Navid Salehnamadi

https://navids.dev

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Experience

Research Assistant - **University of California, Irvine** Irvine, CA, USA | *Oct. 2017 - Sep. 2022*

- Automated Assistive-Technology Driven Accessibility Testing
  - Introduced a novel technique to control assistive technologies and detect accessibility issues automatically.
  - Designed and implemented a server system using **Python**, **Unix Shell**, **WebSocket**, and **Flask** to communicate with client systems using **Java** and **Android API** on multiple Android devices set up on **Google Cloud**
  - Improved automated accessibility issue detection up to 50% in comparison to state-of-the-art
  - Awarded a $1.2M grant from **National Science Foundation**
  - U.S. Provisional Patent Serial No. 63/178,708 by Navid Salehnamadi and Sam Malek, Filed 04/23/2021
- Data-Driven Accessibility/UI Repair
  - Examined +200GB mobile screenshots and curated a balanced training set of icons and their description (alt texts)
  - Train a context-aware deep learning model, using **LSTM** and **ResNet** in **PyTorch,** to fix inaccessible icons
  - Achieved significantly better performance compared to prior work, up to 2.7x improvement in text prediction
- Scalable Event-Race Detection
  - Devised a scalable and accurate static program analysis technique in **Java** to detect event races in **Android** apps
  - Improved performance by 12 factors in comparison with the existing event-race detection tools

Software Engineer/Research Intern - **Microsoft** Remote | *Jun. 2021 - Sep. 2021*

- Implemented a scalable caching service using **C#**, **ASP.NET**, **CosmosDB**, and **Azure Storage**
- Designed a multi-level job caching mechanism powered by **Bloom Filters**, improved the response time +30 times faster than the baseline model

Software Engineer - **Avaye Hamrah Hooshmand Hezardastan** Tehran, Iran | *Oct. 2015 - Aug. 2017*

Coordinated several teams in CafeBazaar (a local Android store with +40M active users) with Agile methodology (**Scrum**), Designed and implemented several internal tools using **Django** and **Angular**, including a malware app detection system, resulting in **4 times** faster turnaround time

Education

University of California, Irvine - Ph.D. in Software Engineering Irvine, CA, USA | *2017 – 2022*

- **Awards**: Noyce Foundation Fellowship, UCI Inclusive Excellence Grant, Sigma Xi Grants-in-Aid of Research
- Published papers in top HCI and Software Engineering research venues (CHI, ESEC/FSE, ASE, MobiSys, and TOSEM)

Sharif University of Technology - M.Sc. in Software Engineering Tehran, Iran | *2015 – 2017*

- **Thesis**: Invented a general approximation method for solving a family of geometry optimization problems (such as clustering) in the sliding window model processing streams of big data, with constant time query and low memory overhead

University of Tehran - B.Sc. in Computer Engineering Tehran, Iran | *2011 – 2015*

- **Awards**: Golden Medal in Iran Nationwide Computer Science Olympiad, ACM Student Chapter Excellence Award, Top 10 Regional Teams in ACM International Collegiate Programming Contest (ICPC)

Publication and Patent

Automated Assistive-Technology Driven Accessibility Testing Environments
U.S. Provisional Patent Serial No. 63/178,708, filed 04/23/2021
Navid Salehnamadi and Sam Malek

ROUTE: Roads not taken in UI Testing
*Published in ACM Transactions on Software Engineering and Methodology (**TOSEM**)*
Jun-Wei Lin, Navid Salehnamadi, and Sam Malek

Groundhog: An Automated Accessibility Crawler for Mobile Apps
*Published in **ASE 2022**, 37th International Conference on Automated Software Engineering*
Navid Salehnamadi, Forough Mehralian*, and Sam Malek*

Too Much Accessibility is Harmful! Automated Detection and Analysis of Overly Accessible Elements in Mobile Apps
*Published in **ASE 2022**, 37th International Conference on Automated Software Engineering*
Forough Mehralian, Navid Salehnamadi*, Syed Fatiul Huq, and Sam Malek*

DeltaDroid: Dynamic Delivery Testing in Android
*Published in ACM Transactions on Software Engineering and Methodology (**TOSEM**)*
Negar Ghorbani, Reyhaneh Jabbarvand, Navid Salehnamadi, Joshua Garcia, and Sam Malek

Data-driven Accessibility Repair Revisited: On the Effectiveness of Generating Labels for Icons in Android Apps
*Published in **ESEC/FSE 2021**, The ACM Joint European Software Engineering Conference* and Symposium on the Foundations of Software Engineering
Forough Mehralian, Navid Salehnamadi, and Sam Malek

Latte: Use-Case and Assistive-Service Driven Automated Accessibility Testing Framework for Android
*Published in **CHI 2021**, Conference on Human Factors in Computing Systems*
Navid Salehnamadi, Abdulaziz Alshayban, Jun-Wei Lin, Iftekhar Ahmed, Stacy Branham, and Sam Malek

ER Catcher: A Static Analysis Framework for Accurate and Scalable Event-Race Detection in Android
*Published in **ASE 2020**, 35th International Conference on Automated Software Engineering (23% acceptance rate)*
Navid Salehnamadi, Abdulaziz Alshayban, Iftekhar Ahmed, and Sam Malek

Test Automation in Open-Source Android Apps: A Large-Scale Empirical Study
*Published in **ASE 2020**, 35th International Conference on Automated Software Engineering (23% acceptance rate)*
Jun-Wei Lin, Navid Salehnamadi, and Sam Malek

A Benchmark for Event-Race Analysis in Android Apps (Poster)
*Published in **MobiSys 2020**, 18th International Conference on Mobile Systems, Applications, and Services*
Navid Salehnamadi, Abdulaziz Alshayban, Iftekhar Ahmed, and Sam Malek

Peer-Review Service

ACM Transactions on Software Engineering and Methodology (TOSEM)	2021
IEEE International Conference on Software Architecture (ICSA)	2021
Computing: Archives for Scientific Computing (COMP)	2021
Grace Hopper, Software Engineering Review Committee	2020-2021
European Conference on Software Architecture (ECSA)	2019-2020

Leadership Experience and Community Involvement

Author, Soot Tutorial, an introduction to static program analysis 2019-2021
- Published a blog series and a public repository in Github, built by **Java**, **Gradle**, and **Travis**

Live! Virtualization Team Member, International Conference on Software Engineering 2020

Technical Organizer, International Olympiad in Informatics 2017
- Developed a translation web app, IOI Translation, used in the International Olympiads in Informatics, powered by **Python**, **Django**, **JavaScript**, **Bootstrap**, and **Nginx**

Chief editor, F1 the scientific journal of the ACM student chapter of the University of Terhan 2015

Programming Skills

Languages: Python, Java, Javascript, C++, SQL, C#, Bash **Technologies**: Android, Flask, PyTorch, React