Sara Ghaemi

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Highlights

- 2nd year MSc student in software engineering and intelligent systems with about 2 years of experience researching distributed ledger technologies.
- One year of experience implementing blockchain networks and developing decentralized applications on Hyperledger Fabric, IOTA, and Ethereum in research projects.
- Effective communications and interpersonal skills developed during 1+ years in teaching roles.

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–Present**

University of Alberta   *Edmonton, Canada*

- Relevant Coursework: Machine Learning, Software Quality, Engineering Dependable Systems, Cyberphysical Systems
- GPA: 3.9/4 | Expected completion: Sep 2020

BSc in Electrical Engineering, Electronics   **Sep 2013–Apr 2018**

Amirkabir University of Technology   *Tehran, Iran*

- Relevant Coursework: Multimedia Systems, Advanced Programming, Probability and Statistics, Computer Architecture and Microprocessors, Introduction to Computational Intelligence
- Total GPA: 3.5/4 via 140 credits (last 2 years: 3.82/4)

Experience

Blockchain Mentee in the Hyperledger Mentorship Program   **Jun 2020-Present**

The Linux Foundation   *Toronto, Canada*

- Selected as one of the 18 people to work on Hyperledger mentorship projects in 2020.
- Working on blockchain interoperability in permissioned blockchains.

Research Assistant   **Aug 2019-Present**

Performant and Available Computing Systems (PACS) Lab, York University   *Toronto, Canada*

- Working on using **blockchain** technology in serverless computing.
- Designed, implemented, and evaluated ChainFaaS, an open blockchain-based serverless platform.
- Implemented a **Hyperledger Fabric** network on cloud computing instances for the platform.
- Used **Node.js** to implement two smart contracts (chaincodes) for the network.
- The whole project is based on a microservices architecture using **Docker** containers.
- Used **Django** web framework to implement a simple web application for the platform in **Python**.

Coding Instructor   **Dec 2019-May 2020**
Alpha Coding Inc.   *Toronto, Canada*
  o Taught **Python** and **Robotics** to students of age 7 to 20 and created curriculum for beginner to advanced
    classes.

Teaching Assistant   **Jan 2020-May 2020**
Object Oriented Programming from Sensors to Actuators Lab, York University   *Toronto, Canada*
  o Supervised about 40 students in each lab to write different programming tasks in **Java**.

Research Assistant   **Sep 2018-Aug 2019**
Dependable and Distributed Systems Lab, University of Alberta   *Edmonton, Canada*
  o Worked on performance analysis of DAG-based distributed ledger technologies (**DAG-based DLT**), especially
    IOTA.
  o Conducted a series of simulations to create a private **IOTA** network and find its most important performance
    metrics.

Teaching Assistant   **Jan 2019-Apr 2019**
Introduction to Microprocessors Lab, University of Alberta   *Edmonton, Canada*
  o Supervised about 30 students in each lab to program an NXP ColdFire microprocessor using assembly
    language.

Research Assistant   **May 2014-Feb 2018**
Control of Multi-Vehicle Systems Lab, Amirkabir University of Technology   *Tehran, Iran*
  o Developed different computer vision programs for localization and object detection of quadcopter and UGV
    robots.
  o Collaborated with a team of 10 to integrate the programs into the robots.

Teaching Assistant   **Feb 2017-Jun 2017**
Advanced Programming Course, Amirkabir University of Technology   *Edmonton, Canada*
  o Taught **Python** programming language to about 25 undergraduate students.

Chair of IEEE Student Branch (IEEE SB)   **May 2015-Jul 2016**
AmirKabir University of Technology   *Tehran, Iran*
  o Led a team of 5 to plan and execute about 18 events, workshops, and student competitions.
  o IEEE Amirkabir University SB received the "Student Branch Excellence Award" from IEEE Iran Section in
    May 2016.

Robotics Teacher   **Apr 2013-Sep 2014**
Farzanegan 1(NODET) Highschool   *Tehran, Iran*
  o Taught an introductory course on robotics to 2 classes, including a total of about 30 students.
  o Introduced concepts of AVR microcontrollers, C programming language, and robotics tools to high school
    students with no background in programming.

Publications

Ghaemi, S., Khazaei, H., & Musilek, P. (2020). ChainFaaS: An Open Blockchain-based Serverless
Platform. IEEE Access (Accepted)

Fan, C., Ghaemi, S., Khazaei, H., & Musilek, P. (2020). Performance Evaluation of Blockchain Systems:
A Systematic Survey. IEEE Access.

Fan, C., Ghaemi, S., Khazaei, H., Chen, Y., & Musilek, P. (2019). Performance Analysis of DAG-based
Distributed Ledgers. Transactions on Modeling and Performance Evaluation of Computing Systems
(Submitted)

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**.
- Used logistic regression to find statistically significant features.

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 (empty or full), and send this information to 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 in the parking lot's map.

Face Recognition Using CNN in MATLAB   **Nov 2016-Jan 2017**

Amirkabir University of Technology   *Tehran, Iran*

- Used transfer learning in **MATLAB** for face recognition.
- The program was trained to recognize five specific people.

Face Detection using CNN in MATLAB   **Jan. 2017**

Amirkabir University of Technology   *Tehran, Iran*

- Worked with three other student on this project
- Used transfer learning in MATLAB for live face detection

Handwritten Digit and Alphabet Recognition With Image Processing in Python **Mar 2016-Jun 2016**

Amirkabir University of Technology   *Tehran, Iran*

- Worked in a team of two to develop a program that detects and tracks hand in the webcam video and recognizes the digit or alphabet written by hand.
- Used **OpenCV** and **Python** to train a model to detect and track hand.
- Used **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.