Shuyang Liu

Ph.D. Candidate in Computer Science • University of Illinois Urbana-Champaign

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RESEARCH FOCUS

I develop, analyze, and optimize **AI-powered software agents** to make them more reliable, efficient, and adaptive. At the intersection of artificial intelligence and software engineering, my research investigates how agents reason and act in complex environments, and designs methods to evaluate, guide, and improve their behavior.

EDUCATION

University of Illinois Urbana-Champaign Aug. 2024 – Present
Ph.D. Candidate in Computer Science | Advisor: Reyhaneh Jabbarvand Expected Fall 2028

Huazhong University of Science and Technology Sept. 2020 – June 2024
B.E. in Computer Science GPA: 3.93/4.00

PUBLICATIONS

Process-Centric Analysis of Agentic Software Systems
Shuyang Liu, Yang Chen, Rahul Krishna, Saurabh Sinha, Jatin Ganhotra, Reyhaneh Jabbarvand
ACM SIGPLAN International Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA 2026)

From Plan to Action: How Well Do Agents Follow the Plan?
Shuyang Liu*, Saman Dehghan*, Jatin Ganhotra, Martin Hirzel, Reyhaneh Jabbarvand
41st IEEE/ACM International Conference on Automated Software Engineering (ASE 2026)

Exploiting Code Symmetries for Learning Program Semantics Spotlight (Top 3.5%)
Kexin Pei, Weichen Li*, Qirui Jin*, **Shuyang Liu**, Scott Geng, Lorenzo Cavallaro, Junfeng Yang, Suman Jana
41st International Conference on Machine Learning (ICML 2024)

Online Monitoring and Corrective Steering of Programming Agents
Shuyang Liu, Saman Dehghan, Ji Young Kim, Jatin Ganhotra, Martin Hirzel, Reyhaneh Jabbarvand
Under review

Beyond Outcomes: Toward Process-Aware Software Agents 1st Place
Shuyang Liu
41st IEEE/ACM International Conference on Automated Software Engineering (ASE 2026) · Student Research Competition

Graphectory Viewer: A Tool for Process-Centric Analysis of Agentic Software Trajectories
Charlie Jyu, **Shuyang Liu**, Reyhaneh Jabbarvand
41st IEEE/ACM International Conference on Automated Software Engineering (ASE 2026) · Tools and Datasets

Narrowing the Complexity Gap in the Evaluation of Large Language Models
Yang Chen, **Shuyang Liu**, Reyhaneh Jabbarvand
Under review

* Equal contribution.

WORK EXPERIENCE

IBM Thomas J. Watson Research Center May – Aug. 2025
Research Intern | Managers: Raju Pavuluri and Martin Hirzel

HONORS & AWARDS

First Place (Graduate Category), ACM Student Research Competition, ASE 2026.
ACM SIGSOFT CAPS Travel Grant, ASE 2026.
Outstanding Graduate (Class of 2024), Huazhong University of Science and Technology.

SERVICE

Student Volunteer, SPLASH 2026.