Sean Bocirnea

Updated April 9th, 2025 – https://orcid.org/0009-0007-5231-8618 – https://passingti.me

Education

Bachelor of Science, Honours in Computer Science with Software Engineering

University of British Columbia, Vancouver, Canada

Sept. 2019 – May 2023. 92.2% GPA Overall

Selected Coursework:
Algebra and Coding Theory (MATH342, 2020W, 94%),
Machine Learning and Data Mining (CPSC340, 2021W, 99%),
Topics in Computer Science – NLP (CPSC436N, 2022W, 96%),
Advanced Algorithms (CPSC420, 2023W, 92%),
Compiler Construction (CPSC411, 2023W, 90%)

Doctor of Philosophy in Computer Science

University of British Columbia, Vancouver, Canada

Sept. 2023 – Present. Supervisor: Dr. William J. Bowman

Research in UBC's Software Practices Lab. Currently interested in gradual dependent types, performance evaluation, type preserving compilation. Currently performing research in extensible language frameworks and metaprogramming.

Selected Coursework:
Dependent Types (CPSC539B, 2023W, 98%),
Programming Language Principles (CPSC509, 2023W, 94%)

Publications

Adam T. Geller, Sean Bocirnea, Chester J. F. Gould, Paulette Koronkevich, and William J. Bowman 2025. Type-Preserving Flat Closure Optimization. Proc. ACM Program. Lang. 9, OOPSLA1, Article 103 (April 2025), 27 pages. https://doi.org/10.1145/3720437

Experience

Software Development Consultant

Motivity Systems, Honolulu, Hawaii

Part-time 2018-2023

Web and server-side development in F# with FRP concepts, product aimed at facilitating ABA therapy. Autonomously performed requirements elicitation, UX/UI design, development and testing of high-priority user-facing features in a fully reactive web application. Development of server-side data structures to support feature additions and interaction with external systems.

Notable Achievements: Interval data collection methodology and interface; result: Motivity application rated best in interval data collection for ABA therapy by the Behavioral Collective.

Reactive pagination over arbitrary server queries with live state updates. API surface design for AlohaABA integration. Bulk data collection.

Honours Thesis Research

Sept. 2022 – May 2023. UBC, Supervisor: Dr. William J. Bowman

Implementation of gradual dependent typed language embedded into Racket. Exploration of interoperability with Racket terms across gradual boundary. Exposure to concepts including the Calculus of Inductive Constructions, Martin-Löf type theory, normalization and decidability of type checking, definitional and propositional equalities.

Awards

NSERC CGS-M – UBC, 2024W
BC Graduate Scholarship – UBC, 2024W

Science Scholar – *UBC, 2019W, 2020W, 2021W*
Dean's Honour List – *UBC, 2019W, 2020W, 2021W, 2022W*
Trek Excellence Scholarship – *UBC, 2020W, 2021W, 2022W*
Charles and Jane Banks Scholarship – *UBC, 2020W, 2022W*
J Fred Muir Memorial Scholarship in Science – *UBC, 2021W*

Projects

FLEx: Fast Language Extension Framework – *UBC, 2024W*

Research proficiency evaluation project, successfully passed and transitioned into the Ph.D. program. Developed a taxonomy for categorizing the extensibility of language development frameworks, and created a framework which targeted a previously unexplored blend of performance and extensibility goals.

Associated Engineering Resume Management System – *UBC, 2021W*

CPSC 319 Group project (Team of 6) – Task provided by sponsor Associated Engineering. Developed a resume management web application complete with backend API, SQL server and a professional identity provider solution, hosted in Microsoft Azure. UX design lead. Backend and deployment lead. Managed and created continuous integration pipelines, testing and production deployments. Solely responsible for backend framework selection and identity service development, used industry-standard tools.

Proficiency

Languages:	*Proficient:*	F#, Java, Racket, LaTeX
	Familiar:	Agda, Python, C++, Java/TypeScript, C#, Haskell