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Mohanna Shahrad

Education

2020–Now **B.Sc. in Computer Science**, *McGill University, Montreal, Canada*.
[GPA: 3.94/4]

2019–2020 **B.Sc. in Computer Engineering**, *Sharif University of Technology, Tehran, Iran*.
[GPA: 19.21/20, 4/4], Transferred to McGill University after moving to Canada.

2016–2019 **High School**, *Farzanegan 2 High School, National Organization for Development of Exceptional Talents (NODET), Tehran, Iran*, [GPA: 19.89/20, 4/4].

Work/Research Experience

Jan 2023 - Now **Undergraduate Research Assistant**, *McGill University, Montreal, Quebec*.
Supervisor: Prof. Muthucumaru Maheswaran
- Currently working on developing algorithms to navigate a set of smart moving devices using Wifi RRSI and CSI readings of smart (ESP32) guides, simulating reflection and refraction of emitted data beams.

Sep 2022 - Dec 2022 **Undergraduate Teaching Assistant**, *McGill University, Montreal, Quebec*.
COMP310: Operating Systems - Instructor: Prof. Muthucumaru Maheswaran

June 2022 - Sep 2022 **SDE Intern**, *AWS IoT FreeRTOS Team, Amazon, Vancouver, British Columbia*.
- Introduced open-source CloudFormation templates to accelerate IoT data ingestion and visualization.
- Implemented four templates (AWS Timestream, IoT Analytics, Kinesis Data Firehose, and OpenSearch Service) to capture, ingest, and visualize IoT data coming from AWS ExpressLink devices to AWS IoT Core.
- My contributions are publicly available at the AWS IoT ExpressLink github repository.

May 2022 - Aug 2022 **Research Volunteer**, *McGill University*, Supervisor: Prof. Joseph Vybihal.
- Studied security vulnerabilities, challenges, and requirements of multi agent systems.
- Designed a layered security framework for multi agent systems that use blackboard (central repository) communication using Mobile Ad Hoc Network (MANET), fault tolerance, and integrity policies.

May 2021 - Sep 2021 **Data Engineering Intern**, *DataLake Team*, Canadian National Railway (CN), Montreal, Quebec.
- Introduced and implemented an internal Q&A and knowledge sharing platform for the team.
- Implemented monitoring dashboards using Microsoft Azure and Power Bi.

Feb 2021 - May 2021 **Research & Development Intern**, *Affinity RCM Team*, Harris Computer Corporation, Ottawa, Ontario.
- Designed an automated quality assurance (QA) process framework using Selenium webdriver and C# supporting web-based application testing.

Honors and Awards

Since 2021 **Member of the Golden Key International Honour Society**, *Selected by the Dean of Students at McGill University*.

2021 **McGill Faculty of Science Scholarship**, *Faculty of Science Scholarships Committee, McGill University*.

2021 **Member of the McGill Dean's Honour List**, *McGill University*.

2021 **Excellence Scholarship in Computer Science, Computer Engineering and Computer Construction, and Electrical, Electronic and Communications Engineering**, *Ministère de l'Enseignement supérieur*.

2021 **McGill Perseverance Award**, *Scholarships and Student Aid Office, McGill University*.

2021 **Selected for Google CS Research Mentorship Program (CSRMP)**.

2019 **Ranked 68th among +164,000 participants**, *Iranian University Entrance Exam (Konkour)*.

2017 **Bronze Medal**, *2017 India International Mathematics Competition (InIMC), Lucknow, India*.

2015 **Recipient of Outstanding Achievement Certificate**, *Gauss Mathematics Contest, University of Waterloo Centre for Education in Mathematics and Computing (CEMC)*.

2015 **Gold Prize Winner**, *The 2015 International Mathematics Contest (IMC), Singapore*.

Publications

G. Sadeghian, M. Elsakhawy, **M. Shahrad**, J. Hattori, and M. Shahrad, "*UnFaaSener: Latency and Cost Aware Offloading of Functions from Serverless Platforms*", under review at USENIX ATC '23.

Other Projects

Fall 2022	Developing of a Paxos module for total order delivery of messages in a distributed system
Fall 2022	Stabilizing the inverted pendulum system using Kalman filter, PID controller, and RL controller
Fall 2022	Developing a Travelling Salesman Problem solver using Azure Quantum Inspired Optimization tools
Winter 2022	Developing brick breaker in x86 assembly language with cover art for the game using OpenGL and GLSL
Winter 2022	Developing an AI agent to play Colosseum Survival game
Fall 2021	Analysis of the performance of wider neural networks given the same number of parameters
Fall 2021	Analyzing the discussions around COVID-19 in Canadian social media (Twitter) with sentiment analysis
Fall 2021	Selected as Borealis AI Mentorship Program Participant, Large countries' deforestation rate predictor.

Skills

Programming	Proficient: Python, Java, C/C++, Bash - Intermediate: C#, x86 Assembly, CUDA, R, OCaml, SQL, KQL, HTML/CSS
Tools	Git, Docker, Microsoft Power Bi, Selenium, AWS CDK, PyTorch, Flask, Python Turtle, Bokeh Dashboards, Grafana, ZooKeeper
Cloud Comp.	Microsoft Azure: {VMs, Data Factory, Databricks, App Service, Container Instances, Data Lake Storage, Azure DevOps, Azure Quantum}, AWS {Lambda, S3, EC2, EFS, ECR, VPC, SNS, Step Functions, Athena, Glue, Kinesis , OpenSearch, QuickSight, Timestream, IoT Core, IoT Analytics}, GCP: {VM Instances, Storage, Cloud Functions, Pub/Sub, Workflows, Cloud Composer}
OS's	Linux, MacOS, Windows

Volunteer Work

2021	McGill University Head Delegate, *Canadian University Software Engineering Conference 2022*, Montreal, Canada
2021	Mentor at New Student Mentorship Program (NSMP), *McGill Campus Life and Engagement*, Montreal, Canada
2021	Co-president, *Girls Who Code McGill* student club, Montreal, Canada
2020	Vice President of Internal Affairs, *Through Their Eyes* student club, Students' Society of McGill University (SSMU), Montreal, Canada.
2019	Executive Staff, International Collegiate Programming Contest (ICPC), Asia Region - Tehran Site, Sharif University of Technology, Tehran, Iran.

Immigration Status

Canadian Permanent Resident (PR)