

Amir Makhshari

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Education

The University of British Columbia (UBC)

Vancouver, Canada

MASC. IN COMPUTER ENGINEERING

Sep 2019 - Present

- GPA: **4.15**

Amirkabir University of Technology, Tehran Polytechnic (AUT)

Tehran, Iran

B.S. IN COMPUTER ENGINEERING

Aug 2014 - Mar. 2019

- GPA (last two years): **3.97**

Work Experience

Software Analysis and Testing Lab @UBC

Vancouver, Canada

RESEARCH SCIENTIST & SOFTWARE DEVELOPER

Sep 2019- Present

- Proposed a bug taxonomy for IoT with **Root Cause Analysis of IoT Bugs** and a systematic characterization of IoT development challenges.
- Developed an **Automated Test Case Generation** approach for IoT systems using **Java** with a focus on **AWS IoT**, and **SmartThings** IoT platform.
- Proposed an automatic ML-based bug detection technique using **Graph Neural Networks** which improved our baseline accuracy by 30%.

Computer Science Department @UBC

Vancouver, Canada

TEACHING ASSISTANT

Sep 2020- Present

- *Software Engineering Industry Skills (CPSC 455)*: Mentoring students during interactive workshops and labs regarding front-end and **back-end** web development and **NoSQL** databases.
- *Advanced Software Engineering (CPSC410)*: Responsible for directing five student groups towards developing static and dynamic **source code analysis** tools, applying **design patterns**, and developing self-defined DSLs all in **Java**.
- *Software Engineering Projects (CPSC319)*: Working directly with **Stakeholders from HSBC bank** and two large student groups to deliver an email campaign service following a Waterfall SDLC methodology and using **AWS** services such as Amplify, DynamoDB, SES, and S3.

IoT Lab at AUT

Tehran, Iran

SOFTWARE ENGINEER

Jul 2018- Aug. 2019

- Responsible for **testing and code maintenance** of an IoT platform back-end services written with PHP Laravel.
- Solved some old bugs in the permission system and improved the event logging and error management of the IoT platform.
- As a PHP **back-end developer**, worked closely with the clients and the IoT core team and debugged other developers' code.

Electronic Research & Production Co. TAKTA

Tehran, Iran

SOFTWARE ENGINEER

Sep 2017- Jun. 2018

- Designed and implemented a **JavaScript IoT hub server** for an IoT-based monitoring system for remote TV transmitters.
- Responsible for **testing** the product with real on-site TV transmitter devices and working closely with the hardware engineering team.

Side Projects

DroidCov

BASH, Java

ANDROID TESTING TOOL | GROUP PROJECT

2020

- A test automation tool that automatically measures instruction and method coverage for Android apps with **Sapienz**, **Monkey**, and **APE**.

StressThing

JavaScript

WOOT TESTING TOOL | THESIS PROJECT

2019

- A web-based testing tool that uses Apache **JMeter** and **BlazeMeter** to perform **Stress Testing** on smart IoT devices.

publications

43rd International Conference on Software Engineering (ICSE'21)

Madrid, Spain

TECHNICAL PAPER AUTHOR AND PRESENTER

May. 2021

- A. Makhshari and A. Mesbah, "IoT bugs and development challenges," 2021 IEEE/ACM 43rd International Conference on Software Engineering (ICSE), 2021. (LINK)

Skills

Programming Expert: Java Proficient: JavaScript • C • PHP Familiar: Python • BASH • R • Objective-C

Technologies Git and CI/CD • AWS • Docker • SQL/NoSQL • Testing Tools for web (JMeter, Selenium) and mobile (Monkey, Sapienz, Ape)

Honors & Awards

2021 **Vice-President of Social Relations**, Elected by ECE students as a member of Graduate Student Society

Vancouver, BC

2019 **UBC Graduate Fellowship**, Granted by ECE department at UBC and funded by Intel co.

Vancouver, BC

2014,2018 **Ranked top 1%**, National-wide University Entrance Exam for M.Sc. (CE, IT) and B.Sc. (Eng., Foreign lang.)

Iran