Yang Chen

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Research Interests

My research interests lie at the intersection of software engineering and AI, including (1) **integrating static analysis with LLMs to tackle real-world challenges**, such as **flaky test repair** and **SWE issue repair**; (2) **synthetic data generation**, such as evaluating flakiness detection tools and **benchmarking LLMs**. I also study LLM **code reasoning**. Prior research projects have equipped me with skills and experience in *neurosymbolic program analysis*, *genetic algorithms and LLM fine-tuning*, as well as software testing including flaky tests detection & repair (accumulating to 139 accepted patches in real-world projects), *mutation testing*, and *test suite minimization*. My ongoing research focuses on building **agentic systems** that integrate software engineering knowledge.

Education

2022-Present **University of Illinois Urbana-Champaign (USA)**.
Ph.D. Candidate in Computer Science
Co-advisors: Darko Marinov and Reyhaneh Jabbarvand

2018–2022 **Huazhong University of Science and Technology (China)**.
B.Sc. in Computer Science

Publications

[1] ICSE 2026 **Assessing Coherency and Consistency of Code Execution Reasoning by LLMs**.
Changshu Liu, **Yang Chen**, and Reyhaneh Jabbarvand.

[2] ICSE-FTW 2025 **A Preliminary Study of Fixed Flaky Tests in Rust Projects on GitHub**.
Tom Schroeder, Minh Phan, and **Yang Chen**.
Flaky Test Workshop in Proceedings of the 47th International Conference on Software Engineering. Ottawa, Canada. April 2025.

[3] ISSTA 2024 **Neurosymbolic Repair of Test Flakiness**.
Yang Chen and Reyhaneh Jabbarvand.
The 33rd ACM SIGSOFT International Symposium on Software Testing and Analysis. Vienna, Austria. September 2024.

[4] ICSE-FTW 2024 **Can ChatGPT Repair Non-Order-Dependent Flaky Tests?**.
Yang Chen and Reyhaneh Jabbarvand.
Flaky Test Workshop in Proceedings of the 46th International Conference on Software Engineering. Lisbon, Portugal. April 2024.

[5] ICSE -Companion 2024 **Flakiness Repair in the Era of Large Language Models** .
Yang Chen.
[2nd Place in Student Research Competition] Proceedings of the 46th International Conference on Software Engineering, Lisbon, Portugal. April 2024.

[6] ISSTA 2023 **Transforming Test Suites into Croissants**.
Yang Chen, Alperen Yildiz, Darko Marinov, and Reyhaneh Jabbarvand.
Proceedings of the 32nd ACM SIGSOFT International Symposium on Software Testing and Analysis, Seattle, USA. July 2023.

[7] preprint **Automated Bug Generation in the Era of Large Language Models**.
Ali Reza Ibrahimzada, **Yang Chen**, Ryan Rong, and Reyhaneh Jabbarvand.

[8] **Benchmarking Generalizability of LLMs**.
Under Review **Yang Chen**, Shuyang Liu, and Reyhaneh Jabbarvand.

[9] **Enhancing SWE Issue Repair with Regression Tests**.
Under Review **Yang Chen**, Toufique Ahmed, Reyhaneh Jabbarvand, and Martin Hirzel.

[10] **Process-Centric Analysis of Agentic Software Systems**.
Under Review Shuyang Liu, **Yang Chen**, Rahul Krishna, Saurabh Sinha, and Reyhaneh Jabbarvand.

[11] **Evaluating Code Reasoning Abilities of Large Language Models Under Real-World Settings**.
Under Review Changshu Liu, Alireza Ghazanfari, **Yang Chen**, and Reyhaneh Jabbarvand.

[12] **Can Large Language Models Reason About Code?**.
Under Review Changshu Liu, Shizhuo Zhang, **Yang Chen**, and Reyhaneh Jabbarvand.

[13] ICSE-Demo 2022 **iPFlakies: A Framework for Detecting and Fixing Python Order-Dependent Flaky Tests**.
Ruixin Wang, **Yang Chen**, and Wing Lam.
Demonstration Track, Proceedings of the 44th International Conference on Software Engineering, Pittsburgh, USA. May 2022.

Experience

2025 **IBM Research Scientist Intern**, *IBM Research, NY*.
May – Aug Manager & Mentor: Martin Hirzel and Toufique Ahmed.

Selected Honors and Grants

2024 Ranked 2nd in the 46th ACM Student Research Competition at ICSE 2024.
2023 SIGSOFT CAPS Grants for ISSTA 2023, ICSE 2024, and ISSTA 2024.
2022 Outstanding Graduate of Class 2022, Huazhong University of Science and Technology.

Academic Service

Reviewer: MSR 2024, TOSEM 2025.
Artifact Evaluation PC: ISSTA 2024, ISSTA 2025.
Research Track PC: MSR 2024.