

THOMAS SNOW

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EDUCATION

University of Toronto

Sept 2024 - Jan 2026

Master of Science in Computer Science, advised by Mike Molloy

Member of the Theory Group

GPA: 4.0/4.0

Research Keywords: Random Graphs · Colorings · Probabilistic Method

University of Waterloo

Sept 2019 - Dec 2023

Bachelor of Mathematics

Major in Combinatorics and Optimization, Honours

Minor in Computational Mathematics

GPA: 3.86/4.0

Dean's Honours

RESEARCH

University of Toronto

Sept 2019 - Present

Master's Thesis (Advised by Mike Molloy)

Toronto, Canada

- Analyzed the solution space of Random Constraint Satisfaction Problems (CSP's); Particularly, with respect to adaptable colorings in Erdős–Rényi random graphs with a random (not necessarily proper) edge coloring.
- Utilized the Weighted Second Moment Method for the case of 2 colors.
- Characterized structural properties of graphs with a given edge coloring, which determine adaptable 2-colorability.
- Provided and proved a sharp threshold for the adaptable 2-colorability of a random graph with and without random edge colorings.
- Provided and proved bounds on the scaling/critical window for adaptable 2-colorability, matching the windows of the giant component and 2-SAT.
- Proved that below the critical window, the solution space is connected with high probability and thus does not exhibit a clustering property.
- Research funded by Ontario Graduate Scholarship (OGS).

University of Waterloo

May 2023 - Aug 2023 & Jan 2024 - Apr 2024

Undergraduate Research Assistant (URA)

Waterloo, Canada

- Worked under the supervision of professors Kanstantsin Pashkovich and Ricardo Fukasawa on online approximation algorithms for maximal matchings under adversarial edge arrivals.
- Developed and proved an optimal fractional algorithm for graphs of maximum degree 3, consequently proving no gap exists between edge and vertex arrival models for this case.
- Proved an upper bound for the competitive ratio achievable by any integral algorithm on graphs of maximum degree 3.
- Proved an upper bound for the competitive ratio achievable on bipartite graphs of maximum degree 4.
- Proved an upper bound for an existing framework of algorithms for trees of maximum degree 3.
- Research funded by NSERC Undergraduate Student Research Award (USRA) and Mathematics Undergraduate Research Award (MURA)

TEACHING

University of Toronto

Teaching Assistant (TA)

Sept 2024 - Present

Toronto, Canada

- TA for CSC 373 (Algorithm Design, Analysis & Complexity) from Sept 2025 - Dec 2025 & Jan 2026 - Present.
- TA for CSC 148 (Introduction to Computer Science) from Jan 2025 - Apr 2025.
- TA for CSC 236 (Introduction to the Theory of Computation) from Sept 2024 - Dec 2024.
- Duties include: Holding Office Hours and Tutorials, marking, and Invigilating Tests/Exams.

WORK EXPERIENCE

Public Services and Procurement Canada

Data Scientist & Operations Researcher

May 2024 – Aug 2024

Ottawa, Canada

- Produced a real property report analyzing the predicted occupancy and true benchmark counts.
- Utilized copulas to model the joint distribution of multiple count types over a multitude of buildings in order to analyze their dependency structure and better predict the true occupancy counts, with data manipulation and analysis done through R.

Sun Life Financial

Security Developer

May 2022 – Aug 2022

Waterloo, Canada

- Co-developed a library in Java that scans and validates uploaded files for malicious content, supporting a variety of file types.
- Coordinated efforts and collaborated with multiple teams and third parties to remediate penetration test findings.
- Utilized Burp Suite Professional to recreate vulnerabilities and flag false positives.

Sun Life Financial

Application Security Developer

May 2021 – Aug 2021

Waterloo, Canada

- Developed an extension for Burp Suite Professional using Java and SQLite to test the security of web applications.
- Wrote an API using ASP.NET in C# to check for insecure login credentials.
- Developed tools in C++ to perform HTTP requests and process the responses.

PUBLICATIONS

Refereed Conference Proceedings

Pashkovich, K., Snow, T. (2026). Online Algorithm for Fractional Matchings with Edge Arrivals in Graphs of Maximum Degree Three. In: Matuschke, J., Verschae, J. (eds) Approximation and Online Algorithms. WAOA 2025. Lecture Notes in Computer Science, vol 16077. Springer, Cham. https://doi.org/10.1007/978-3-032-06706-7_14

Refereed Journals

(Invitation Only & In Progress) Acta Informatica (Topical Collection WAOA 2025): Pashkovich, K., Snow, T. (2026). Online Algorithm for Fractional Matchings with Edge Arrivals in Graphs of Maximum Degree Three.

TALKS

Workshop on Approximation and Online Algorithms (WAOA)

Part of ALGO 2025

Sept 19 2025

Warsaw, Poland

- Online Algorithm for Fractional Matchings with Edge Arrivals in Graphs of Maximum Degree Three.

Theory Student Seminar (TSS)

Department of Computer Science

Nov 6 2025

Toronto, Canada

- A Look into the Critical Window for Adaptable 2-Colorability.

AWARDS

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| Ontario Graduate Scholarship (OGS) | 2025 | \$15,000 |
| Mathematics Undergraduate Research Award (MURA) | 2024 | \$6,000 |
| NSERC Undergraduate Student Research Award (USRA) | 2023 | \$6,000 |
| University of Waterloo President Scholarship | 2020 | \$2,000 |