

Matthew Regehr

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Education

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

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

Research Experience

Master's Research Assistant <i>University of Waterloo</i>	September 2021–Present <i>Waterloo, ON</i>
I am researching differential privacy under the advisorship of Gautam Kamath. I am preparing a manuscript focused on the role of unbiasedness in differentially private statistical estimation. I am also working with Shai Ben-David on machine learning theory and out-of-distribution generalization in particular.	
NSERC Undergraduate Student Research Assistant <i>University of Alberta</i>	May 2021–August 2021 <i>Edmonton, AB</i>
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 <i>Edmonton, AB</i>
I worked in the 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 <i>Edmonton, AB</i>
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–August 2022, January 2023–Present <i>Waterloo, ON</i>
CS 485/685: Foundations of Machine Learning <i>University of Waterloo</i>	September 2022–December 2022 <i>Waterloo, ON</i>
CS 135: Designing Functional Programs <i>University of Waterloo</i>	January 2022–April 2022 <i>Waterloo, ON</i>
CS 116: Introduction to Computer Science 2 <i>University of Waterloo</i>	September 2021–December 2021 <i>Waterloo, ON</i>
MATH 154: Calculus for Business and Economics I <i>University of Alberta</i>	January 2020–April 2020 <i>Edmonton, AB</i>

Publications and Manuscripts

- A Bias-Variance-Privacy Trilemma for Statistical Estimation** 2023
Gautam Kamath, Argyris Mouzakis, Matthew Regehr, Vikrant Singhal, Thomas Steinke, Jon Ullman (Alphabetical)
In submission to 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
Matthew Regehr, Alex Ayoub
ArXiv preprint: <https://arxiv.org/abs/2108.02827>
- Automatic Right Atrial Segmentation from Magnetic Resonance Imaging** 2019
Matthew Regehr, Andrew Volk, Michelle Noga, Kumaradevan Punithakumar
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

Selected Awards

- NSERC Canada Graduate Scholarship—Master's** 2022
Natural Sciences and Engineering Research Council of Canada Waterloo, ON
Provides financial support to high-calibre scholars engaged in an eligible master's program in Canada.
- Vector Scholarship in AI** 2021
Vector Institute Waterloo, ON
An entrance award for top students pursuing AI master's degrees in Ontario.
- The Gold Medal in Computing Science** 2021
University of Alberta Edmonton, AB
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
Natural Sciences and Engineering Research Council of Canada Edmonton, AB
Awarded to nurture interest and fully develop potential for a research career in the natural sciences and engineering.
- Kao Family Eisenco Scholarship** 2020
University of Alberta Edmonton, AB
Recognizes superior academic achievement in students whose focus is theoretical computing.
- Mathukumalli Venkata Subbamma Prize** 2020
University of Alberta Edmonton, AB
Awarded annually to an undergraduate student who has shown outstanding academic ability in Number Theory.
- Alberta Innovates Summer Research Studentship** 2019
University of Alberta Edmonton, AB
Supports students engaging in medical and health sciences research and innovation during the summer months.
- Louise McKinney Scholarship** 2019
University of Alberta Edmonton, AB
Awarded to the top 1.5–2% of students in the Faculty of Science by academic standing.
- Hooper–Munroe Academic Scholarship** 2019
University of Alberta Edmonton, AB
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
University of Alberta Edmonton, AB
Recognizes the efforts of a student who achieves outstanding merit in introductory honors analysis.

Work Experience

- Web Developer** October 2016–Present
Kneehill Regional Family and Community Support Services *Three Hills, AB*
I developed an online volunteering platform as well as a website providing resources to local families and young parents.
- Web Developer** March 2016–Present
Bermuda King *Kingfisher, OK*
I redesigned and extended the capabilities of the client's existing website, which I still regularly maintain today.
- Web Developer** June 2018–August 2018
Altawest Services *Three Hills, AB*
I implemented a modern, responsive website redesign and helped the client update and expand their online presence.

Volunteer Experience

- VP Website Development** October 2018–April 2020
Tutors for Affordable Education *Edmonton, AB*
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
Three Hills School *Three Hills, AB*
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** 2021–2022
University of Waterloo *Waterloo, ON*
Awarded annually to top master's students on the basis of academic excellence.
- Dean's Silver Medal in Science** 2021
University of Alberta *Edmonton, AB*
Awarded to convocating students with superior academic achievement in an Honors program in the Faculty of Science.
- The Dirk Snoeck Henkemans Memorial Scholarship** 2019
University of Alberta *Edmonton, AB*
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
University of Alberta *Edmonton, AB*
Awarded annually to students with superior academic achievement.
- Faculty of Science Undergraduate Scholarship** 2019
University of Alberta *Edmonton, AB*
Awarded to upper-year students with superior academic achievement in the Faculty of Science.
- Department of Mathematical Statistical Sciences Academic Excellence Scholarship** 2017
University of Alberta *Edmonton, AB*
Awarded to matriculating students based on exceptional mathematical ability or performance in high school mathematics.