

## RESEARCH INTERESTS

Programming Languages • Human-Computer Interaction

## EDUCATION

**University of Toronto** • **H.B.Sc in Mathematics & Computer Science** • *May 2019*

Graduate-level coursework in abstract algebra, compilers, graphics & languages.

Coursework in algorithms, concurrency, differential geometry, operating systems & topology.

Built a Racket-based x86/C compiler for a  $\lambda$ -calculus-based language with macro system.

## RESEARCH EXPERIENCE

**Techniques in Variability-aware Data Structures with Marsha Chechik** • *2018 - 2019*

Built & profiled Haskell data structures supporting variational analysis of software product lines.

Designed & built [SpyShare](#), a Graphviz-based tool to visually inspect data sharing.

Created and modelled a system of GHC rewrite-rules using PLT Redex.

[Project Report](#) • [Presentation Slides](#)

**Independent Study in Structured Editing in Racket with Gary Baumgartner** • *Summer 2017*

Self-initiated study of existing refactoring, live programming & direct manipulation tooling.

Began work on [Fracture](#), a Racket-based polyglot structure editor, and [Containment Patterns](#), which extend pattern matching to capture contexts as composable continuations.

## CONFERENCES

**Invited speaker at RacketCon** • *2019* • *Salt Lake City*

Spoke about [Fracture](#), a prototype structured editor focused on edit-time term-rewriting

[Recorded Talk](#) • [Fracture Slides](#)

**Seat Filler** • *Salt Lake City, Toronto, Eugene, St.Louis*

2019: [Racket's How to Design Languages Summer School, Clojure North](#).

2018: [Oregon Programming Languages Summer School, ICFP, Strange Loop, RacketCon](#)

## TEACHING

**Course Development** • *Summer 2018* • *University of Toronto*

Designed assignments and course materials for CSC324 - Principles of Programming Languages.

Specified and built [Ductile](#), a toy language demonstrating exhaustive pattern matching on ADTs.

Implemented an [algebraic stepper](#) to illustrate continuations and non-determinism in Scheme.

**Teaching Assistance** • *University of Toronto*

Winter 2019 CSC324 Principles of Programming Languages

Fall 2018 CSC324 Principles of Programming Languages

Fall 2018 CSC104 Introduction to Computational Thinking

Winter 2018 CSC324 Principles of Programming Languages

Fall 2017 CSC324 Principles of Programming Languages

## INDUSTRY EXPERIENCE

**TODAQ Toronto** • **Software Development in Clojure** • *May 2019 - Current*

On the back-end: Implementing and refining a new protocol for decentralized digital asset management based on a Merkel-trie-derived distributed data structure. On the front-end: Building a reactive web portal and mocking up UI for upcoming protocol applications.

## LANGUAGES

English • French