Sahar Mehrpour

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PROFILE

I am a researcher in Software Engineering and Human-Computer Interaction (HCI), focusing on how developers make and handle design decisions. I aim to develop tools to help developers document, adhere to, and discover these decisions. I completed my Ph.D. in Computer Science at George Mason University under Dr. Thomas LaToza in May 2024.

EDUCATION

PhD in Computer Science
George Mason University
2017-2024 | Fairfax, VA

MS in Computer Science
University of Manitoba
2014-2016 | Canada

MS in Computer Science
Sharif University of Technology
2011-2013 | Iran

BS in Computer Science
Sharif University of Technology
2007-2011 | Iran

SELECTED GRADUATE COURSEWORK

George Mason University
Secure Software Programming, Component-Based Software Development, User Interface Design and Development.
University of Utah
Machine Learning, Data Visualization.
University of Manitoba
Software Testing and Quality Assurance, Advanced HCI, Advanced Data Mining.
Sharif University
Computer Organization, Analysis of Algorithms, Computational Geometry, Advanced Algorithms, Cryptology.

TECHNICAL SKILLS

- React.js (Proficient), Angular (Familiar)
- JavaScript, CSS, JAVA, HTML, (Proficient), Python, C++, TypeScript, JSF, JSP (Familiar)
- D3-V4, Bootstrap, Node.js, Redux.js (Proficient), Firebase, AWS (Familiar)

SELECTED PROJECTS

- **[PhD Research] Helping Developers work with Design decisions Java Developers:** In my research, I am studying the challenges developers face when working with design decisions, and design and develop tools to address these challenges. Specifically, I developed an IntelliJ plugin ActiveDocumentation, by which users can document their design decisions as they are coding and receive instant feedback when following or violating documented decisions. I also designed and implemented RulePad for writing design decisions without the need for special skills. *Supervised by Thomas LaToza*. (JavaScript, Java, React, NodeJS, WebSocket, Bootstrap, Redux).
- **[Google Software Engineer Intern Project, Summer 2023] Conversational Visualization of logs:** This project aims to design and create a fresh visualization method for presenting the log data generated by the Google Search Generative AI tool. Engineers must delve into the log data to gain insights into user behavior. Nevertheless, the current tools available for examining this log data are overly complex and challenging for the majority of users. The objective of the new visualization is to make it user-friendly and straightforward, ensuring that it can be easily utilized by all users to explore the log data effectively. *Supervised by Chenjie Yu and Nan Jiang*. (TypeScript, Go, React).
- **[Google Software Engineer Intern Project, Fall 2022] Accessibility Reading Toolkit:** This project is developed by the accessibility group AT Google. This tool is Google Chrome Extension which renders texts in a simplified format, and helps people with cognitive impairments read and comprehend texts. In this project, the goal is to add additional features to the toolkit including inserting labels and highlight phrases during read-aloud. I collaborated with a team at accessibility group for UX decisions and collaborated with a ML team to integrate tflite model used for detecting phrases into the Toolkit. *Supervised by Ajit Narayanan and Shari Trewin*. (TypeScript, Python, C++, Tensorflow-tflite, Chrome Extension, WebAssembly).
- **[Research Project] Clinical Data Visualization:** In this project, we visualized the clinical information of patients to help medical workers prescribe *medication* or *procedure* for a patient based on the clinical information of similar patients. *Supervised by Alexander Lex*. (TypeScript, Python, JavaScript, *D3.js*, Phovea Framework).

SELECTED PUBLICATIONS

- **Mehrpour, S.**, LaToza, T. D. *A survey of tool support for working with design decisions?*, In ACM Computing Surveys (CSUR), 2023.
- **Mehrpour, S.**, LaToza, T. D. *Can static analysis tools find more defects?*, Empirical Software Engineering (ESME), 28(1), 2022.
- **Mehrpour, S.**, LaToza, T. D. *Programming Tools for Working with Design Decisions in Code*, In the Annual Workshop on The Intersection of HCI and PL (PLATEAU), 2021.
- **Mehrpour, S.**, LaToza, T. D., Sarvari, H. *RulePad: Interactive of Authoring Checkable Design Rules*, In ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE), 2020.
- **Mehrpour, S.**, LaToza, T. D., Kindi, R. K. *Active Documentation: Helping Developers Follow Design Decisions*, In IEEE Symposium on Visual Languages and Human-Centric Computing (VL/HCC), 2019.