Amir Makhshari

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Education

The University of British Columbia (UBC)   *Vancouver, Canada*

MASc. in Computer Engineering   *Sep 2019 - Present*

- GPA: **4.15/4**
- Thesis: *IoT Bugs and Development Challenges* - Published in   **ICSE'21: Top Conference in Software Engineering**

Amirkabir University of Technology, Tehran Polytechnic (AUT)   *Tehran, Iran*

B.S. in Computer Engineering   *Aug 2014 - Mar. 2019*

- GPA (last two years): **3.97/4**
- Thesis: *A **Testing Framework** for Load and Stress Testing of IoT Systems (StressThing)*.

Work Experience

Software Analysis and Testing Lab @UBC   *Vancouver, Canada*

Software Engineering Researcher   *Sep 2019- Present*

- Proposed a bug taxonomy for IoT with **Root Cause Analysis of 323 IoT Bugs** and a systematic characterization of IoT development challenges by communicating with **more than 200 IoT developers** with different expertise from all over the world **(published in ICSE'21)**.
- Developed an **automated test case generation** approach for IoT using **Java Groovy**. Experimented on **AWS IoT**, and **SmartThings**.

Computer Science Department @UBC   *Vancouver, Canada*

Software Engineering Teaching Assistant   *Sep 2020- Present*

- *Software Engineering Industry Skills (CPSC 455)*: Mentoring students during interactive web development workshops and labs about **front-end** development (React.js), **back-end API** development (Express.js), and **NoSQL** databases (MongoDB).
- *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 **domain-specific languages** all in **Java**.
- *Software Engineering Projects(CPSC319)*: Directed two large student groups throughout the **design, implementation, and testing** of an email service system using **AWS** (Amplify, DynamoDB, SES, S3). Communicated regularly with **stakeholders from HSBC bank** to meet requirements.

IoT Lab at AUT   *Tehran, Iran*

Software Engineer   *Jul 2018- Aug. 2019*

- As a **PHP back-end developer**, was responsible for **testing and code maintenance** of **more than 100 micro-services** in the IoT platform.
- Solved known bugs in the permission system, improved the event logging and error management by **debugging** other developers' buggy code.
- Worked closely with the clients and the IoT core team to successfully pass the **load requirement** of handling **5000 concurrent nodes**.

Electronic Research & Production Co. TAKTA   *Tehran, Iran*

Software Engineer   *Sep 2017- Jun. 2018*

- Delivered a full-stack **JavaScript IoT hub server** and **React Native mobile app** for an IoT-based monitoring system for remote TV transmitters.
- **Consistent team-work** with the hardware engineering team for **testing and deploying** the product with real on-site TV transmitters.

Alton Tech. Co.   *Tehran, Iran*

Software Engineer Intern   *May 2017- Sep. 2017*

- Built an **iOS application** using **Swift**, to control, monitor, and schedule smart light bulb devices in our office remotely.
- Worked closely with the project supervisor and the back-end team to **design APIs** in **Java**, that allow other developers to query the IoT lamps.

Side Projects (Link)

GNN4Code   *Python*

ML-based Bug Detection Tool | Group project   *2021*

- A tool that builds heterogeneous graph models of the source code and uses three **Graph Neural Networks** to detect bugs with **80%** accuracy.

DroidCov   *BASH, Java*

Android Test Automation Tool | Group project   *2020*

- This tool automatically measures **instruction and method coverage** for Android apps with Facebook Sapienz, Google Monkey, and APE.

Skills

Programming   **Expert:** Java **Proficient:** JavaScript • PHP • Python   **Familiar:** C/C++ • BASH • R • Swift

Technologies   Git and CI/CD • AWS • Object-Oriented Design • RESTful APIs • Design Patterns • Functional Programming • Algorithms and Data Structures • SQL/NoSQL • API Testing • Android Testing

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*