ANDREW LUO

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EDUCATION

University of Waterloo   Waterloo, Ontario
Doctor of Philosophy - Computer Science   *Jan 2024 - Present*

- Conducting research in symbolic computational methods for Analytic Combinatorics in Several Variables under the supervision of Stephen Melczer and Eric Schost
- **Courses:** Computational Complexity, Algebraic Geometry, Algebraic Complexity, Artificial Intelligence, Software Design and Architecture, Computer Networks, Complexity in Commutative Algebra

University of Waterloo   Waterloo, Ontario
Bachelor of Mathematics   *Sept 2018 - Apr 2023*

- Triple majors in Computer Science, Pure Mathematics, and Combinatorics & Optimization
- **Courses:**
  - PMATH – Groups and Rings, Fields and Galois Theory, Real Analysis, Complex Analysis, Differential Geometry, Analytic Number Theory, Lebesgue Integration and Fourier Analysis, Algebraic Number Theory, Representation of Finite Groups, Set Theory and Model Theory
  - CS – Functional Programming, Object Oriented Programming, Data Structures and Algorithms, Numerical Computation, Theory of Computation, Algorithm Design and Analysis, Machine Learning
  - CO – Intro to Optimization (Advanced Level), Combinatorial Enumeration, Applied Cryptography, Mathematics of Public Key Cryptography, Algebraic Combinatorics, Continuous Optimization

ACADEMIC EXPERIENCE

Graduate Teaching Assistant   Waterloo, ON
University of Waterloo   *Jan 2024 - Present*

- Conducted office hours, tutorials, responses to student inquiries on piazza, and grading of assignments and exams for CS 370

Instructional Apprentice   Waterloo, ON
University of Waterloo   *Sept 2024 - Dec 2024*

- Conducting weekly tutorials and office hours for CS 245

Undergraduate Teaching Assistant   Waterloo, ON
University of Waterloo   *Sept 2019 - Dec 2022*

- Conducted grading and feedback for undergraduate mathematics courses including Math 136 and Math 235

Undergraduate Mathematics Research Assistant   Waterloo, ON
University of Waterloo   *May - Aug 2022*

- Worked under the supervision of Stephen Melczer and ACSV group B. Hackl, J. Selover, E.Wong to develop a SageMath package for computing asymptotics of multivariate generating functions

University of Waterloo   *May - Aug 2021*

- Surveyed the most recent progress made in and applications to Waring's Problem and Vinogradov's Mean Value Theorem under supervision of Professor Yu-Ru Liu

PUBLICATIONS

A SageMath Package for Analytic Combinatorics in Several Variables: Beyond the Smooth Case.   FPSAC Link
B. Hackl, A.Luo, S. Melczer, E. Schost. Submitted March 2025.

Rigorous Analytic Combinatorics in Several Variables in SageMath. B. Hackl, A. Luo, S. Melczer, J.   FPSAC Link
Selover, and E. Wong. Submitted March 2023.

Presentations

A SageMath Package for Analytic Combinatorics in Several Variables, SageDays 2025, Hokkaido University	Sapporo, Japan
A SageMath Package for Analytic Combinatorics in Several Variables: Beyond the Smooth Case (Code Demo), FPSAC 2025, Hokkaido University	Sapporo, Japan
Automatically Computing Asymptotics of Sequences with Multivariate Rational Generating Functions, AofA 2025, Fields Institute	Toronto, ON
A Brief Introduction to Computational Analytic Combinatorics, Canadian Undergraduate Mathematics Conference, Université Laval	Québec City, QC
An Introduction to Vinogradov's Mean Value Theorem, Canadian Undergraduate Mathematics Conference, Western University	London, ON

Professional Experience

Part-Time Mathematics Tutor *Cloudtimes Education*	Missisauga, ON *Feb 2023 - June 2024*
Full-Stack Software Developer Intern *Noom*	New York City, NY *Jan - Apr 2022*
Full-Stack Developer Intern *BDO*	Missisauga, ON *Sep - Dec 2020*
Backend Developer Intern *Wayfair*	Boston, MA *Jan - Apr 2020*
Full-Stack Software Developer Intern *Wish*	San Francisco, CA *May - Aug 2019*

Honours and Awards

Canada Graduate Scholarship - Master's	*NSERC*	2025
Queen Elizabeth II Scholarship in Science & Technology	*University of Waterloo*	2024
Graduate Excellence Award in Computer Science	*University of Waterloo*	2024
Mike Vangoch Memorial Scholarship	*University of Waterloo*	2023
NSERC Undergraduate Student Research Award	*NSERC*	2022
NSERC Undergraduate Student Research Award	*NSERC*	2021
Faculty of Mathematics Entrance Scholarship	*University of Waterloo*	2018
Putnam Math Competition Honour Roll (Top 500)	*Mathematical Association of America*	2018