UTKARSH BAJAJ

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EDUCATION

Carnegie Mellon University, Mountain View, CA **Expected Graduation: 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, C#, JavaScript
- Databases: Azure Cosmos DB, MongoDB, Microsoft SQL Server, MySQL
- Frameworks and Tools: .NET, Docker, Azure, Azure DevOps, Azure Data Explorer, Node.js, Socket.io, Vim, Neovim, LLMs, GDB

WORK EXPERIENCE

MICROSOFT, India

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

- Developed .NET backend application to migrate PowerShell 5.1 and Python 3.8 customer scripts from VM-based monolithic executions to container based microservices architecture using C#, Docker
- Enhanced system security by executing scripts in isolated Hyper-V containers, boosted success rates from 99.8% to 99.9% by eliminating VM dependencies and resolving customer-reported bugs for over 200M+ monthly Python and PowerShell executions during migration process
- Collaborated with team to debug and deploy microservice for container-server communication, facilitating expansion into new regions. Initiated automation of monitoring and continuous deployment scripts, reducing work hours required for scaling to additional regions and data centers
- Designed and implemented Rest APIs by configuring localhost inside containers and created PowerShell cmdlets and Python packages, enabled customers to retrieve stored assets (e.g., certificates, credentials)

Software Engineering Intern, Azure Automation **January 2022 - June 2022**

- Created container based application using C#, .NET Core and Docker to enable PowerShell 7.2, Python 3.10 runtimes on Azure Automation, unit testing 95%+ lines of code written
- Achieved significant adoption with 150+ customers running 10,000+ scripts in preview, paving path for migration of existing runtimes

PROJECTS

Systems Development (C, Unix) **September 2024 - November 2024**

- Built C based cache simulator with an LRU algorithm, computing hits, misses, dirty bytes, and evictions from configurable cache settings, gaining practical experience in cache management and performance optimization
- Coded optimized 64-bit general-purpose allocator in C for malloc, realloc, calloc, and free, utilizing an explicit free list to enhance memory allocation efficiency, reduce fragmentation and improve overall performance
- Created a tiny Unix shell program in C, managing processes, foreground and background jobs and handling signals
- Implemented multithreaded HTTP proxy in C, handling concurrent client requests and caching of requests

Distributed Consensus Algorithm - Raft (Golang) **January 2025 - February 2025**

- Built a RPC library allowing Raft peers to interact with each other via Remote Procedure Calls using the Go Reflect package
- Implemented Raft Consensus Algorithm, incorporating log replication, leader election and failure recovery mechanisms

Codeforces Rating Updates (Side Project / Python, JavaScript) **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 user interface, made with HTML, CSS and JavaScript on Github Pages, application sends email to the user upon rating publication, sparing need for manual checks on Codeforces website

LEADERSHIP AND INVOLVEMENT

- **Graduate Research Assistant at CMU**: Developing a platform using LLMs and multi-agent systems to automate code evaluation with accurate grading, detailed feedback, and personalized learning insights for students
- **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