

Logan Murphy | Curriculum Vitae

Toronto – Canada

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Education

Doctor of Philosophy 2022–Present

University of Toronto, Department of Computer Science

Supervisor: Marsha Chechik

Master of Science 2020–2022

University of Toronto, Department of Computer Science

Supervisor: Marsha Chechik

Bachelor of Science with First Class Honours 2016–2020

Saint Francis Xavier University, Department of Computer Science

Department of Computer Science

Research Statement

I aim to use formal methods and proof engineering to solve software assurance challenges. I am especially interested in creating, reusing and repairing proofs and verification witnesses for variability-aware software systems (e.g., Software Product Lines). I am also interested in variability-aware verification, and in supporting widespread formal, auditable software assurance by combining automated theorem proving with proof assistants (in particular, Lean).

Awards

- Walter C. Sumner Memorial Fellowship (6,650 CAD) 2023
- Bell Graduate Scholarship (20,000 CAD) 2022
University of Toronto
- Bell Graduate Scholarship (20,000 CAD) 2021
University of Toronto
- Dr. H. Stanley and Doreen Alley Heaps Award in Computer Science (3,000 CAD) 2019
Saint Francis Xavier University
- Alley Heaps Summer Research Internship Award (6,250 CAD) 2019

Publications

Conference Proceedings.....

- Torin Viger, **Logan Murphy**, Simon Diemert, Claudio Menghi, Alessio Di Sandro, Marsha Chechik. *Supporting Assurance Case Development Using Generative AI*. SAFECOMP 2023 (Position Paper)
- **Logan Murphy**, Alessio Di Sandro, Ramy Shahin, Marsha Chechik. *Reusing Your Favourite Analysis Framework to Handle Workflows of Product Line Models*. Proceedings of the 27th International Conference on Systems and Software Product Lines (SPLC), 2023.
- **Logan Murphy**, Torin Viger, Alessio Di Sandro, Ramy Shahin, Marsha Chechik. *Validating Safety Arguments with Lean*. Proceedings of the 19th International Conference on Software

Engineering and Formal Methods (SEFM), 2021 (**Invited Paper**).

- o Torin Viger, **Logan Murphy**, Alessio Di Sandro, Ramy Shahin, Marsha Chechik. *A Lean Approach to Building Valid Model-Based Safety Arguments*. Proceedings of the 23rd ACM/IEEE International Conference on Model Driven Engineering, Languages and Systems (MODELS), 2021.

Journal Articles.....

- o Torin Viger, **Logan Murphy**, Alessio Di Sandro, Claudio Menghi, Ramy Shahin, Marsha Chechik. *The ForeMoSt approach to building valid model-based safety arguments*. Software and Systems Modeling (2022).

Tool Papers.....

- o Alessio Di Sandro, **Logan Murphy**, Torin Viger, Marsha Chechik. *MMINT-A: A Framework for Model-based Safety Assurance*. Science of Computer Programming 231.

Teaching Experience (TA)

Software Testing and Verification (CSC236)	Fall 2023
Introduction to the Theory of Computing (CSC236)	Summer 2023
Enriched Introduction to the Theory of Computing (CSC240)	Spring 2023
Software Testing and Verification (CSC410)	Fall 2022
Enriched Introduction to the Theory of Computing (CSC240)	Spring 2022
Introduction to the Theory of Computing (CSC236)	Fall 2021
Enriched Introduction to the Theory of Computing (CSC240)	Spring 2021
Software Testing and Verification (CSC410)	Fall 2020
<i>All TAs held at the University of Toronto</i>	

Professional Experience

Software Engineering Intern May – Sept 2022
CertiK, LLC

- o Developed improvements to symbolic model checking toolchain for smart contract auditors

Service

Student Volunteer 2022
ACM/IEE 25th Int'l Conference on Model Driven Eng., Languages and Systems (MODELS)

Co-President, Mathematics and Computer Science Society Sept 2019 – May 2020
Saint Francis Xavier University