

Rahul Challa

Software Engineer | San Francisco Bay Area | +1 (951) 801-9131 | challaviswanadhrahul@gmail.com | F1 OPT (STEM Eligible)
LinkedIn: [linkedin.com/in/rahulchalla13](https://www.linkedin.com/in/rahulchalla13) | GitHub: github.com/rahul-challa | Portfolio: rahul-challa.github.io/Portfolio

EDUCATION

University of California, Riverside | *Masters of Science in Computer Science* Sep 2024 - Mar 2026

- Honors: HEST Scholarship Awardee (2025), Top 3 @ UCRPC (2024).

SOA University | *Bachelors of Technology in Computer Science and Engineering* Nov 2020 - Sep 2024

- Honors: Top 10 @ Byte Verse by NIT Patna (2023), Top 10 @ Xperiments by UST (2022), Google Cloud Facilitator (2022).

EXPERIENCE

Graduate Student Researcher, Autotuning Framework | *University of California, Riverside* July 2025 - Mar 2026

- Engineered a micro-architectural profiling framework to predict unknown CPU parameters, achieving **90%** parameter-matching accuracy via a **sequential reinforcement-learning model** and custom workload registry.
- Benchmarked CPUs across **30** workloads and **16** parameters, tuning predictions to within **5%** of ground truth.
- Optimized model convergence to under **0.5%** of a **500M+** search space by evaluating IPC, CPI, and **cache-level metrics**.
- Built a **cross-platform** data-collection layer integrating multiple hardware simulators, with a resilient direct-timing fallback mechanism for consistent execution across Linux, macOS, and Windows.

Undergraduate Student Researcher, ASL Translation System | *SOA University* Feb 2024 - June 2024

- Led a 4-person engineering team building a real-time American Sign Language translation app, integrating **OpenCV** and Google MediaPipe for hand-tracking, reaching **98% classification accuracy**.
- Shipped a cross-platform app supporting a **50-sign** library, handling noisy backgrounds at **<5%** relative error and a **95%** classification improvement over a region-of-interest baseline.
- Delivered **real-time inference** with an optimized random forest classifier at **sub-100ms** processing latency.

PROJECTS

Private Credit Portfolio Engine | *Java, Spring Boot, PostgreSQL, Docker*

- Built **REST microservices** for managing credit facilities, borrowers, and covenants by implementing **Spring Boot, PostgreSQL, and Flyway-managed** schema migrations.
- Secured all API endpoints by implementing stateless **OAuth2/JWT** authentication via **Spring Security**.
- Ensured business-logic correctness by writing a layered test suite using **JUnit 5 & Mockito** for **Unit-testing** and built a **Cucumber suite** for **Integration Testing**. Integrated the Testing suite with **CI/CD** pipelines.

TexMex - A LaTeX Editor for VS Code | *TypeScript, VS Code API, Node.js, Web Sockets* | [VS Code Marketplace](https://vscodemarketplace.com) | **1100+ Users**

- Reached **1100+** active users by launching a VS Code extension delivering **real-time** LaTeX preview and **auto-sync** for .tex files.
- Cut scroll latency to under **100ms** by optimizing rendering and event-handling for **10K+** line LaTeX documents.
- Enabled **real-time multi-user** editing by building a **WebSocket-based** peer collaboration server for live document synchronization.
- Maintained a **4.5 rating** on the VS Code Marketplace by shipping a fully self-contained, zero-dependency extension with reliable offline operation.

Wildfire Twin - Digital Twin Disaster Simulation | *Kafka, Spark, Apache Sedona, Docker, DuckDB, Streamlit* | [GitHub](https://github.com)

- Built a **Kafka-to-Spark streaming pipeline** cross-referencing **live** fire-event streams against **11.5M** building footprints, sustaining a **sub-30s** processing **SLA** at **1K** concurrent events.
- Cut **P95** processing latency by **91%** by rewriting inefficient Python UDFs as native Java (Apache Sedona) expressions and broadcast spatial joins, a **JVM-level performance optimization**.
- Indexed spatial data with Uber's H3 library and served results through a **DuckDB-backed** layer powering the **Streamlit** dashboard.

SKILLS

Languages: Java, Python, TypeScript, Go, SQL, JavaScript, C++, Bash

Backend & APIs: Spring Boot, Spring MVC, Spring Data JPA, Spring Security, RESTful API, FastAPI, Node.js, gRPC

Cloud & DevOps: AWS (Lambda, EC2, S3), Docker, CI/CD (GitHub Actions), 12-Factor App Methodology, Linux, Git, Vercel, Render

Data & Messaging: PostgreSQL, MongoDB, Redis, Apache Kafka, Apache Spark, DuckDB, Supabase, DynamoDB

Systems: Distributed Systems, Microservices Architecture, Performance Profiling (Intel VTune)