

# James Yoo

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<b>Research Interests</b>	My current research interest is in augmenting programmer productivity via automated tools that detect defects in code and verify its correctness. My previous research focused on context-preserving programming interfaces.	
<b>Research Experience</b>	<b>Verification for Option Types, University of Washington</b>	September 2023 - Present
	I am working on a type system and verification tool that guarantees the absence of run-time errors related to the misuse of the option type.	
	<ul style="list-style-type: none"><li>Detected 13 previously-undiscovered defects in 1 million non-comment, non-blank lines of real-world Java code.</li></ul>	
	<b>Verifying Collections, University of Washington</b>	January 2024 - Present
	I am constructing a type system and verification tool that enables programmers to reason about whether container types are non-empty, helping to eliminate run-time errors related to mishandling empty containers.	
	<b>Context-Preserving Programming Interfaces, U of B.C.</b>	September 2020 - November 2022
	I conducted research in integrated development environments. Developed an IntelliJ IDEA plugin for asking and answering data-flow reachability questions in context. <b>Published at ICSME '23.</b>	
	<ul style="list-style-type: none"><li>Designed and executed a formative study for investigating difficult questions that programmers ask in practice.</li><li>Developed a user interface plugin for IntelliJ IDEA that enables programmers to explore programming questions while maintaining their context within the IDE.</li><li>Designed and executed a randomized counter-balanced within-subjects user study of an user-interface plugin on 20 professional software developers.</li></ul>	
<b>Publications</b>	<b>J. Yoo</b> and G. Murphy. <i>Breaking the Bento Box: Accelerating Visual Momentum in Data-flow Analysis</i> . ICSME 2023: Proceedings of the 39th IEEE International Conference on Software Maintenance and Evolution, October 2023, pp. 306-316.	
<b>Awards</b>	2017 UBC Computer Science Undergraduate Teaching Award 2017 UBC Alma Mater Society Service Award	
<b>Education</b>	<b>University of Washington, Seattle</b>	September 2023 - Present
	PhD student in Computer Science & Engineering Advisors: Michael D. Ernst and René Just	
	<b>University of British Columbia, Vancouver</b>	November 2022
	Master of Science in Computer Science Advisor: Gail C. Murphy Thesis: <i>Investigating Data-flow Reachability Questions</i>	
	<b>University of British Columbia, Vancouver</b>	May 2020
	Bachelor of Science, Major in Computer Science with Co-op	
<b>Industrial Experience</b>	<b>Software Developer, Charli AI</b>	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.	
	<ul style="list-style-type: none"><li>Designed and implemented a service to restrict permissions on AI-generation templates which had been previously hardcoded in a frontend application.</li><li>Led standardization of engineering processes, such as code reviews and incident response steps.</li></ul>	

**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.** June 2021 - August 2021  
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.

## Teaching Experience

**Graduate Teaching Assistant Coordinator, U of B.C.** August 2021 - July 2022  
Graduate coordinator for all teaching assistants employed by the department of computer science.

- Designed and administered training sessions for new teaching assistants.
- Coordinated performance reviews and led conflict mitigation for teaching assistants.
- Conducted reviews for TA training processes and prepared budgets each term.

**University of British Columbia, Vancouver** September 2016 - May 2021  
Worked across UBC's offering of core undergraduate programming and software engineering courses, often as a lead teaching assistant (TA). Co-taught a seminar on computer science education research.

- Co-instructor for CPSC 490: Student-led Seminar in Computer Science Education, Winter 2020.
- Lead TA and Infrastructure Lead for CPSC 110: Introduction to Computer Science (7 terms).
- Lead TA for CPSC 210: Software Engineering (3 terms).
- TA for CPSC 221: Introduction to Data Structures and Algorithms, Fall 2018.
- Graduate TA and Guest lecturer for CPSC 310: Software Engineering (4 terms).

## Service

**University of British Columbia, Vancouver**

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

**University of Washington, Seattle**

- Graduate Applications Reader (2023).
- Pre-application Mentorship Service (2023).