Sara Ghaemi

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Highlights of Skills

- 2 years of experience researching software systems earned through an MSc program in software engineering.
- 1 year of experience implementing software programs based on the microservice architecture using Docker containers on cloud computing platforms.
- Strong teamwork and interpersonal skills developed during 6 years in research assistantship roles working with teams of size 10, 1+ years in teaching roles, and 1+ years in a leadership role leading a team of 5.

Technical Skills

Programming Languages: Python, Node.js, C/C++, Java, MATLAB

Tools: Linux, Git, Docker, Travis CI, Hyperledger Fabric

Education

MSc in Software Engineering and Intelligent Systems **Sep 2018–Dec 2020**
University of Alberta, Edmonton, Canada

- Selected Coursework: Software Quality, Engineering Dependable Systems, Cyberphysical Systems, Machine Learning
- GPA: 3.9/4

BSc in Electrical Engineering, Electronics **Sep 2013–Apr 2018**
Amirkabir University of Technology, Tehran, Iran

- Selected Coursework: Multimedia Systems, Advanced Programming, Introduction to Computational Intelligence

Experience

Technology Specialist - GTLP **Jan 2021–Present**
TELUS, Toronto, Canada

- Working in the software development stream under the graduate technology leadership program (GTLP).

Research Assistant and Teaching Assistant **Aug 2019–Dec 2020**
York University, Toronto, Canada

- Investigating and researching the use of **blockchain** technology in **serverless** computing.
- Designed, implemented, and evaluated ChainFaaS, an open blockchain-based serverless platform.
- Utilized **Docker** containers to develop ChainFaaS based on a microservices architecture.
- Used **Node.js** to implement a **Hyperledger Fabric** network on cloud computing instances.
- Leveraged **Django** web framework to implement a simple web application for the platform in **Python**.
- As a teaching assistant, supervised about 40 students to write different programming tasks in **Java**.

Blockchain Intern **Jun 2020–Nov 2020**
The Linux Foundation, Toronto, Canada

- Selected as one of the 18 people to work on Hyperledger mentorship projects in 2020.
- Developed an interoperability solution based on the publish/subscribe architecture for permissioned **blockchains**.
- Contributed to open-source projects in the Hyperledger community.

Coding Instructor **Dec 2019–May 2020**
Alpha Coding Inc., Toronto, Canada

- Taught **Python** and **Robotics** to students of age 7 to 20 and created curriculum for beginner to advanced classes.

Research Assistant and Teaching Assistant **Sep 2018–Aug 2019**
University of Alberta, Edmonton, Canada

- Analyzed the performance of DAG-based distributed ledger technologies (**DAG-based DLT**), especially **IOTA**.
- Conducted a series of simulations to create a private **IOTA** network and find its most important performance metrics.
- As a teaching assistant, supervised about 60 students to program an NXP ColdFire microprocessor using assembly.

Research Assistant and Teaching Assistant **May 2014–Feb 2018**
Amirkabir University of Technology, Tehran, Iran

- Developed different computer vision programs for localization and object detection of quadcopter and UGV robots.
- Collaborated with a team of 10 to integrate the programs into the robots.
- As a teaching assistant, taught **Python** programming language to about 25 undergraduate students.

Volunteer Work

Chair of IEEE Student Branch (IEEE SB) **May 2015-Jul 2016**
AmirKabir University of Technology, Tehran, Iran

- Led a team of 5 to plan and execute about 18 events, workshops, and student competitions.
- IEEE Amirkabir University SB received the "Student Branch Excellence Award" from IEEE Iran Section in May 2016.

Publications

- S. Ghaemi, H. Khazaei and P. Musilek, "ChainFaaS: An Open Blockchain-Based Serverless Platform," in IEEE Access, vol. 8, pp. 131760-131778, 2020, doi: 10.1109/ACCESS.2020.3010119.
- C. Fan, S. Ghaemi, H. Khazaei and P. Musilek, "Performance Evaluation of Blockchain Systems: A Systematic Survey," in IEEE Access, vol. 8, pp. 126927-126950, 2020, doi: 10.1109/ACCESS.2020.3006078.
- S. Ghaemi, S. Rouhani, R. Belchior, R. S. Cruz, H. Khazaei, and P. Musilek, "A Pub-Sub Architecture to Promote Blockchain Interoperability," in IEEE International Conference on Blockchain and Cryptocurrency, (Submitted).
- C. Fan, S. Ghaemi, H. Khazaei, Y. Chen, and P. Musilek, "Performance Analysis of DAG-based Distributed Ledgers," in Transactions on Modeling and Performance Evaluation of Computing Systems, 2019 (Under Major Revision).

Selected Projects

An Analysis of Travis CI Build Failures **Feb 2019-Apr 2019**
University of Alberta, Edmonton, Canada

- Analyzed the TravisTorrent dataset to investigate build failures in Travis CI using **Python** and **R**.
- Found the most important factors that result in continuous integration build failures.

Implementation of an Othello Player **Feb 2019-Apr 2019**
University of Alberta, Edmonton, Canada

- Worked in a team of two to implement an open-source Othello game player program in **Python**.
- Developed a GUI with **PyQt5** for the program.

Managing Decentralized Energy Production and Consumption **Nov. 2018-Dec. 2018**
University of Alberta, Edmonton, Canada

- Worked in a team of two to design, implement, and evaluate a dependable and decentralized billing mechanism for energy retailers using **Ethereum** smart contracts in **Solidity**.

Design and Implementation of a Prototype of an Indoor Smart Parking **Sep 2017-Apr 2018**
Amirkabir University of Technology, Tehran, Iran

- Designed and implemented hardware required to detect the status of a parking spot, and inform a server.
- Developed **C/C++** code for microcontrollers of the hardware devices.
- Developed a simple web application using **Django** framework in **Python** to visualize the status of all parking spots.

Face Detection and Recognition using CNN in MATLAB **Nov 2016 - Jan 2017**
Amirkabir University of Technology, Tehran, Iran

- Worked in a team of four to use transfer learning in **MATLAB** for face detection and recognition.
- The program was trained to recognize five specific people.

Handwritten Digit and Alphabet Recognition With Image Processing in Python **Mar 2016-Jun 2016**
Amirkabir University of Technology, Tehran, Iran

- Developed a program to detect and track hand in webcams's video and recognize digits or alphabets written by hand.
- Used **OpenCV** and **Python** to train a model to detect and track hand and **PyQt** to develop a GUI for the program.

Localization by Fusing ARUCO Library and Encoder Data on a UGV Robot **Aug 2015-Oct 2015**
Amirkabir University of Technology, Tehran, Iran

- Worked in a team of two on using image processing and encoder data for robot localization in a room.
- Used **C++** and **OpenCV** for QRCode detection to find the robot's location and pose.

Awards and Honors

IEEE Student Branch Excellence Award **May 2016**
IEEE Iran Section *Shiraz, Iran*

- Received this award from IEEE Iran Section while responsible for IEEE Amirkabir University Student Branch.

University Entrance Exam Exemption **Sep 2013**
Amirkabir University of Technology *Tehran, Iran*

- Admitted to the BSc program without participating in the university entrance exam due to international achievements in robotics competitions.

Best Robot Performance and 3rd Place Award for Junior Soccer Robot **Jul 2011**
Junior Soccer League at Robocup International Competition *Istanbul, Turkey*

- Worked in a team of 4 to develop junior soccer robots which received two major awards in Robocup international competitions.