

# JASPER GEER

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## EDUCATION

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- University of British Columbia** 2024-Present  
*Vancouver, British Columbia, Canada*  
Computer Science, PhD
- Supervised by Dr. Alexander J. Summers
- Tufts University** 2020-2024  
*Medford, Massachusetts, USA*  
Computer Science, BS  
*summa cum laude*
- Activities: TuPL Reading Group, Tufts Chinese Students' Association Event Chair 2022-23
- Mercer Island High School** 2016-2020  
*Mercer Island, Washington, USA*

## RESEARCH EXPERIENCES

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- Tufts Programming Languages (TuPL)**, Tufts University September 2023 - Present  
*Research Assistant*
- Conducted program synthesis research under Professor Jeff Foster.
  - Worked on the implementation of a novel constraint-guided Java program synthesis technique.
- Tufts Security and Privacy Lab**, Tufts University September 2023 - May 2024  
*Research Assistant*
- Assisted in a review of recent symbolic execution literature under Professor Dan Votipka.
  - Qualitatively coded rounds of 5-10 research papers and contributed to codebook development.

## PROFESSIONAL EXPERIENCES

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- Tesla** May 2023 - August 2023  
*Vehicle Software Intern*
- End-to-end feature development in Haskell for an incremental compiler frontend.
  - Refactored compiler passes into incremental build rules for a monadic build system.
  - Created embedded domain-specific languages to implement new language server features.
  - Received offer for full-time conversion.

## TEACHING

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- University of British Columbia, Graduate Teaching Assistant** September 2024 - Present
- CPSC411, Compilers. *Spring 2024.*
  - CPSC311, Definition of Programming Languages. *Fall 2024.*
- Tufts University, Teaching Fellow** January 2024 - May 2024
- CS170, Computation Theory. *Spring 2024.*
- Tufts University, Course Assistant** September 2022 - December 2023

- CS170, Computation Theory. *Fall 2022*.
- CS170, Computation Theory. *Spring 2023*.
- CS170, Computation Theory. *Fall 2023*.

### Coding With Kids

*May 2022 - September 2022*

- Taught week-long programming classes for middle and elementary school students.

### The Summit at Snoqualmie

*Nov 2018 - March 2021*

- Taught 8-week long nordic skiing youth programs.

## AWARDS

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**Four Year Doctoral Fellowship (4YF)**, University of British Columbia

*Jan 2026 - Dec 2029*

## PROJECTS

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### miniVerifier

- Symbolic-execution based verifier for a small programming language with Hoare-logic specifications.
- Written in Haskell and produces SMT-LIBv2 scripts.

### Compost

- LLVM frontend for a statically-typed functional programming language.
- Designed an affine type system to enforce memory safety without runtime garbage collection.
- Began as a personal summer project, completed as a semester-long group project in a compilers class.
- Written in OCaml.

### tinyValidator

- Translation validator for a C-subset language by means of symbolic execution.
- Devised a big-step operational semantics to describe the execution of programs with symbolic inputs.
- Written in Haskell and uses the Z3 SMT solver.

## PROGRAMMING BACKGROUND

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- Recent Experience with Haskell, Scala, and Rust.
- Some experience with OCaml, SML, Racket, C, Typescript, Python, and Java.