Mohammed Al-Jawaheri

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Education

Carnegie Mellon University
B.S. in Computer Science, Concentration in Computer systems May 2025

Work Experience

Software Engineer Intern May 2024 – Aug 2024
OpenStack Swift, NVIDIA

- Landed patches approved by project leads and merged upstream to OpenStack Swift.
- Added quota support features to prevent cluster abuse, enhancing system reliability.
- Implemented modern recon features for the container reaper, optimizing performance.
- Improved concurrency in the container sharder daemon.

Backend Engineer Sep 2022 – Feb 2024
Hungry Mushrooms Game Studio

- Architected a backend migration for three games from previous backends and ad-hoc Firebase storage, improving scalability and performance.
- Oversaw live migration of player NoSQL data to CockroachDB, ensuring data integrity and minimal downtime.
- Collaborated with game developers to optimize backend services for enhanced player experiences.

Teaching Assistant Aug 2023 – Present
Carnegie Mellon University

- Graded and created exams for undergraduate courses on Computer Networks, including assignments on building web servers with WSGI support for Flask and other frameworks.
- Assisted students in understanding complex networking concepts and debugging challenging problems.

Projects and Achievements

HyperOS: Operating System & Hypervisor | *C/x86 Assembly* Aug 2022 – Jan 2023

- Built a fully preemptive multitasking kernel on real x86 hardware using C and x86 Assembly.
- Supported paravirtualization interfaces for running guest kernels, enhancing system versatility.
- Implemented user-space multithreading and hardware exception handling.
- Developed custom user-space thread libraries and synchronization primitives, optimizing performance.

C0++: Type-Inferring Optimizing Compiler | *C++17, Flex/Bison* Aug 2021 – Jan 2022

- Built a compiler for a C-like language targeting x86-64 architecture.
- Implemented optimizations such as partial redundancy elimination and strength reductions.
- Utilized SSA form, achieving performance competitive with GCC -O1 on various benchmarks.
- Demonstrated strong problem-solving skills in compiler design and code optimization.

Personal Website | *NextJS/ChakraUI* (mjawaheri.com) Apr 2023 - Present

- Personal portfolio built using Next 14
- Uses ChakraUI for smooth animations & page transitions

Liso: HTTP/HTTPS Web Server | *C* Jan 2022 – May 2022

- Built a multiplexing HTTP and HTTPS web server in C, supporting HTTP parsing, CGI, WSGI, and TLS connections.
- Optimized for high concurrency and performance, stress-tested using Siege and ApacheBench benchmarks.

Honors and Awards

Andrew Carnegie Society Scholar Recognition by CMU to 40 exemplary students
Qatar Campus Scholar Recognition given by CMU-Q given to one graduate of each major
Best Freshman Team prize at CarnegieApps Hackathon 2020
QCPC 2021 winner Competed in QCPC, ACPC