UTKARSH BAJAJ

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EDUCATION

Carnegie Mellon University **August 2024 - December 2025**

Master of Science in Software Engineering

Coursework: Distributed Systems, Introduction to Computer Systems, Software Design and Architecture, Functional Programming

Manipal Institute of Technology, Manipal **July 2018 - July 2022**

Bachelor of Technology in Computer Science and Engineering

SKILLS

- Programming Languages: C++, C, Go, Python, JavaScript, TypeScript, Java
- Databases: DynamoDB, MongoDB, Microsoft SQL Server, MySQL
- Frameworks and Tools: .NET, OpenSearch, Bedrock, Docker, Azure, Azure DevOps, Node.js, Socket.io, Vim, Neovim, LLMs, GDB

WORK EXPERIENCE

Amazon **Seattle, WA**

Software Development Intern, AWS **May 2025 - July 2025**

- Built Retrieval Augmented Generation (RAG) solution for AWS International Expansion using Bedrock, vector embeddings, and semantic search, facilitating automated responses to compliance-related questions, reduced repeat queries sent downstream by up to 50%, lowering operational overhead and external counsel costs
- Engineered real-time ingestion pipeline using DynamoDB, EventBridge Pipes, and Lambda to embed new data into Bedrock knowledge base, ensuring LLM generated answers remain up to date despite model cutoff limitations
- Leveraged Amazon Bedrock to host both LLMs and vector data, enabling solution to function as an agent in workflows such as internal chatbots

Microsoft **Hyderabad, India**

Software Engineer, Azure Automation **July 2022 - July 2024**

- Enhanced system security, decreased operating costs by 30%, and improved reliability to a 99.9% success rate by building containerized .NET application with C# and Docker to migrate customer script executions from monolithic virtual machines to container-based microservices architecture
- Enabled customers to securely access Azure-stored assets, such as certificates and variables, at runtime by designing and implementing a localhost service within container, accessible via REST APIs through custom PowerShell and Python packages
- Reduced work hours for deploying microservice into new cloud regions by automating service and monitoring deployments through scripting and pipelining, enabling faster and more efficient rollouts
- Increased customer satisfaction (CSAT scores) by resolving user-reported bugs, serving as an on-call engineer to fix live site issues, and implementing automated monitoring to proactively detect and address recurring problems

PROJECTS

Hierarchical Key-Value Cluster with Raft Consensus **February 2025 - April 2025**

- Designed and implemented a hierarchical key-value cluster combining Distributed Hash Table and Distributed File System characteristics, where each directory hosts an independently managed key-value store using Raft for consistency; exposed a unified HTTP API for CRUD operations across cluster
- Implemented Raft consensus algorithm from scratch by studying original Raft paper, incorporating log replication, leader election, and robust failure recovery to ensure consistency across distributed peers
- Built a custom Remote Procedure Call library in Go using reflect package, enabling dynamic RPC between Raft peers for inter-node coordination and state synchronization

Codeforces Rating Updates **August 2021**

- Engineered full-stack application, automates delivery of Codeforces contest rating updates, utilizing Google Firebase for user data management and AWS EC2 for execution of Python scripts
- Hosted on Github Pages, application sends email to user upon rating publication, sparing need for manual checks on Codeforces website

LEADERSHIP AND INVOLVEMENT

- **Graduate Research Assistant at CMU**: Developed LLM-powered autograding platform, delivers code evaluations and personalized feedback leveraging a dataset of graded submissions, instructor comments to generate consistent, context-aware assessments, integrated with IntelliJ via IDE plugin, allowing students to receive feedback with a single click
- **Chairperson, Association for Computing Machinery, Manipal Chapter**: Led a team of 15+ to organize national programming competition, TechTatva 2020 with 200+ participants, mentored 10+ juniors in problem solving using C++

AWARDS AND ACHIEVEMENTS

- Achieved peak contest rating: 1839 on Leetcode, securing ranking in top 7% contestants globally
- Received Culture Champion Award at Azure Core, Microsoft for embodying company's core value of growth mindset