

Mohammad Sonji

Prospective PhD Student

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Research Interest

I am broadly interested in Systems, especially: **High-Performance Computing and Architecture**. Within these fields, I have a strong interest in sub-fields such as:

- **Parallel/Heterogeneous/Cloud Computing**
- **Performance Variability and Performance Modeling**

Education

- 2022 - 2023 : **Master of Science, Computer Science, American University of Beirut**
CGPA: 3.78, Thesis title: Predicting If Executing Applications Are Near Completion
Advisor: **Dr. Izzat El Hajj**, Assistant Professor, Department of Computer Science, AUB
- 2018 - 2021 : **Bachelor of Science, Computer Science, Beirut Arab University**
CGPA: 3.76, Class rank: 3rd, Graduated with honors.
I was awarded a scholarship for outstanding academic performance every semester.

Experience

Research

- June, 2022 - present : **Research Assistant**, American University of Beirut, AUB & Hewlett Packard Labs, HPE
I joined **Dr. Izzat El Hajj's** team in collaboration with Hewlett Packard Labs (HPE) led by **Dr. Dejan Milojevic** and his team.

Teaching

Teaching Assistant, American University of Beirut, AUB

- Fall 23-24 : CMPS221: Computer Organization & Design
- Spring 22-23 : CMPS202: Intermediate Programming with Data Structures
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- Fall 22-23 : CMPS224/CMPS396AA: GPU Computing
- Spring 21-22 : CMPS200: Introduction to Programming
CMPS212: Intermediate Programming with Data Structures

Selected Academic Projects

- 2022 : **GPU Computing**
I designed a CUDA application in C/C++ for computing the Jaccard similarity among vertices in a graph, implementing four distinct versions of the code, each integrating one or more novel optimizations. I was able to achieve the fastest execution time among my classmates.
- 2022 : **Compiler Construction**
Using the LLVM compiler and its Clang frontend, I implemented the following tasks in C++:
 - Source-to-source compiler as a recursive AST visitor in Clang
 - Code generator as a non-recursive AST visitor in Clang
 - Aggressive Dead Code Elimination optimization.

Technical skills

Parallel, Distributed, & GPGPU Programming: CUDA, MPI, Pthreads

Imperative Programming Languages: C, C++, Python, JAVA, Bash

Logic Programming Languages: Prolog

Functional Programming Languages: Scheme

Operating Systems: Linux/Unix, Windows

Tools: Docker, Kubernetes, Knative

Nvidia GPUs Partitioning features

Compilers

Serverless Computing

Deep Learning

Version Control

Certificates

Academic

2022 : **Physical Science Responsible Conduct of Research**, AUB, CITI PROGRAM

2022 : **Attendance of multiple Graduate workshops**, AUB, Graduate Council

2020 : **Lebanese Collegiate Programming Contest**, ACM, LCPC

2020 : **Internet and Computing Core Certification (IC3)**, Certiport Inc.

2019 : **Lebanese Collegiate Programming Contest**, ACM, LCPC

Extracurricular Activities

2018 - 2020 : **Volunteer**, Red Cross youth sector