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# Brydon Eastman, Ph.D.

OpenAI  
San Francisco, CA

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## WORK EXPERIENCE

### **OpenAI, San Francisco, CA** – *Member of Technical Staff*

January 2023 – Present

I am a research scientist working on various projects related to reasoning, reinforcement learning, and agents with large language models. Contributed to the browsing, plugins, 4o, and o1 projects among others.

### **MinervaAI, Toronto, ON** – *Machine Learning & Data Science Lead*

October 2022 – July 2023

I designed and oversaw the implementation of various natural language processing models to assist in the anti-money laundering and know-your-client/know-your-business efforts at MinervaAI. My responsibilities also included the hiring and assistance in the training of a Senior Data Scientist.

### **University of Waterloo, Waterloo, ON** – *Sessional Instructor*

September 2019 – August 2022

Sessional instructor for various Mathematics courses. More information in the Teaching section below.

## EDUCATION

### **University of Waterloo, Waterloo, ON** – *Ph.D. Applied Mathematics*

September 2017 – May 2022

Thesis: *Machine Learning Techniques and Stochastic Modeling in Mathematical Oncology*

Pursued a Ph.D. in applied mathematics and machine learning in mathematical biology under the supervision of Mohammad Kohandel. GPA 93%

### **McMaster University, Hamilton, ON** – *M.Sc. Mathematical Biology*

September 2015 – August 2017

Thesis: *Sensitivity to Predator Response Functions in the Chemostat*

Pursued a master's of science in mathematical biology under the supervision of Gail Wolkowicz. GPA 11.2/12

## **Redeemer University, Hamilton, ON** – *Hon B.Sc. Mathematics and Computer Science*

January 2011 – April 2015

Thesis: *Pentadiagonal Companion Matrices*

Completed a double major in honours Mathematics and four-year Computer Science.  
GPA 11.6/12

## **AWARDS & HONOURS**

Outstanding Teaching Assistant Award x2 \$500x2  
Applied BioMath Poster Award \$250  
Queen Elizabeth II - Graduate Scholarship in Science and Technology \$15,000  
Ping Yang Memorial Graduate Scholarship \$5,000  
NSERC Canadian Graduate Scholarship Doctoral \$105,000  
NSERC Canadian Graduate Scholarship Masters \$17,500  
NSERC Ontario Graduate Scholarship Masters \$15,000  
Milos Novotny Fellowship \$4,000  
NSERC Undergraduate Research Award \$24,500  
Board of Governor's Scholarship \$14,400

## **PUBLICATIONS**

**Universal Physics-Informed Neural Networks: Symbolic Operator Discovery with Sparse Data.** ArXiv Preprint April 4, 2023  
Lena Podina, **Brydon Eastman**, and Mohammad Kohandel.

**A comparison and calibration of integer and fractional order models of COVID-19 with stratified public response** Mathematical Biosciences and Engineering Sept 1, 2022  
Somayeh Fouladi, Mohammad Kohandel, **Brydon Eastman**

**Reinforcement learning derived chemotherapeutic schedules for robust patient-specific therapy** Nature Scientific Reports Sep 9, 2021  
**Brydon Eastman**, Michelle Pzedborski, Mohammad Kohandel

**Modeling the impact of public response on the COVID-19 pandemic in Ontario** PLoS One Apr 14, 2021  
**Brydon Eastman**, Cameron Meaney, Michelle Pzedborski, Mohammad Kohandel

**A Predator-Prey Model in the Chemostat with Holling Type II Response Function** Mathematics in Applied Sciences and Engineering Nov 1, 2020  
Tedra Bolger, **Brydon Eastman**, Madeleine Hill, Gail S. K. Wolkowicz

**The effects of phenotypic plasticity on the fixation probability of mutant cancer stem cells** Journal of Theoretical Biology Oct 21, 2020  
**Brydon Eastman**, Dominik Wodarz, Mohammad Kohandel

**From Solid-State NMR to Crystal Structures through Combinatorial Tiling Theory** Int. Union Crystallography Jan 1, 2018  
Darren Brouwer, Janelle Vanderhout, Chelsey Hurst, **Brydon Eastman**

**Pentadiagonal Companion Matrices** Special Matrices Oct 28, 2015  
**Brydon Eastman** and Kevin N. Vander Meulen

**Sparse Spectrally Arbitrary Patterns** The Electronic Journal of Linear Algebra  
Apr 28, 2015  
**Brydon Eastman**, Bryan Shader, Kevin N. Vander Meulen

**Companion Matrix Patterns** Linear Algebra and its Applications Feb 1, 2014  
**Brydon Eastman**, I.-J. Kim, B.L. Shader, K.N. Vander Meulen

## PRESENTATIONS

Lena Podina, **Brydon Eastman**, and Mohammad Kohandel. 2023. “Poster: **Universal Physics-Informed Neural Networks: Symbolic Operator Discovery with Sparse Data**” International Conference on Machine Learning. International Conference.

**Brydon Eastman**. 2023. Invited Talk: **LLMs and Education: An Insider’s look at ChatGPT** Redeemer University.

Lena Podina, **Brydon Eastman**, and Mohammad Kohandel. 2022. “Poster: **A PINN Approach to Symbolic Differential Operator Discovery with Sparse Data**” Neural Information Processing Systems. International Conference.

**Brydon Eastman**, Michelle Przedborski, and Mohammad Kohandel. 2021. “Poster: **Reinforcement learning derived chemotherapeutic schedules for robust patient-specific therapy given unknown patient response parameters.**” Society of Mathematical Biology Annual Meeting. International Conference.

**Brydon Eastman**. 2021. “Contributed Talk: **Reinforcement learning derived chemotherapeutic schedules for robust patient-specific therapy.**” Workshop in Mathematical and Computational Biology. International Conference.

**Brydon Eastman**. 2019. “Invited Talk: **Contrasting chemotherapy schedules from reinforcement learning and optimal control.**” Canadian Mathematics Society: Winter Meeting. National Conference.

**Brydon Eastman**, Tedra Bolger, Madeleine Hill, and Gail Wolkowicz. 2016. “Poster: **Predator Response Functions in the Chemostat: A Cautionary Tale**” Canadian Mathematics Society: Winter Meeting. National Conference

**Brydon Eastman**. 2015. “Contributed Talk: **Sex, Drugs, and Mathematics: Using Evolutionary Algorithms to Interpret Pharmaceutical NMR Data.**” Canadian Undergraduate Math Conference. National Conference.

**Brydon Eastman**, Brouwer, D. 2015 “Poster: **A Genetic Algorithm for NMR Crystallography of Materials with Multispin Networks**” MOOT 2015. Provincial Conference. Poster Presentation.

**Brydon Eastman**, Brouwer, D, Vander Meulen, K. 2014. “Poster: **Solving Crystal Structures using Delaney Graphs derived from NMR Spectra**” McMaster Chemistry Research Symposium. Institutional Conference. Poster Presentation.

**Brydon Eastman** 2014. “Contributed Talk: **Solving Crystal Structures using Delaney Graphs derived from NMR Spectra**” Conference on Graph Theory, Matrix Theory, and Interactions. International Conference.

**Brydon Eastman** 2013. “Contributed Talk: **Companion Matrix Patterns**” Canadian Undergraduate Math Conference. National Conference.

## TEACHING

2022 **Instructor** AMATH 353, *University of Waterloo*  
Partial Differential Equations I

2020 **Instructor** MATH 137, *University of Waterloo*  
Calculus I for Honours Computer Science students

2019 **Instructor** MATH 116, *University of Waterloo*  
Calculus I for Architecture Engineering Students

2022 **Teaching Assistant** AMATH 250, *University of Waterloo*  
Differential Equations

2021 **Teaching Assistant** AMATH 350, *University of Waterloo*  
Differential Equations (Winter and Fall 2021)

2019–2020 **Teaching Assistant** Calculus I, Calculus III, and Linear Algebra  
*University of Waterloo*

2018 **Teaching Assistant** MATH 117, *University of Waterloo*  
Led two tutorial sections of Calculus I for Engineering Students

2015–2017 **Teaching Assistant** Scientific Computing, Graph Theory, Various  
Calculus courses, and assisted in the Math Help Centre

2013 **Instructor**, *Dundas Valley Highschool Co-Op* Instructor for a Grade 11  
Physics Course

2015–2017 **Lab Assistant**, *Redeemer University* First-year physics lab assistant

2011–2015 **Teaching Assistant**, *Redeemer University* TA for two computer science  
courses and was part of the university's tutor program for various mathematics  
courses.

## CREDENTIALS & AFFILIATIONS

2019 **Fundamentals of University Teaching** *University of Waterloo*, Centre for  
Teaching Excellence

2020–Present **Member**, Society for Mathematical Biology

2021–Present **Elected Member**, Sigma Xi Scientific Research Honour Society

## STUDENT SUPERVISION

2021 Somayeh Fouladi (Co-Supervised Visiting Ph.D. Research Project)

## COMMUNITY SERVICE

### Open Source Contributor

Contributed to Keras Tuner, an open-source automated machine learning platform  
built on Tensorflow

### Reviewer

Performed peer review for the following journals: Journal of Computational  
Biology, iScience, PLOS One, PeerJ, Journal of Biomedical and Health  
Informatics, Mathematical Biosciences