

# Mohammad Sonji

Computer Science PhD Candidate

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📄 Webpage

in LinkedIn

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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

2024 - 2029 : **Doctor of Philosophy, Computer Science, University of Virginia**

Advisor: **Dr. Adwait Jog**, Assistant Professor, Department of Computer Science, UVA

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: 3<sup>rd</sup>, Graduated with honors.

I was awarded scholarships for outstanding academic performance every semester.

## Experience

### Research

August, 2024 - **Research Assistant, University of Virginia, UVA**

present : I joined **Dr. Adwait Jog's** Insight Computer Architecture Lab as a research assistant.

June, 2022 - **Research Assistant, American University of Beirut, AUB & Hewlett Packard Labs, HPE**

July, 2024 : I joined **Dr. Izzat El Hajj's** team in collaboration with Hewlett Packard Labs (HPE) led by **Dr. Dejan Milojicic** 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.

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**Publications**

**I have multiple works with HPE/AUB under submission.**

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**Awards**

2023-2024 **Henri Qais Naccache Best Thesis Award**

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**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**

**Assembly: MIPS, RISC-V**

**Operating Systems: Linux/Unix, Windows**

**Cloud: Docker, Kubernetes, Knative**

**Nvidia GPUs Partitioning features**

**Compilers**

**Serverless Computing**

**Deep Learning**

**Version Control**

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**Certificates**

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

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**Extracurricular Activities**

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