# JASPER GEER

**jasper.geer@ubc.ca | www.jaspergeer.com**

## Education

**University of British Columbia** *2024-Present*
*Vancouver, British Columbia, Canada*
Computer Science, PhD

- Supervised by Dr. Alexander J. Summers

**Tufts University** *2020-2024*
*Medford, Massachussets, 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

**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

**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

**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

- Travel Award: Programming Languages Mentoring Workshop (PLMW) at International Conference on Functional Programming (ICFP) 2023

## Projects

**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

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

## Awards

**Four Year Doctoral Fellowship (4YF)**, University of British Columbia *Jan 2026 - Dec 2029*