HARSH JAIN

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EDUCATION

Master of Science in Computer Science Expected Graduation December 2025

University Of Southern California , Los Angeles , California 3.75 GPA

Coursework: Algorithm Analysis , Operating Systems , Machine Learning , Advanced Database Systems

SKILLS

Languages: C, Python, Java, Go , Assembly , Typescript

Software & Technologies: AWS , GCP , Linux , Unix, Git , PostgreSQL, GDB , Terraform, Angular , Node.Js, Docker , Kubernetes , Django Rest , Redis , React , Next.js , Flask , GraphQL

EXPERIENCE

Software Engineer Intern July 2024 - Present

Southern California Earthquake Center, Los Angeles, California

- Engineered an optimized database schema by revamping indexing strategies and refining table relationships to address legacy performance issues, resulting in a 20% reduction in query latency and improved system responsiveness.
- Managed a 20,000 user emergency drill registration system and migrated it to support a newer backend architecture for better forward compatibility reducing API load times by 30%.

Software Engineer Intern May 2024 - August 2024

Speech Articulation Reinforcement Application, Los Angeles, California

- Built a service using AWS Lambda, Polly, and S3 to dynamically generate audio instructions for practice templates, automating the release process and reducing launch times by 50%.
- Developed a real-time phonetic word breakdown service to convert IPA-to-orthographic character mappings , simplifying visual pronunciation guides for children and boosting audio exercise performance scores by 18%.

Software Engineer Intern August 2023 - November 2023

Swasthya AI, Pune, India

- Built an EMR application backend for oncologists in major Indian hospitals by leveraging MongoDB's aggregation pipeline & GraphQL, achieving a 30% latency boost amidst scalability challenges from increasing patient data.
- Implemented a CRM analytics dashboard on the MERN Stack to allow for custom task workflow management.

Software Engineer Intern January 2022 - October 2022

NUDOC Systems, Mumbai, India

- Built a React-based PDF management system to combat sluggish document processing, achieving a 2x reduction in processing time via automated file organization and streamlined flows for repetitive processing tasks.
- Created an optimized PDF archival workflow, duplicating frequently accessed files to the main server and transferring less frequently used documents to static storage, resulting in a 20% annual reduction in block storage costs.

PROJECTS

Operating Systems: Kernel(Linux , C , x86, Assembly, GDB) | bit.ly/41cXif8 July 2024- December 2024

- Built a Unix-like kernel with robust process management system, enabling concurrent multi-process execution through implementation of thread scheduling and context switching mechanisms.
- Developed a comprehensive virtual memory management system with demand paging and memory-mapped files.
- Implemented a Virtual File System (VFS) abstraction layer supporting both RAMFS and S5FS.

Enhancing PostgreSQL's buffer management policy (Unix , C , SQL , GDB) | bit.ly/41cXif8 Jan 2025- Feb 2025

- Implemented two handed clock sweep and LIFO based scheduling policies in C modifying the PostgreSQL's buffer management codebase to improve query performance by 30% for cyclic data access workloads.
- Utilized condition variables and the pthread library for thread operations maximizing emulated buffer usage to 90%.

Realtime Stock market platform | bit.ly/Hjstocktrade January 2024 - June 2024

- Created a stock trading application with two versions: a web version using Node.js and React, and a mobile version in Swift(IOS), with over 2,000 active users & implemented portfolio management and real time transaction support.
- Delivered a security framework using HTTPS and JWT, while deploying on AWS to handle 5000+ requests per minute using WebSockets for real-time data updates to allow users to trade with accurate data from the real markets.