

# THOMAS SNOW

tsnow@cs.toronto.edu  
(613) 501 - 5281  
tsnowh.github.io

## EDUCATION

---

### University of Toronto

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

Sept 2024 - Jan 2026

### University of Waterloo

Bachelor of Mathematics

Major in Combinatorics and Optimization, Honours

Minor in Computational Mathematics

GPA: 3.86/4.0

Dean's Honours

Sept 2019 - Dec 2023

## RESEARCH

---

### University of Toronto

*Master's Thesis (Advised by Mike Molloy)*

Sept 2019 - Present

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

*Undergraduate Research Assistant (URA)*

May 2023 - Aug 2023 & Jan 2024 - Apr 2024

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

---

<b>University of Toronto</b> <i>Teaching Assistant (TA)</i>	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

---

<b>Public Services and Procurement Canada</b> <i>Data Scientist &amp; Operations Researcher</i>	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.	
<b>Sun Life Financial</b> <i>Security Developer</i>	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.	
<b>Sun Life Financial</b> <i>Application Security Developer</i>	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](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

---

<b>Workshop on Approximation and Online Algorithms (WAOA)</b> <i>Part of ALGO 2025</i>	Sept 19 2025 Warsaw, Poland
· Online Algorithm for Fractional Matchings with Edge Arrivals in Graphs of Maximum Degree Three.	
<b>Theory Student Seminar (TSS)</b> <i>Department of Computer Science</i>	Nov 6 2025 Toronto, Canada
· A Look into the Critical Window for Adaptable 2-Colorability.	

## **AWARDS**

---

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