Utkarsh Bajaj

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EDUCATION

Carnegie Mellon University **December 2025**

Master of Science in Software Engineering
Relevant Coursework: Distributed Systems, Introduction to Computer Systems, Software Design and Architecture, Functional Programming

SKILLS

- Programming Languages: C++, C, Go, Python, C#, JavaScript
- Databases: Azure Cosmos DB, MongoDB, Microsoft SQL Server, MySQL
- Frameworks and Tools: .NET, Docker, GDB, Azure, Azure DevOps, Azure Data Explorer, Node.js, Socket.io, Vim, Neovim, NumPy, pandas, LLMs

PROFESSIONAL EXPERIENCE

Microsoft, India **July 2022 - July 2024**

Software Engineer, Azure Automation

- 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
- Designed and implemented **APIs** by configuring localhost inside containers and **created PowerShell cmdlets and Python packages**, enabled customers to retrieve stored assets (e.g., certificates, credentials)
- 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

Software Engineering Intern, Azure Automation

- 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 **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
- Developed 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 shell program** in C, managing processes, foreground and background jobs and signals
- Implemented **multithreaded HTTP proxy in C**, handling concurrent client requests, caching of requests

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 **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

Find IMDB Ratings **October 2020**

- Created **Python script using BeautifulSoup, requests, and pandas**, scrapes web for movies and stores data in .csv file for user analysis
- Attracted multiple forks and contributions from 5+ individuals on GitHub at Hacktoberfest 2020

HONORS AND AWARDS

- **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
- 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