

Aakanksha Khandwaha

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EDUCATION

Master of Mathematics (MMath), Computer Science

University of Waterloo; Waterloo ON

September 2024 - Present

- Thesis-based program at the intersection of Artificial Intelligence and Human-Computer Interaction, working with Dr. Edith Law

Bachelor of Science (BSc), Joint Honours in Mathematics and Computer Science, Biochemistry Minor

Mount Allison University; Sackville NB

September 2020 - May 2024

- Graduated honours with distinction, Dean's List throughout

RESEARCH EXPERIENCE

Ethics of Large Language Models in Healthcare (Independent Study)

Advisor: Dr. Kathleen C. Fraser, National Research Council Canada

January - May 2024

- Evaluated performance of open- and closed-source visual-language models for diagnosing dermatological skin conditions on varying skin tones via different prompting techniques

Attack Detection on ICU IoMT via Formal Methods and Machine Learning (Independent Study)

Advisor: Dr. Laurie Ricker, Mount Allison University

September 2023 - May 2024

- Developed a model to detect attacks on an Intensive Care Unit (ICU) Internet of Medical Things (IoMT) network via formal methods (dynamic automata) and machine learning

Undergraduate Summer Research Intern

Advisor: Dr. Amber L. Simpson, Queen's University; Kingston ON

May - August 2023

- Developed project on analyzing racial and gender biases in clinical notes, presented this work at the [Science Atlantic MSCS Conference](#), winning first place research award in computer science
- Co-wrote and hosted [The Responsible Use of AI](#) podcast, interviewed 3 multidisciplinary scholars on the implications of AI technologies and tools to ensure it is universally beneficial

AI4Good Lab Fellow

MILA; Montreal QC

May - June 2022

- A seven-week AI and machine learning training program for gender minorities with a focus on applications for social good
- Pitched and developed [heAlthics](#), a project evaluating racial bias in skin condition and cancer detection AI models by analyzing the diversity and generalizability of datasets and proposing solutions to mitigate the bias

Summer Research Student

Advisor: Dr. Matthew Betti, Mount Allison University

May - June 2021; July - August 2022

- Mathematically modeled and analyzed COVID-19 data using a modified SIR model to predict future infection rates in Canada. Model utilized by Public Health Canada
- Presented at the [Student Undergraduate Research Fair \(SURF\) Mount Allison](#) outlining the change in effectiveness of non-pharmaceutical interventions (e.g., masking, social distancing) over the course of the coronavirus pandemic
- Modified a mathematical ODE model of honeybee colonies to analyze the threshold for hygienic behaviour for multiple hives

TEACHING EXPERIENCE

Computer Science Teaching Assistant (TA)

University of Waterloo; Waterloo ON

September 2024 - present

CS492/692: Social Implications of Computing - Winter '25

CS449/649: Human-Computer Interaction - Fall '24

- Assisted students during labs, marked design documentation for lab group projects weekly
- Marked essay assignments and in-class role-playing exercises

Math & Computer Science Help Centre Tutor

Meighen Center - Mount Allison University; Sackville NB

September 2022 - April 2024

- Ran a weekly help centre for students in first- and second-year math, data science, and computer science courses, helping them with assignments and practice problems

Computer Science, Mathematics, and Biochemistry Teaching Assistant (TA)

Mount Allison University; Sackville NB

September 2021 - April 2024

COMP1731: Programming Techniques and Algorithms - Winter '23, Winter '24

COMP1631: Intro. to Computer Science - Fall '21, Winter '22, Fall '22, Fall '23

MATH1511: Applied Calculus - Fall '21

BIOC1001: Introduction to Biochemistry - Fall '21

- Organized, prepared, and lead TA training for all MtA computer science TAs during Fall '23
- Helped students during lectures and labs, supporting in-class activities and lab assignments
- Marked in-person labs and programming assignments, invigilated tests

AWARDS AND RECOGNITIONS

2024	McCall McBain Regional Award (McGill University) — \$5,000 Awarded to exceptional students to pursue graduate studies at any public Canadian university
2024	Scotiabank Graduate Scholarship in Data Science (uWaterloo, <i>declined</i>) — \$10,000 Awarded to two outstanding graduate students enrolled in MMath Data Science or MDSAI program
2023	Science Atlantic MSCS Conference Undergraduate Research Award (First Place) Awarded for Computer Science research presentation on analyzing racial and gender biases in MIMIC-IV clinical notes via natural language process (NLP) methods including sentiment analysis
2023	David Gilchrist Chalmers Memorial Prize (Mount Allison University) — \$4,600 Awarded to a Mathematics and Computer Science student who has demonstrated high professional potential, and participated in extracurricular activities with concern for the welfare of the wider community
2020 - 2024	Dean's List (Mount Allison University) Recognition given to full-time students who have maintained a first-class average ($\geq 3.7/4.3$).
2020 - 2024	Marjorie Young Bell Scholarship (Mount Allison University) — \$56,000 \$12,000 per year and \$8,000 for personalized internship Awarded to exceptional high school graduates who demonstrate strong academic ability, leadership capability, volunteer work, extracurricular activities, and good citizenship

COMMUNITY INVOLVEMENT

Technovation Waterloo - Speaker & Mentor

University of Waterloo; Waterloo ON

February 2025 - present

- Presented an introductory lecture to artificial intelligence, with a focus on AI ethics

Math Graduate Student Association (GSA) - Events Coordinator

University of Waterloo; Waterloo ON

November 2024 - present

- Organize social events such as monthly coffee & snack chats, crocheting workshop, and movie night

CRA Undergraduate to PhD (UR2PhD) Program - Graduate Mentor

University of Waterloo; Waterloo ON

September - December 2024

- Developed research mentorship skills through online graduate student mentor training course, interacting with other graduate students across North America
- Mentored three University of Waterloo undergraduate students on research project developing LLM-driven patient simulations for medical education

MtA Hacks - President

Mount Allison University; Sackville NB

September 2022 - April 2024

- Lead and organized Mount Allison University's annual computer science conference and hackathon aimed at increasing accessibility to the field for high school and university students across the Maritimes in 2023 and 2024
- Fundraised approx. \$10,000 from local sponsors and New Brunswick technology companies
- Collaborated with Amazon, Google, and IBM employees to organize workshops and judge hackathon projects

Responsible AI Club - Founder & Lead Organizer

Mount Allison University; Sackville NB

September 2023 - April 2024

- Organized meetings to discuss and learn the computational basis of AI as well as its ethical implications with the aim of demystifying and critically thinking about the field

Women in Science Society - Co-President (2022-2024), Computer Science Representative (2020-2022)

Mount Allison University; Sackville NB

September 2020 - April 2024

- Developed an elementary school outreach program to increase accessibility to STEM
- Hosted a science speaker series with Mt. A alumni and professors to help guide current students in their post-graduate pursuits and form meaningful connections
- Organized social events for female and gender-diverse science students

MENTORING

January 2025 - Present

Alan Bui
University of Waterloo

September - December 2024

Sinry Dong - CRA UR2PhD Mentee
University of Waterloo

September - December 2024

Saivenkat Lohit Jilla - CRA UR2PhD Mentee
University of Waterloo

September - December 2024

Rachel Philipose - CRA UR2PhD Mentee
University of Waterloo

SKILLS AND CERTIFICATES

2025	TCPS 2: Core 2022 (Course on Research Ethics) Certification Based on Tri-Council Policy Statement: Ethical Conduct for Research involving humans
2024	Math and Computer Science Teaching Assistant Certificate (Mount Allison University) Given to a student who has TA'd 2+ courses and enhanced the teaching of a course
2023/24	Women in Machine Learning (WiML) Career Mentorship Program (Mentee) Supports women and non-binary individuals applying for research-oriented graduate programs
2023/24	Black in AI's Emerging Leaders in AI Program Provides mentorship and financial support for racialized individuals applying for graduate programs
2023	Bumblekite Machine Learning Summer School in Healthcare and the Biosciences Developed machine learning skills for applications in healthcare via lectures and tutorials held at ETH Zurich, Switzerland. Learned from and interacted with senior executives, leaders & top researchers from Emory, ETH Zürich, Cambridge, Roche, Bayer, Biogen, and Novartis, among others.
2023	Amii Kickstart Program Early career development program for women and gender-diverse individuals working in AI
2023	Machine Learning for Health (ML4H) Career Mentorship Program (Mentee) Paired with mentor conducting research in an area of ML4H to provide advice on career-related topics
2023	CITI Program Data or Specimens Only Research Certification