

Alison Cheeseman

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Education

- 2022 **PhD, Applied Mathematics**, *University of Waterloo*
Supervisor: Dr. Edward R. Vrscay
Thesis: A Critical Examination of Two Specific Approaches Used to Characterize Medical Images: i) Projection-based Descriptors for Image Retrieval and ii) Estimating Fractal Dimensions of Discrete Sets
- 2017 **MASc, Electrical & Computer Engineering**, *University of Toronto*
Supervisor: Dr. Raviraj S. Adve
Thesis: Adaptive Waveform Design and CFAR Processing for High Frequency Surface Wave Radar
- 2015 **BSc, Honours Cooperative Mathematical Physics, Minor in Pure Mathematics**, *University of Waterloo*
Research Project: Objective Quality Assessment of Degradation in Compressed Images

Teaching Experience

Lecturer Roles

Jan 2022 - **Sessional Lecturer**, *University of Waterloo*

present **Courses:**

- MATH 217 Calculus 3 for Chemical Engineering (Winter 2022, Winter 2024)
- MATH 225 Applied Linear Algebra 2 (Winter 2024 (online))
- AMATH 343 Discrete Models in Applied Mathematics (Fall 2023)
- MATH 228 Differential Equations for Physics and Chemistry (Fall 2023)
- MATH 218 Differential Equations for Engineers (Fall 2022, Fall 2023)
- MATH 137 Calculus 1 for Honours Mathematics (Spring 2023 (online))
- MATH 674.04 Fractals (Fall 2022 (online))

2020 **PhD Lecturing Requirement**, *University of Waterloo*

- MATH 116 Calculus 1 for Engineering (Fall 2020)

Outreach Roles

2023 **Math Circles Presenter**, *University of Waterloo*

Sessions:

- Oct 2023 - Digital Signal Processing (Grade 11/12)
- Mar 2023 - Dynamical Systems and Fractals (Grade 11/12)

Teaching Assistant/Tutoring Roles

Feb 2023-Jan 2024 **Mathematics Tutor, Self-employed**
2024 ○ Private in-person tutoring for high school mathematics students.

2017–2022 **Graduate Teaching Assistant, University of Waterloo**

Courses:

- AMATH 242/CS 371 Introduction to Computational Mathematics
- AMATH 250 Introduction to Differential Equations
- MATH 235 Linear Algebra 2 for Honours Mathematics
- AMATH 391 From Fourier to Wavelets
- AMATH 343 Discrete Models in Applied Mathematics
- AMATH 231 Calculus 4
- MATH 117 Calculus 1 for Engineering
- MATH 218 Differential Equations for Engineers

2015–2017 **Graduate Teaching Assistant, University of Toronto**

Courses:

- ECE 221 Electric and Magnetic Fields
- MAT 291 Calculus III

2013–2014 **Undergraduate Teaching Assistant, University of Waterloo**

Courses:

- PHYS 115 Mechanics
- PHYS 111 Physics 1

Professional Development

Jun 2023 - **Math Teaching Seminar, University of Waterloo**

present Attendee of the bi-weekly Math Teaching Seminars at the University of Waterloo where teaching faculty and guest speakers discuss best practices for teaching mathematics.

Aug 2023 **Effective Teaching & Learning Workshop, University of Waterloo**

Attended a one-day workshop hosted by the UW Math Teaching Seminar and Dr. Barbara Oakley. The workshop focused on presenting new insights from neuroscience as they relate to teaching and learning mathematics.

Apr 2022 **UW Math Teaching Colloquium, University of Waterloo**

Attended the one-day UW Math Teaching Colloquium, in which highlights from recent teaching conferences were presented. Presentations were focused on practical and actionable advice for teaching mathematics.

Apr 2021 **Fundamentals of University Teaching Program, CTE, University of Waterloo**

Completion of the program required attending six workshops on university teaching and participating in three synchronous microteaching sessions.

Oct 2021 **More Feet on the Ground, Centre for Innovation in Campus Mental Health**

Completed the More Feet on the Ground mental health training session for graduate students.

Aug 2020 **Getting Ready to Facilitate Online Courses, CEL, University of Waterloo**

Completed a 4-week online certificate course focused on the successful facilitation of online courses for both instructors and teaching assistants.

Service

- 2018–2022 **Publicity Officer, Math Graduate Student Association, University of Waterloo**
- 2016–2017 **President, ECE Graduate Students' Society, University of Toronto**
- 2016–2017 **ECE Representative (Founding Member), Graduate Engineering Council of Students, University of Toronto**
- 2015–2016 **Social Director, ECE Graduate Students' Society, University of Toronto**
- 2013 **Vice-President, Physics Club, University of Waterloo**
- 2011 **Physical Sciences Peer Leader, University of Waterloo**

Academic Publications

Journal Articles

- [1] Alison K. Cheeseman and Edward R. Vrscay. Estimating the fractal dimensions of vascular networks and other branching structures: Some words of caution. *Mathematics*, 10(5), 2022.
- [2] Alison Cheeseman and Raviraj Adve. Design of multiple near-orthogonal spectrally-compliant waveforms via alternating successive convex approximations and projections. *IET Radar, Sonar & Navigation*, 13(5):781–788, 2019.

Conference Proceedings

- [3] Alison K. Cheeseman, Hamid R. Tizhoosh, and Edward R. Vrscay. Studying the effect of digital stain separation of histopathology images on image search performance. In *International Conference on Image Analysis and Recognition (ICIAR 2020)*, 2020.
- [4] Alison K. Cheeseman, Hamid R. Tizhoosh, and Edward R. Vrscay. A compact representation of histopathology images using digital stain separation & frequency-based encoded local projections. In *International Conference on Image Analysis and Recognition (ICIAR 2019)*, 2019.
- [5] Alison Cheeseman and Raviraj S. Adve. Designing practical spectrally constrained waveforms for HFSWR by successive convex approximations and projections. In *International Conference on Radar Systems (Radar 2017)*, 2017.
- [6] Alison K. Cheeseman, Ilona A. Kowalik-Urbaniak, and Edward R. Vrscay. Objective image quality measures of degradation in compressed natural images and their comparison with subjective assessments. In *International Conference on Image Analysis and Recognition (ICIAR 2016)*, 2016.

Conference Presentations

- 2020 **Studying the Effect of Digital Stain Separation of Histopathology Images on Image Search Performance**, *International Conference on Image Analysis and Recognition*, (online)
- 2017 **Designing practical spectrally constrained waveforms for HFSWR by successive convex approximations and projections**, *IET International Radar Conference*, Belfast, United Kingdom
- 2015 **Predicting Visual Degradation of Image Subblocks Produced by JPEG and JPEG2000 Compression**, *AMMCS-CAIMS Congress*, Waterloo, Canada
- 2013 **Optimising Digital Signal Processing Algorithms for High Resolution Gamma-Ray Spectroscopy with the GRIFFIN Spectrometer**, *Winter Nuclear and Particle Physics Conference*, Banff, Canada

Awards & Honours

- 2022 **Doctoral Thesis Completion Award**, *University of Waterloo*
- 2018-2021 **NSERC Canada Graduate Scholarship - Doctoral (CGS-D)**, *University of Waterloo*
- 2020 **Outstanding Teaching Assistant Award**, *University of Waterloo*
- 2017 **Provost Doctoral Entrance Award for Women**, *University of Waterloo*
- 2017 **QEII Graduate Scholarship**, *University of Waterloo*
- 2015,2016 **Ontario Graduate Scholarship**, *University of Toronto*
- 2014 **Doreen Brisbin Award**, *University of Waterloo*
- 2013 **Xerox Research Centre of Canada Work Term Report Award**, *University of Waterloo*
- 2010 **President's Scholarship**, *University of Waterloo*