

Utkarsh Bajaj

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San Francisco Bay Area

WORK EXPERIENCE

MICROSOFT

Software Engineer

Hyderabad, India

Jul 2022 – Jul 2024

- Reengineered Azure Automation backend by migrating **Python and PowerShell script execution** from VMs to containers, building **.NET, C# based Docker application** for 200K+ customers (2M+ monthly executions), enhancing system security, reducing cogs by 30%, and improving infrastructure reliability to 99.9% success rate
- Debugged API microservice deployments for region expansion and initiated automation of monitoring and deployment pipelines using shell scripting, reducing work hours for expanding service to 50+ Azure regions/data centers
- Resolved customer-reported incidents end-to-end and led blameless postmortems to root cause, delivering permanent fixes that cut repeat incidents while serving as an on-call engineer

AMAZON

Software Development Engineering Intern

Seattle, WA

May 2025 – Jul 2025

- Engineered a retrieval-augmented generation (RAG) system with **AWS Bedrock Agents and APIs in Python** to leverage historical conversations for compliance queries, reducing average response time by 80% and cutting reliance on external experts for 50%+ new queries
- Developed automated pipeline with AWS Lambda and message queues that triggers on new **DynamoDB (NoSQL) records to generate vector embeddings**, insert them into **AWS Bedrock knowledge base (OpenSearch vector store)**, delivering real-time semantic search updates, eliminating manual database refreshes
- Collaborated with team to integrate retrieval system into chatbot interface, enhancing end-user experience

CARNEGIE MELLON UNIVERSITY

Research Assistant

Mountain View, CA

Jan 2025 – Apr 2025

- Architected cloud-based system for automated static and dynamic code analysis to power an automatic grader, leveraging **Google Pub/Sub for event-driven communication with Python based containerized execution environments**, integrated IntelliJ via custom plugin to provide students real-time feedback through single-click submissions
- Implemented **LLM based system for static code analysis** that leverages previous student submissions and corresponding professor feedback to generate automated, personalized comments on new submissions

SKILLS

- **Programming Languages:** C/C++, Python, Go, C#, TypeScript, Bash
- **Frameworks and Tools:** Amazon Web Services (AWS), .NET, Docker, Azure, Node.js, SQL, Amazon DynamoDB, Vim, Neovim, LLMs, OpenSearch Vector Store, NumPy, pandas, Git

EDUCATION

Carnegie Mellon University

Master of Science in Software Engineering, GPA: 3.78/4

Mountain View, CA

Aug 2024 – Dec 2025

Relevant Coursework: Computer Systems, Distributed Systems, Data Science, Software Design and Architecture

Manipal Institute of Technology

Bachelor of Technology in Computer Science and Engineering, GPA: 3.84/4

Manipal, India

Jul 2018 – Jul 2022

PROJECTS

Raft Consensus Algorithm Implementation

Feb 2025 – Mar 2025

- Implemented **Remote Procedure Calls (RPCs) and Raft consensus algorithm in Go**, including log replication, leader election, and failure recovery, resulting in a reusable library for building fault-tolerant distributed systems

Distributed Message Queue (github.com/utkarshbajaj/great-value-kafka)

Oct 2020

- Built a Kafka-inspired message queue in Go with pub/sub, consumer groups, partitioning, ordering, hierarchical topics and TTL, enabling scalable messaging across many publishers and subscribers

LEADERSHIP/ACTIVITIES

- President, **Coding Gym, CMU Silicon Valley**, led sessions on data structures and algorithms, conducted mock interviews to improve problem solving skills among students, make them interview ready
- Achieved peak contest rating of 1839 on **Leetcode**, securing position in top 7% users globally
- Awarded **Culture Champion** in Dec 2022 at Microsoft for embodying company's value of fostering a growth mindset