James Yoo

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June, 2025

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Research Interests	My primary research interest is in improving programmer productivity, most recently via automated tools that detect defects in code and verify its correctness.	
Research Experience	 Program Analysis for Natural-Language Prompts Investigating natural language as programming language; ef preserving changes in natural language prompts on code gen Development of analyses for natural language programs ins program analyses. 	October 2024 - Present fects of formatting and semantics- eration. pired by techniques from classical
	 Verification for Option Types Developed a static analysis tool that has the highest precise that targets errors associated with misuse of option values. Detected 13 previously-undiscovered defects in over 1 million real-world Java code. 	September 2023 - October 2024 ion (93%) of any open-source tool n non-comment, non-blank lines of
	 Context-Preserving Programming Interfaces Designed and executed a formative study for investigating diask in practice. Developed a user interface plugin for IntelliJ IDEA that enagramming questions while maintaining their context within t Designed and executed a randomized counter-balanced with interface plugin on 20 professional software developers. 	September 2020 - November 2022 fficult questions that programmers ables programmers to explore pro- the IDE. in-subjects user study of an user-
Publications	tions J. Yoo, M.D. Ernst, and R. Just. Verifying the Option Type with Rely–Guarantee Rel ASE 2024: Proceedings of the 39th ACM/IEEE International Conference on Automated S Engineering, October 2024, pp. 367-380.	
	J. Yoo and G.C. Murphy. Breaking the Bento Box: Accelerating Visual Momentum in Data-flow Analysis. ICSME 2023: Proceedings of the 39th IEEE International Conference on Software Maintenance and Evolution, October 2023, pp. 306-316.	
Awards	2017 UBC Computer Science Undergraduate Teaching Award 2017 UBC Alma Mater Society Service Award	
Education	University of Washington, Seattle PhD candidate in Computer Science & Engineering Advisors: Michael D. Ernst and René Just	September 2023 - Present
	University of British Columbia, Vancouver Master of Science in Computer Science Advisor: Gail C. Murphy Thesis: Investigating Data-flow Reachability Questions	November 2022
	University of British Columbia, Vancouver Bachelor of Science, Major in Computer Science with Co-op	May 2020
Industrial Experience	 Research Intern, Microsoft Research Research in Software Engineering (RiSE) group Verifying LLM output. 	June 2025 - Present
	Applied Scientist Intern, Amazon Web Services AWS Provable Security (FKA Privacy & Security Automation)	June 2024 - September 2024

• Led efforts to formally validate the results produced by an industrial-strength static analysis tool widely deployed at AWS.

Software Developer, Charli AI

February 2023 - September 2023 As Charli AI's 4th software developer, I was responsible for building out end-to-end solutions in their core application.

- Designed and implemented a service to restrict permissions on AI-generation templates which had been previously hardcoded in a frontend application.
- Led standardization of engineering processes, such as code reviews and incident response steps.

Software Developer, Twitter Inc.

October 2022 - January 2023 Privacy Tools and Infrastructure. I worked on a notification system that would be used across the company before I was affected by the layoffs initiated by Elon Musk in his acquisition of Twitter.

SDE Intern, Twitter Inc.

Privacy and Data Protection Engineering. I received a full-time employment offer from my team.

- Designed and implemented a low-latency end-to-end product analytics framework used by data privacy teams.
- Built out a data pipeline that delivered alarms and service events from Twitter's on-premise datacenters to Google Cloud.

SDE Intern, Hootsuite Inc.

Summer 2019 and Summer 2020

- Shepherded an external API migration across a customer-facing service with minimal downtime.
- Extended a core API gateway in Scala to support v2 data ingestion endpoints for social networks.
- Added a feature to communicate reply and comment unavailability for clients when external services were not operational.
- Assumed the role of scrum master for 1 month, planning work and organizing knowledge transfers across teams.

SDE Intern, Alida CXM January 2018 - August Implemented logging and other visibility metrics across Alida CXM's core surveys product offering.

SDE Intern, Broadcom Software September 2017 - December 2017 Developed and maintained automated user-interface tests in Python.

University of Washington, Seattle

- Graduate Teaching Assistant: Autumn and Winter 2024
 - TA for CSE 590X: How to PhD, Autumn 2024
 - TA for CSE P 504: Advanced Topics in Software Systems, Winter 2024

University of British Columbia, Vancouver

- Graduate Teaching Assistant Coordinator: Autumn 2021 Summer 2022
 - Designed and administered training sessions for all new teaching assistants
 - Coordinated performance reviews and led conflict mitigation for teaching assistants
 - Conducted reviews for TA training processes and prepared budgets for each term
- Teaching Assistant and Seminar Instructor: Autumn 2016 Spring 2021
 - Co-instructor for CPSC 490: Student Seminar in Computer Science Education, 2020
 - Lead TA and Infrastructure Lead for CPSC 110: Intro. Computer Science (7 terms)
 - Lead TA for CPSC 210: Intro. Software Construction (3 terms)
 - TA for CPSC 221: Intro. Data Structures and Algorithms, Fall 2018
 - Graduate TA and guest lecturer for CPSC 310: Software Engineering (4 terms)

Teaching Experience

June 2021 - August 2021

Winter 2024 and Autumn 2024

2016 - 2021

University of British Columbia, Vancouver

- Graduate Student Admissions Committee (2020, 2021).
- Undergraduate Teaching Awards Committee (2021).

University of Washington, Seattle

Service

- Area Chair, Graduate Applications Committee (2024).
- Chair, Prospective Student Committee (2024).
- Mentor, Pre-application Mentorship Service (2023, 2024).
- Reader, Graduate Applications Committee (2023).