

Matthew Regehr

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Education

University of Waterloo <i>PhD in Computer Science</i>	September 2023–Present Waterloo, ON
University of Waterloo <i>Master of Mathematics in Computer Science</i>	September 2021–August 2023 Waterloo, ON
University of Alberta <i>Bachelor of Science with Honors in Computing Science</i>	September 2017–June 2021 Edmonton, AB
Three Hills High School <i>Diploma</i>	September 2015–June 2017 Three Hills, AB

By taking on a heavier course load, I was able to graduate in two years.

Research Experience

PhD Research Assistant <i>University of Waterloo</i>	September 2023–Present Waterloo, ON
I am advised by Gautam Kamath. My research focuses on the theory of privacy accounting.	
MMath Research Assistant <i>University of Waterloo</i>	September 2021–August 2023 Waterloo, ON
I was co-advised by Gautam Kamath and Shai Ben-David. I wrote my thesis on private statistical estimation.	
NSERC Undergraduate Student Research Assistant <i>University of Alberta</i>	May 2021–August 2021 Edmonton, AB
I collaborated with Csaba Szepesvari's group to prove hardness results for reinforcement learning in the partially observable setting. I also worked with another of his students to write a manuscript on the convergence of Q-learning.	
NSERC Undergraduate Student Research Assistant <i>University of Alberta</i>	May 2020–December 2020 Edmonton, AB
I worked in the Reinforcement Learning and Artificial Intelligence lab under Martha White's supervision. I wrote a report on the theoretical properties of reinforcement learning algorithms in a partially observable environment and worked with a team to empirically evaluate their effectiveness.	
Alberta Innovates Summer Research Assistant <i>University of Alberta</i>	May 2019–August 2019 Edmonton, AB
I was advised by Kumaradevan Punithakumar in the Servier Virtual Cardiac Centre. I developed a machine learning algorithm to automatically delineate the right atrial contour from MR images of the heart. I presented a paper on the technique at ISBI 2020.	

Teaching and Instructional Assistantships

CS 240: Data Structures and Data Management <i>University of Waterloo</i>	May 2022–Present Waterloo, ON
CS 485/685: Foundations of Machine Learning <i>University of Waterloo</i>	September 2022–December 2022 Waterloo, ON
CS 135: Designing Functional Programs <i>University of Waterloo</i>	January 2022–April 2022 Waterloo, ON
CS 116: Introduction to Computer Science 2 <i>University of Waterloo</i>	September 2021–December 2021 Waterloo, ON

Publications and Manuscripts

Natural Privacy Filters Are Not Always Free: A Characterization of Free Natural Filters	2026
<i>Matthew Regehr, Bingshan Hu*, Ethan Leeman*, Pasin Manurangsi*, Pierre Tholoniat*, Mathias Lécuyer (*Alpha.)</i>	
ArXiv preprint: https://arxiv.org/abs/2602.15815	
Query-Efficient Locally Private Hypothesis Selection via the Scheffé Graph	2025
<i>Gautam Kamath, Alireza F. Pour, Matthew Regehr, David P. Woodruff</i>	(Alphabetical)
Published in NeurIPS 2025	
ArXiv preprint: https://arxiv.org/abs/2509.16180	
Pitfalls for Privacy Accounting of Subsampled Mechanisms under Composition	2024
<i>Christian Lebeda*, Matthew Regehr*, Gautam Kamath, Thomas Steinke</i>	(*Alphabetical)
Published in SaTML 2025	
ArXiv preprint: https://arxiv.org/abs/2405.20769	
A Bias-Variance-Privacy Trilemma for Statistical Estimation	2023
<i>Gautam Kamath, Argyris Mouzakis, Matthew Regehr, Vikrant Singhal, Thomas Steinke, Jon Ullman</i>	(Alphabetical)
Published in the Journal of the American Statistical Association	
ArXiv preprint: https://arxiv.org/abs/2301.13334	
An Elementary Proof that Q-learning Converges Almost Surely	2021
<i>Matthew Regehr, Alex Ayoub</i>	
ArXiv preprint: https://arxiv.org/abs/2108.02827	
Automatic Right Atrial Segmentation from Magnetic Resonance Imaging	2019
<i>Matthew Regehr, Andrew Volk, Michelle Noga, Kumaradevan Punithakumar</i>	
Published in 17th IEEE International Symposium on Biomedical Imaging (ISBI 2020)	
Presented at University of Alberta Faculty of Medicine & Dentistry 52nd Annual Summer Students' Research Day	
Won best poster prize	

Work Experience

Software Engineering Intern	June 2025–August 2025
<i>Google</i>	<i>Mountain View, CA</i>
I interned at Google Research. My main project focused on the theory of privacy budgeting for machine learning.	
Web Developer	October 2016–Present
<i>Kneehill Regional Family and Community Support Services</i>	<i>Three Hills, AB</i>
I developed an online volunteering platform as well as a website providing resources to local families and young parents.	
Web Developer	March 2016–Present
<i>Bermuda King</i>	<i>Kingfisher, OK</i>
I redesigned and extended the capabilities of the client's existing website, which I still regularly maintain today.	
Web Developer	June 2018–August 2018
<i>Altawest Services</i>	<i>Three Hills, AB</i>
I implemented a modern, responsive website redesign and helped the client update and expand their online presence.	

Selected Awards

NSERC Canada Graduate Scholarship–Doctoral	2024–2026
<i>Natural Sciences and Engineering Research Council of Canada</i>	<i>Waterloo, ON</i>
Promotes continued excellence in Canadian research by rewarding and retaining high-calibre doctoral students at Canadian institutions.	

Ontario Graduate Scholarship	2023
<i>Ontario Student Assistance Program</i>	<i>Waterloo, ON</i>
Encourages excellence in graduate studies at publicly-assisted universities in Ontario.	
NSERC Canada Graduate Scholarship—Master's	2022
<i>Natural Sciences and Engineering Research Council of Canada</i>	<i>Waterloo, ON</i>
Provides financial support to high-calibre scholars engaged in an eligible master's program in Canada.	
Vector Scholarship in AI	2021
<i>Vector Institute</i>	<i>Waterloo, ON</i>
An entrance award for top students pursuing AI master's degrees in Ontario.	
The Gold Medal in Computing Science	2021
<i>University of Alberta</i>	<i>Edmonton, AB</i>
Awarded to the convocating Computing Science student with the highest average over the last three years of the program.	
NSERC Undergraduate Student Research Award	2020–2021
<i>Natural Sciences and Engineering Research Council of Canada</i>	<i>Edmonton, AB</i>
Awarded to nurture interest and fully develop potential for a research career in the natural sciences and engineering.	
Kao Family Eisenco Scholarship	2020
<i>University of Alberta</i>	<i>Edmonton, AB</i>
Recognizes superior academic achievement in students whose focus is theoretical computing.	
Alberta Innovates Summer Research Studentship	2019
<i>University of Alberta</i>	<i>Edmonton, AB</i>
Supports students engaging in medical and health sciences research and innovation during the summer months.	
Louise McKinney Scholarship	2019
<i>University of Alberta</i>	<i>Edmonton, AB</i>
Awarded to the top 1.5–2% of students in the Faculty of Science by academic standing.	

Volunteer Experience

VP Website Development	October 2018–April 2020
<i>Tutors for Affordable Education</i>	<i>Edmonton, AB</i>
I improved the usability and discoverability of the club's website. I also tutored high school students in math and physics.	
Web Developer	November 2015–January 2016
<i>Three Hills School</i>	<i>Three Hills, AB</i>
I developed a web application for players and organizers to track and manage the progress of Badminton tournaments.	

Skills

Programming
Python, Haskell, JavaScript, C/C++, Matlab
Languages
English (native), German (B2)

Other Awards

David R. Cheriton Graduate Scholarship	2021–Present
<i>University of Waterloo</i>	<i>Waterloo, ON</i>
Awarded annually to top graduate students on the basis of academic excellence.	
Dean's Silver Medal in Science	2021
<i>University of Alberta</i>	<i>Edmonton, AB</i>
Awarded to convocating students with superior academic achievement in an Honors program in the Faculty of Science.	

Mathukumalli Venkata Subbamma Prize	2020
<i>University of Alberta</i>	<i>Edmonton, AB</i>
Awarded annually to an undergraduate student who has shown outstanding academic ability in Number Theory.	
The Dirk Snoeck Henkemans Memorial Scholarship	2019
<i>University of Alberta</i>	<i>Edmonton, AB</i>
Preferentially awarded to a student who has made contributions to student life in the Department of Computing Science.	
Max and Marjorie Ward Undergraduate Scholarship	2019
<i>University of Alberta</i>	<i>Edmonton, AB</i>
Awarded annually to students with superior academic achievement.	
Faculty of Science Undergraduate Scholarship	2019
<i>University of Alberta</i>	<i>Edmonton, AB</i>
Awarded to upper-year students with superior academic achievement in the Faculty of Science.	
Hooper–Munroe Academic Scholarship	2019
<i>University of Alberta</i>	<i>Edmonton, AB</i>
Awarded to the student of the highest academic standing in the preceding Winter Term of all those who apply.	
JW Campbell Memorial Prize in Mathematics	2018
<i>University of Alberta</i>	<i>Edmonton, AB</i>
Recognizes the efforts of a student who achieves outstanding merit in introductory honors analysis.	
Department of Mathematical Statistical Sciences Academic Excellence Scholarship	2017
<i>University of Alberta</i>	<i>Edmonton, AB</i>
Awarded to matriculating students based on exceptional mathematical ability or performance in high school mathematics.	