Danya Lette

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EDUCATION

- **University of Toronto** (Expected) 2023
  M.Sc. in Computer Science

- **University of Toronto** 2021
  B.Sc. (Hons) in Computer Science

- **University of Toronto** 2013
  B.A. (Hons) in Philosophy

RESEARCH INTERESTS

Automated formal verification, program synthesis, programming language theory, concurrency, distributed computing, theory of computation, privacy and security, cryptography, quantum computing.

PUBLICATIONS

[1] Azadeh Farzan, **Danya Lette**, and Victor Nicolet. 2022. Recursion synthesis with unrealizability witnesses. In *Proceedings of the 43rd ACM SIGPLAN International Conference on Programming Language Design and Implementation* (PLDI 2022). Association for Computing Machinery, San Diego, CA, USA, 244–259. ISBN: 9781450392655.

TEACHING

- **Teaching Assistant** at University of Toronto 2019-present

  — CSC324: Principles of Programming Languages (Winter 2022)
  — CSC410: Software Testing and Verification (Fall 2021)
  — CSC111: Foundations of Computer Science II (Winter 2021)
  — CSC165: Mathematical Expression and Reasoning (Winter 2020)
  — CSC324: Principles of Programming Languages (Fall 2019)
  — CSC148: Introduction to Computer Science (Winter 2019)

  As a teaching assistant, I have graded assignments, assisted students one-on-one during office hours, monitored and contributed to student discussion forums, invigilated exams, and I have led a weekly practicum.

RESEARCH

- **Research Assistant** (NSERC UGSRP) Summer 2021
  — Supervisor: Azadeh Farzan
  — Project Title: Synthesis of Recursive Programs

  The aim of this project was to develop a bounding method for the synthesis of a recursive function over recursive input data types, in which the synthesis problem is specified by an input reference function and a recursion skeleton. We implemented the result in a tool called Synduce written in OCAML. This work resulted in a conference paper which is currently under submission.

- **Research Assistant** (NSERC UGSRP) Summer 2020
  — Supervisor: Azadeh Farzan
  — Project Title: Symmetry Reduction for Automated Formal Verification of Concurrent Programs

  In this project, I investigated the use of symmetry reductions for more efficient automated formal verification of programs which exhibit a high degree of symmetry, such as multi-threaded programs. In doing so, I formalized the notion of symmetry in the context of trace abstraction, designed algorithms for symmetry-reduced verification, and evaluated the algorithms for efficiency, soundness and completeness. I subsequently implemented these algorithms in an automated formal verification tool called Weaver (written in Haskell).

- **Computer Science Project** (CSC494) Winter 2020
  — Supervisor: Azadeh Farzan
  — Project Title: Automated Formal Verification of Concurrent Programs

  This project aimed at exploring the use of reductions in verification of concurrent programs by doing a literature survey with a focus on interpolation, infinite tree automata, and partial order reduction.

EMPLOYMENT

- **Software Developer** 2013-2017
  — Mercatus (Oct 2015-Nov 2016)
  — Toronto International Film Festival (Dec 2014-Aug 2015)
  — Freelance (2013-2017)

CO-CURRICULAR

- **Review of Undergraduate Computer Science (RUCS)** 2017-2020
  — Senior Advisor (2019-2020)
  — Editor-in-Chief (2018-2019)
  — Editor (2017-2018)

  The Review of Undergraduate Computer Science (RUCS) is a non-archival open-access journal founded in 2015. We publish one edition per year featuring undergraduate computer science research at the University of Toronto and elsewhere. As an editor, I evaluated, reviewed, and edited submissions. As editor-in-chief, I led a team of eight volunteers in publishing our yearly edition. In addition, I spearheaded several new projects such as a website redesign, publication of the Undergraduate Research Guide, and several student outreach initiatives such as the UGSRP Meet & Greet and the RUCS/TURCS Speaker Series.

- **CS Research-A-Thon** Winter 2019, Winter 2020
  Founder & Lead Organizer

  As the founder and lead organizer of the CS Research-A-Thon, my responsibilities included event planning, writing and giving presentations for Research-A-Thon participants, recruiting and leading a team of volunteers, and communicating with faculty members and students to devise miniature research projects for participants.

Awards

- Bell Graduate Scholarship   2022
- NSERC Undergraduate Student Research Award   2021
- Thriver Prize in Computer Science   2021
- NSERC Undergraduate Student Research Award   2020
- Dean's List   2019, 2020

Languages

- *Fluent:* English, French.
- *Limited Proficiency:* Spanish, German