JASPER GEER

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Education

Tufts University *2020-2024 (Expected)*
Medford, MA Major GPA: 3.89
Computer Science Major GPA: 3.86

- Coursework: Compilers, Virtual Machines and Language Translation, Programming Languages, Graph Theory, Advanced Topics in Computer Architecture, Internet-Scale Distributed Systems, Operating Systems
- Activities: Tufts Chinese Students' Association Event Chair 2022-23

Mercer Island High School *2016-2020*
Mercer Island, WA

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 - Present*
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

Tufts University, Teaching Fellow *January 2024 - Present*

- 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

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

- Artifact produced for directed study with Professor Jeff Foster.
- Translation validation 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 using the Z3 SMT solver.

Programming Background

- Recent Experience with Haskell, OCaml, Scala, Agda, and C.
- Some experience with SML, Scheme, C++, Typescript, Python, and Java.