

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 supervision of Stephen Melczer and Eric Schost
- **Courses:** Computational Complexity, Algebraic Geometry

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

Graduate Teaching Assistant

Waterloo, ON

University of Waterloo

Jan 2024 - Present

- Conducting office hours, tutorials, responses to student inquiries, and grading of assignments and exams for undergraduate CS course
- Organized and presented Jupyter Notebook and Python tutorial for CS 370 - Numerical Computation

Undergraduate Teaching Assistant

Waterloo, ON

University of Waterloo

Sept 2019 - Dec 2022

- Conducted grading and feedback for undergraduate mathematics courses

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 Sage package for computing asymptotics of multivariate generating functions

Undergraduate Mathematics Research Assistant

Waterloo, ON

University of Waterloo

May-Aug 2021

- Studied 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

PROFESSIONAL EXPERIENCE

Part-Time Mathematics Tutor

Cloudtimes Education

Mississauga, 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

PUBLICATIONS

Rigorous Analytic Combinatorics in Several Variables in SageMath. B. Hackl, A. Luo, S. Melczer, J. Selover, and E. Wong. Submitted March 2023. [arxiv:2303.09603](https://arxiv.org/abs/2303.09603)

PRESENTATIONS

A Brief Introduction to Computational Analytic Combinatorics

Canadian Undergraduate Mathematics Conference, Université Laval

Québec City, QC

July 2022

- Presented SageMath software package for computing the asymptotics of multivariate generating functions.

An Introduction to Vinogradov's Mean Value Theorem

Canadian Undergraduate Mathematics Conference, Western University

London, ON

Aug 2021

- Summarized Dr. Trevor Wooley's recent work on Vinogradov's Mean Value Theorem.

HONOURS AND AWARDS

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 | Mathematical Association of America

2018