Mariah C. Boudreau

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Research Interests

Mathematical modeling for biological applications.

Education

Ph.D. in Mathematical Sciences | 2019 - Expected 2024
University of Vermont, Burlington, VT
Bachelor of Science in Mathematics | 2015 - 2019
Saint Michael's College, Colchester, VT

Skills

LaTeX, MATLAB, Python, R, Java, C++, Statistical analysis, knowledge in Microsoft Word, PowerPoint, and Excel, conversational French

Research Experience

Graduate Research Assistant | June 2023 - Present
University of Vermont, Burlington, VT
Conducted data analysis on blood work data for the Lived Experience Measured Using Rings study.

Contractor | May 2022 - July 2022
Institute for Disease Modeling at the Bill and Melinda Gates Foundation, Seattle, WA
Assisting in the parameterization and development of an open-source human papillomavius population model.

Graduate Research Assistant | August 2020 - May 2022
University of Vermont, Burlington, VT
Conducted research on model analysis through the scope of epidemiological modeling.

Dartmouth Summer Research Student | June 2018 – August 2018
Dartmouth College, Hanover, NH
Participated in a research experience for undergraduates to research mathematical applications in signal processing.

Publications and other writings

M.C. Boudreau, A.J. Allen, N.J. Roberts, A. Allard, & L. Hébert-Dufresne | February 2023
Working title: *Temporal and probabilistic forecasts of epidemic interventions*
ArXiv

A.J. Allen, **M.C. Boudreau**, N.J. Roberts, A. Allard, & L. Hébert-Dufresne | February 2022
Predicting the diversity of early epidemic spread on networks
Phys. Rev. Research

M.C. Boudreau, C.M. Danforth, J.G. Young, & L. Hébert-Dufresne | In Progress
Working title: *Sensitivity analysis of stochastic polynomials, and its application to epidemic forecasting and random graphs*
Draft available upon request

M.C. Boudreau, J. Cohen, & L. Hébert-Dufresne | In Progress
Working title: *Human Papillomavirus cell modeling using master equations*
Draft available upon request

Professional Experience

QuEST Coding Workshop Teaching Assistant | August 2021
University of Vermont, Burlington, VT
Coordinated and taught first year Ph.D. students the fundamentals of coding in R and calculus basics.

Graduate Teaching Assistant | Fall 2019 - Spring 2020 & Fall 2022 - Spring 2023
Mathematics Department, University of Vermont, Burlington, VT
Taught MATH 017: Applications of Finite Math and MATH 019: Fundamentals of Calculus I.

Technical Services Intern | June 2019 - August 2019
Mylan, Saint Albans, VT
Analyzed sampling, mass balance and other essential functions at the Mylan Saint Albans manufacturing plant.

Relevant Coursework

Differential Equations, Advanced Ordinary Differential Equations, Partial Differential Equations, Linear Algebra, Numerical Analysis, Numerical Partial Differential Equations, Principles of Complex Systems, Modeling of Complex Systems, Probability and Statistics.

Other interests

Hiking, skiing, ski patrolling, Crossfit and learning more about Vermont.