

Ramtin Ehsani

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I am a PhD candidate specializing in language model-assisted automated program repair, with a focus on improving software bug repair and developer-facing software engineering tasks. My research advances reliable, interpretable, and empirically grounded AI-driven methods for software tools and development environments.

Research Interests: AI for Software Engineering, Automated Software Engineering, Large Language Models, Empirical Software Engineering, Natural Language Processing, Social Aspects of Software Engineering

EDUCATION

Doctor of Philosophy in Computer Science

Drexel University

2023 – Present

Philadelphia, PA

Bachelor of Science in Computer Engineering

Iran University of Science and Technology

2018 – 2022

Tehran, Iran

EXPERIENCE

Research Assistant

SOAR Lab

2023 – Present

Philadelphia, PA

- Investigating methods for LLM evaluation through uncertainty quantification and attention analysis, developing metrics and empirical signals to assess confidence, reliability, and interpretability of models in code generation
- Designing frameworks for automated program repair and code generation using large language models with a focus on knowledge injection strategies (e.g., RAG), agents, and context selection techniques to improve LLMs' accuracy and reliability in code generation | **ASE'25, ICSME'25**
- Developed frameworks to analyze developer-LLM conversations, identify prompt gaps and styles, and measure their impact on software bug resolution, optimizing interactive debugging with LLMs | **MSR'25, EMSE'25**
- Developed analytical frameworks for detecting incivility and toxicity in open source software communications, leveraging NLP and ML techniques to identify patterns and triggers of toxic behavior in GitHub, aiming to improve developer collaborations | **NLBSE'25, MSR'24, FSE'23**

Software Engineer

KayaDev

2020 – 2021

Tehran, Iran

- Developed Android applications using Java and Firebase, focusing on creating efficient and user-friendly solutions

PUBLICATIONS

Conference Proceedings

- Ramtin Ehsani**, Sakshi Pathak, Shriya Rawal, and Preetha Chatterjee. “Where Do AI Coding Agents Fail? An Empirical Study of Failed Agentic Pull Requests in GitHub”. *Under review*.
- Ramtin Ehsani**, Esteban Parra Rodriguez, Sonia Haiduc, and Preetha Chatterjee. “Hierarchical Knowledge Injection for Improving LLM-based Program Repair”. In *Proceedings of the 40th IEEE/ACM International Conference on Automated Software Engineering*. ASE 2025.
- Yousab Grees, Polina Iaremchuk, **Ramtin Ehsani**, Esteban Parra Rodriguez, Preetha Chatterjee, and Sonia Haiduc. “AI-Powered Commit Explorer (APCE)”. In *Proceedings of the 41st International Conference on Software Maintenance and Evolution*. ICSME 2025.
- Ramtin Ehsani**, Sakshi Pathak, and Preetha Chatterjee. “Towards Detecting Prompt Knowledge Gaps for Improved LLM-guided Issue Resolution”. In *Proceedings of the 22nd International Conference on Mining Software Repositories*. MSR 2025.
- Ramtin Ehsani**, Mia Mohammad Imran, Robert Zita, Kostadin Damevski, and Preetha Chatterjee. “Incivility in Open Source Projects: A Comprehensive Annotated Dataset of Locked GitHub Issue Threads”. In *Proceedings of the 21st International Conference on Mining Software Repositories*. MSR 2024.
- Ramtin Ehsani**, Rezvaneh Rezapour, and Preetha Chatterjee. “Exploring Moral Principles Exhibited in OSS: A Case Study on GitHub Heated Issues”. In *Proceedings of the 31st ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering*. FSE 2023.
- Layla Bouzoubaa, **Ramtin Ehsani**, Preetha Chatterjee, and Rezvaneh Rezapour. “The Evolution of Substance Use Coverage in the Philadelphia Inquirer”. In *International AAAI Conference on Web and Social Media*. ICWSM Data Challenge 2023.
- Mohammad Ilbeigi, Azita Morteza, and **Ramtin Ehsani**. “Emergency Management in Smart Cities: Infrastructure-Less Communication Systems”. In *Construction Research Congress*. CRC 2022.

Journal Articles

- **Ramtin Ehsani**, Shriya Rawal, Yuanfang Cai, and Preetha Chatterjee. “Faster Code, Deeper Debt? A Multivocal Literature Review on Technical Debt in LLM-Assisted Software Development”. *Major revision–Under review*.
- **Ramtin Ehsani**, Sakshi Pathak, Esteban Parra Rodriguez, Sonia Haiduc, and Preetha Chatterjee. “What Characteristics Make ChatGPT Effective for Software Issue Resolution? An Empirical Study of Task, Project, and Conversational Signals in GitHub Issues”. In *Empirical Software Engineering*. EMSE 2025.
- Layla Bouzoubaa, **Ramtin Ehsani**, Preetha Chatterjee, and Rezvaneh Rezapour. “Shifting Narratives in Media Coverage: A Decade of Drug Discourse in The Philadelphia Inquirer”. In *Journal of Medical Internet Research Infodemiology*. JMIR 2025.
- Mohammad Ilbeigi, Azita Morteza, and **Ramtin Ehsani**. “An Infrastructure-Less Emergency Communication System: A Blockchain-Based Framework”. In *Journal of Computing in Civil Engineering*. 2022.

Workshops

- **Ramtin Ehsani**, Rezvaneh Rezapour, and Preetha Chatterjee. “Analyzing Toxicity in Open Source Software Communications Using Psycholinguistics and Moral Foundations Theory”. In *The 4th International Workshop on NL-based Software Engineering*. NLBSE 2025.

Extended Abstracts and Symposiums

- Layla Bouzoubaa, **Ramtin Ehsani**, Preetha Chatterjee, and Rezvaneh Rezapour. “The Evolution of Substance Use Coverage in the Philadelphia Inquirer”. In *10th International Conference on Computational Social Science*. IC2S2 2024.

PROFESSIONAL SERVICES

Program Committee

- 34th Intl. Conf. on Foundations of Software Engineering (FSE 2026), Tool Demonstrations Track Jan. 2026
- 34th Intl. Conf. on Program Comprehension (ICPC 2026), Replications and Negative Results Track Jan. 2026
- 23rd Intl. Conf. on Mining Software Repositories (MSR 2026), Research Track Dec. 2025
- 11th Intl. Conf. on Computational Social Science (IC2S2 2025), Extended Abstract Track Mar. 2025
- 22nd Intl. Conf. on Mining Software Repositories (MSR 2025), Research Track Dec. 2024
- 40th Intl. Conf. on Software Engineering (ICSE 2024), Artifact Evaluation Track Feb. 2023

Journal Reviewer

- *Journal of Science of Computer Programming* Aug. 2025
- *Journal of Software Testing, Verification and Reliability* (STVR) Jun. 2025
- *Journal of Automated Software Engineering* (ASE) Jun. 2024

FELLOWSHIPS & AWARDS

CCI College PhD Research Excellence Award Jun. 2025

Awarded by Drexel University’s College of Computing & Informatics for outstanding PhD research contributions.

SIGSOFT CAPS Travel Award Feb. 2023

Grant awarded by the Association for Computing Machinery (ACM) SIGSOFT for presenting research at the 31st ACM ESEC/FSE Conference.

GSA Graduate Student Domestic Travel Subsidy Award Feb. 2023

Grant awarded by Drexel’s Graduate Student Association for presenting at the 31st ACM ESEC/FSE Conference.

PROFESSIONAL MEMBERSHIPS & AFFILIATIONS

Events Coordinator of Doctoral Student Association (DSA) 2024 – 2025

Serving as an Executive Board Member and Events Coordinator, organizing academic and social events to foster community and support for doctoral students at Drexel University.

Member of Association for Computing Machinery (ACM) 2023 – Present

TECHNICAL SKILLS

Languages: Python, Java, C#, Javascript, SQL, Kotlin

Libraries: PyTorch, HF Transformers, HF Datasets, LangChain, Pandas, NLTK, React, Android