

# Mohammed Al-Jawaheri

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## EDUCATION

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### Carnegie Mellon University

*B.S. in Computer Science, Concentration in Computer systems*

May 2023

### Relevant Coursework:

**15-410** - Operating Systems Design & Implementation

**15-411** - Compiler Design & Implementation

**15-440** - Distributed Systems

**15-441** - Computer Networks

**15-445** - Database Systems

**GPA: 3.93/4.00**

*Dean's List (8/8 semesters)*

## WORK EXPERIENCE

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### Backend Engineer

Sep 2023 - Present

*Hungry Mushrooms Game studio*

- Architected a backend migration for three games from previous backends/adhoc firebase storage
- Overlooking live migration of player nosql data to cockroachdb

### Teaching Assistant

Aug 2023 - Present

*Carnegie Mellon University*

- Graded and created exams for undergraduate courses on Computer systems, Operating systems and Algorithms

### Undergraduate Research Assistant

May 2021 - Sep 2021

*Carnegie Mellon University*

- Contributed to research software for Teams of aquatic robots for marine environmental monitoring
- Simulated robot squad communication in both 4G/Wifi in NS3 before deployment

## PROJECTS AND ACHIEVEMENTS

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### HyperOS: OS & hypervisor | C/x86

Aug 2022 - Jan 2023

- Built a fully pre-emptive multi-tasking kernel on real x86 hardware
- Supported Paravirtualization interface for running guest kernels
- Implemented user-space multi-threading, and user-space hardware exception handling
- Packaged with custom made user-space thread library and synchronization primitives

### C0++: Type inferring optimizing compiler | C++17, Flex/Bison

Aug 2021 - Jan 2022

- Built a compiler for a C-like language targeting x86-64
- Implemented optimizations such as partial redundancy elim. and str. reductions
- SSA-based, competitive with GCC -O1 on many benchmarks

### FileStack: Distributed Filesystem | Java

Jan 2022 - May 2022

- Developed a Java RMI library and used it to implement a FS inspired by HDFS and GFS
- Implemented locking and a basic invalidation-based replication mechanism

### Connect4 | Javascript (Matter.js), Python (django)

Mar 2021 - May 2021

- Real-time online turn based connect-4, physics simulated pieces
- Django 3.x backend, Django channels for websockets

## HONORS AND AWARDS

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**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

## TECHNICAL SKILLS

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**Languages:** C/C++17, x86/x86-64 Assembly, ARM Assembly, Java, Javascript, Python, SML.

**Developer Tools:** Git, Docker, Simics, GDB, CMake