

# FOROUGH MEHRALIAN

Informatics Department at UC Irvine

<https://fmehralian.github.io>

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## EDUCATION

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Ph.D. in Software Engineering - <i>University of California, Irvine, USA</i>	Sep 2018 - Jun 2024
M.Sc. in Software Engineering - <i>Sharif University of Technology, Iran</i>	Sep 2015 - Jan 2018
B.Sc. in Computer Engineering - <i>Sharif University of Technology, Iran</i>	Sep 2011- Sep 2015

## RESEARCH AND INDUSTRY EXPERIENCE

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**Research Assistant - [Software Engineering and Analysis Lab](#)**, UC Irvine, California Jun 2019 - Present

Awarded a \$1.2M grant from National Science Foundation to advance software accessibility.

- Proposed context-aware icon embedding, resulting in a substantial enhancement in the quality of labels generated by deep learning models for inaccessible icons.
- Introduced an innovative automated accessibility testing oracle that accounts for the disparities between various interaction modes, i.e., with and without Assistive Technologies, leading to the discovery of three critical categories of accessibility issues previously unidentified by existing testing methods.
- Designed and implemented the first automated technique to build energy test oracles using a novel explainable deep learning model.

**Software Engineer - [Candelis Inc.](#)**, Newport Beach, California Jun 2021 - Sep 2023

- Enhanced defect localization by leading the development of a Performance Monitoring dashboard, providing valuable insights into critical system metrics after conducting a survey on troubleshooting challenges for the support team.
- Engineered a cost-efficient archive and backup mechanism for DICOM data, resulting in a remarkable 72.5% reduction in storage expenses per gigabyte.
- Designed and implemented the DICOMWeb standard, enabling web-based access to DICOM data.

**Software Engineering Intern - [Café Bazaar](#)**, Tehran, Iran Jun 2018 - Aug 2018

- Engineered an advertising service for Iran's largest app store, serving over 40 million users, enabling ad placement on the search page.

## PUBLICATIONS

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- [C1] **F. Mehralian** \*, N. Salehnamadi\*, and S. Malek. "Too Much Accessibility is Harmful! Automated Detection and Analysis of Overly Accessible Elements in Mobile Apps" In *Proceedings of the 37th IEEE/ACM International Conference on Automated Software Engineering (ASE)*, 2022
- [C2] N. Salehnamadi\*, **F. Mehralian**\*, and S. Malek. "Groundhog: An Automated Accessibility Crawler for Mobile Apps." In *Proceedings of the 37th IEEE/ACM International Conference on Automated Software Engineering (ASE)*, 2022
- [C3] **F.Mehralian**, N. Salehnamadi, S. Malek. "COALA: Context-Aware label generation for icons in Android apps" In *Proceedings of the 2021 15th Joint Meeting on Foundations of Software Engineering (ESEC/FSE)*, 2021.
- [C4] R. Jabbarvand, **F. Mehralian**, and S. Malek. "Automated Construction of Energy Test Oracle for Android" In *Proceedings of the 2020 14th Joint Meeting on Foundations of Software Engineering (ESEC/FSE)*, 2020.

## SKILLS

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**Programming Languages:** Python, Java, C/C++

**Database:** PostgreSQL, SQLite, MySQL, Redis

**Technologies and Frameworks:** PyTorch, Keras, Matlab, Django, Docker, Kubernetes

**Software Engineering:** Agile and RUP methodologies, Software Testing, Object Oriented Design and Patterns, Program Analysis

## HONORS AND AWARDS

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### Fellowships and Scholarships:

- Richard N. Taylor Graduate Award in Software Engineering 2023
- Graduate Dean's Dissertation Fellowship for outstanding academic achievements 2023
- Informatics Department Dissertation Writing Fellowship 2023-2024
- National Elites Foundation Scholarship 2016-2017

### Travel Awards:

- NSF travel award to attend Automated Software Engineering conference, Pittsburgh 2022
- NSF travel award to attend Automated Software Engineering conference, San Diego 2019
- Grace Hopper scholarship to attend the conference in Orlando, Florida 2019

### Honorable Mention:

- No-Exam admission offer for MSc and PhD programs at Sharif University of Technology 2015, 2017
- Ranked in the top 0.5% in the nationwide BSc entrance exam 2011

## NOTABLE INDEPENDENT PROJECTS

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**Text Generation with GANs:** Replicated [MaskGAN](#) to generate IMDB reviews using a generative adversarial network.

**Modularization of [EqualsVerifier](#):** Migrating an open-source project from Java 8 to Java 9 after thorough code dependency analysis.

**Handwritten Digit recognizer:** MATLAB implementation of several Machine Learning classifiers for detecting handwritten digits.

**Knowledge Management System:** Developed a knowledge management system in Java using the RUP methodology, from requirement extraction to Java implementation.

**Pomodoro:** Designed the user interface and implemented the backend of an Android application dedicated to efficient daily task management utilizing the Pomodoro time management technique.

**Book Search Engine:** Developed an information retrieval system for book searching utilizing Java and Lucene.

## CERTIFICATES & TRAINING

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**Emotional Intelligence:** Learning the art and science behind emotions to enhance interpersonal relationships 2023

**Sighted Guide Training:** Learning how to walk with someone who has vision loss 2023

**Excellence in Engineering Communication:** Learning communication and public speaking techniques for graduate students in engineering 2020

## TEACHING EXPERIENCE

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**Graduate Teacher Assistant**, University of California, Irvine

- **Courses:** Human-Computer Interaction, Distributed Software Architecture, Software Design
- Conducted office hours to assist +50 students with course material and assignments.
- Organized and led Q/A discussion sessions, supervised group projects, and provided feedback for them.

**Teacher Assistant**, Sharif University of Technology

- **Courses:** Data Mining, Software Engineering lab, Database Design
- Led a team of 8 TAs in the creation and implementation of lab syllabus and holding weekly sessions.
- Designed assignments and evaluated +40 students' performance.

## LEADERSHIP EXPERIENCE & COMMUNITY INVOLVEMENT

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**Tour leader and Sighted guide**, 38th Annual CSUN Assistive Technology Conference

Member of **Big Brothers Big Sisters** of Orange County and the Inland Empire

- Nurturing the potential of young individuals through mentorship and guidance.

Member of **live virtualization team**, the first Virtual ICSE, International Conference on Software Engineering

**Peer reviewer:**

- Journal of Science of Computer Programming, 2023
- International Conference on Software Architecture (ICSA'22)
- International Conference on Mobile Software Engineering and Systems (MobileSoft'21)

Member of **ACM SIGSOFT** and **ACM-W**