Andrew Luo

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EDUCATION

University of Waterloo   Waterloo, Ontario
Master of Mathematics - Thesis Option   *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

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

- Triple majors in Computer Science, Pure Mathematics, and Combinatorics & Optimization
- Graduated with Dean's Honours standing and a 95% CAV
- **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 – Designing Functional Programs, Data Structures and Algorithms, Numerical Computation, The Theory of Computation, Algorithm Design and Analysis, Introduction to Machine Learning
  - CO – Intro to Optimization (Advanced Level), Combinatorial Enumeration, Applied Cryptography, The Mathematics of Public Key Cryptography, Algebraic Combinatorics, Continuous Optimization

ACADEMIC EXPERIENCE

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

- Conducting weekly tutorials and office hours for CS 245

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

- Conducted office hours, tutorials, responses to student inquiries on piazza, and grading of assignments and exams for CS 370
- Received "Excellent" evaluation over all categories

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

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

Professional Experience

Part-Time Mathematics Tutor
Cloudtimes Education
Missisauga, ON
Feb 2023 - Present

- Developing and giving lessons for high school students taking various math courses or programs, including Advanced Functions, Calculus, and Euclid Math Contest preparation

Full-Stack Software Developer Intern
Noom
New York City, NY
Jan - Apr 2022

- Developed Natural Language Processing microservice for customer service request question detection and triage

Full-Stack Microsoft Developer Intern
BDO
Mississauga, ON
Sept - Dec 2020

- Designed web application and backend logic for resource allocation tool

Backend Developer Intern
Wayfair
Boston, MA
Jan - Apr 2020

- Made architecture decisions for backend software use by the customer service team

Full Stack Software Developer Intern
Wish
San Francisco, CA
May - Aug 2019

- Developed Python APIs and scripts for monitoring merchant fraud activity

Presentations

A Brief Introduction to Computational Analytic Combinatorics
Canadian Undergraduate Mathematics Conference, Université Laval
Québec City, QC
July 2022

- Presented theory and algorithms for computing asymptotics of multivariate generating functions

An Introduction to Vinogradov's Mean Value Theorem
Canadian Undergraduate Mathematics Conference, Western University
London, ON
Aug 2021

- Surveyed recent work on Vinogradov's Mean Value Theorem

Honours and Awards

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