern models of EBR data used in the manufacturing process of CAR-T cancer therapy
- Identified discrepancies between shift processing times and created POC for solution that improved production workflow
- Worked on quick authentication initiative to streamline data inputting process and speed up production by 7 minutes
- Implemented simple and effective GUI for faster work shift assignment with React, Javascript, and Azure Web Services

Projects

RL Wordle **2025**
- Implemented three algorithms—Naïve Bayes, Monte Carlo Tree Search), and Q-Learning—to solve the Wordle game, leveraging probabilistic reasoning, tree-based exploration, and value iteration under an MDP framework.
- Achieved a 97% win rate with the Q-Learning agent after training on 1M+ games using epsilon-greedy exploration, custom state-action encoding, and a reward function based on information gain and letter placement feedback.
- Utilized Georgia Tech's PACE HPC cluster to parallelize simulation runs and optimize training time with CUDA kernels; developed an interactive demo interface showcasing model predictions and performance metrics live with React.

Scribe **2025**
- Engineered a full-stack automated changelog generation platform utilizing Next.js for a high-performance frontend, a custom REST API for backend services, and MongoDB for robust data persistence, deployed on Vercel.
- Developed a system that parses commits and generates changelogs, improving accuracy and consistency of project documentation.
- Implemented secure GitHub OAuth integration and built advanced RESTful functionalities for dynamic log manipulation, including on-the-fly editing, deletion, and search, thereby streamlining release management workflows for developers

Research

Undergraduate Research Assistant **Jan 2025 – Present**
AI Virtual Assistant Lab, Dr. Larry Heck *Atlanta, GA*
- Ported a Linear Quadratic Model Predictive Control (LQ-MPC) optimization library from Python to C++, improving runtime performance and enabling deployment in real-time embedded control applications.
- Contributed to development of a dataset paper for efficient LLM tuning for research paper conversations

Skills

Languages: Java, Python, C, C++, SQL, Node.js, PySpark, JavaScript, React, HTML/CSS, PHP, TypeScript, Bash
Tools: PyTorch, Git, Docker, AWS, Apache Spark, Kafka, YAML, REST API, Flask, Spring, Gradle, MySQL, Maven, Postgres, MongoDB, Linux, UNIX, Lambda, DynamoDB, Terraform, TensorFlow, Keras, scikit-learn, Selenium
Skills: Application Dev, Unit Testing, Machine Learning, Distributed Systems, Low Latency Optimization, Web Dev, Data Processing, Cloud Computing, API Dev, Continuous Integration & Deployment, Databases, Backend Dev, Concurrency & Multithreading, Virtualization, Object Oriented Programming, Natural Language Processing, Infrastructure, Agile