MIRZA ZUHAYR

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Education

Georgia Institute of Technology — Atlanta, GA
M.S in Electrical and Computer Engineering — *Expected December 2026*
B.S in Computer Engineering (GPA: 3.65) — *December 2025*
Relevant Coursework: Data Structures and Algorithms, Circuit Analysis, Digital Design Lab, Object-Oriented Programming, Advanced Computer Architecture, Design and Analysis of Algorithms, Operating Systems, Compilers and Interpreters

Technical Skills

Tools and Software: VS Code, Android Studio, Visual Studio, Eclipse, IntelliJ, JUnit
Programming Languages: Python, Java, C/C++, JavaScript, Rust, HTML5, CSS, PL/SQL, MIPS Assembly, RISC-V Assembly
Technologies/Frameworks: Ubuntu (Linux), Git, GitHub, Gradle, AWS Lambda, AWS S3, FastAPI, Firebase, Terraform, Jira

Experience

Samsung Semiconductor — May 2025 - August 2025
Software Engineering Intern — *Austin, TX*
- Designed and developed a full-stack cloud-hosted web application using Python, FastAPI, JavaScript, HTML/CSS, NumPy, and Pandas for modernizing fab-critical wafer test workflows for 20+ engineers across 7 departments in New Product Introduction.
- Improved overall application efficiency by 92%, saving 73 engineering hours/month by optimizing backend logic, matrix computations, and memory usage; reduced query latency by 91% through PL/SQL and cloud integration improvements.
- Designed a robust UI with Plotly and MathJax for enhanced graphing and formula display, implemented input prepopulation from internal cloud databases, and built a comprehensive test suite of 50+ cases to ensure reliability and correctness.

Viasat — June 2024 - August 2024
Software Engineering Intern — *Carlsbad, CA*
- Engineered a data retention log monitoring system using AWS Lambda and Python scripting to process over 20,000 AWS S3 bucket files, validate log counts, and trigger alerts via AWS EventBridge and Sensu REST-API, significantly improving data accuracy
- Developed and optimized infrastructure using Terraform to create 3 AWS IAM roles, enabling seamless integration between AWS Lambda and EventBridge, streamlining cloud deployment processes, and enhancing overall system security
- Enhanced monitoring system efficiency by 50% by integrating an EventBridge Scheduler to automate data retention monitoring on a timed schedule via cron rules, resulting in more reliable and consistent data processing and reducing manual oversight

Verizon — May 2024 - June 2024
Software Engineering Intern (Analytics) — *Remote*
- Engineered an AI assistant chatbot for Verizon's ThingSpace Internet of Things platform to aid developers in documentation navigation and provide responses to common IoT questions
- Utilized Java and Program AB AIML library to implement response rulesets, improving chatbot's accuracy with 30+ custom responses catered to the ThingSpace platform documentation details and setup queries
- Integrated Weather.gov REST API to deliver real-time forecasts within chatbot, boosting user engagement and functionality

CellAntenna Corporation — May 2023 - August 2023
Software Engineering Intern — *Coral Springs, FL*
- Developed a Rust-based API using Actix Web to send I2C serial commands to a Teensy microcontroller, seamlessly integrating it into GUI software, improving efficiency by 25%, reducing memory usage by 10%, and ensuring reliable real-time communication.
- Collaborated within a 3-person software development team and communicated using Kanban agile methodology, showcasing expertise in Python, Rust, and Git version control in a Linux environment to successfully execute embedded software projects
- Enhanced and debugged a Python-based signal generation device GUI, implementing 4+ new features based on customer feedback while adhering to software development life cycle practices, including requirements gathering, design, testing, and deployment.

Projects

Tiger Compiler (Backend) | *Java, MIPS, ANTLR* — January 2025 - April 2025
- Optimized code generation by designing and benchmarking both naive and greedy register allocation strategies in Java, achieving a measurable 30% runtime improvement in generated MIPS assembly programs across test workloads
- Engineered a backend compiler that translated Tiger Intermediate Representation into efficient MIPS assembly, implementing instruction selection, physical register allocation, and stack frame management for correctness and speed
- Developed a middle-end optimizer that applied dead code elimination to Tiger IR using reaching definitions analysis, effectively reducing redundant computations and unnecessary instructions to improve compiler output performance
- Designed and maintained over 50 LL(1) grammar productions in ANTLR4 to generate a robust and extensible Java-based parser and lexer, enabling accurate parsing and translation of the Tiger language into intermediate representation

GreenPlate: Sustainable Food Management App | *Java, Android Studio, Firebase* — January 2024 - May 2024
- Managed the Firebase database to facilitate real-time updates of pantry and ingredient data with up to 50+ options for ingredients, enhancing the app's functionality by enabling dynamic recipe availability and real-time updates based on inventory.
- Designed and implemented an intuitive navigation bar for seamless transitions between 5 app screens and created data graph visualizations of daily calorie tracking, enhancing user experience by streamlining access to key features and displaying data.
- Led a 6-member team to design and develop a sustainable food management mobile application, allowing users to track calorie intake, manage ingredient quantities, and create shopping lists, promoting sustainable eating habits and reducing food waste.