JOSEPH LYON

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EDUCATION

PhD in Computational Mathematical and Statistical Sciences Expected May 2025
Marquette University
Dissertation Title: Spatially Correlated Sampling From Parallel Partial and Linked Emulators
Committee: Susan Minkoff, Anthony Parolari, Cheng-Han Yu, Elaine Spiller (chair)

MS in Computational Mathematical and Statistical Sciences May 2022
Marquette University
Thesis Title: Emulating a One-Dimensional Soil Hydrology Model Using a Gaussian Process
Advisor: Elaine Spiller

BS in Mathematics and Computer Science May 2020
Loras College, Dubuque, IA
Thesis Title: Exploring Plabic Graphs
Advisor: Angela Kohlhaas

TEACHING EXPERIENCE

Instructor of Record, Calculus for the Biological Sciences January 2024 – May 2024
Department of Mathematical & Statistical Sciences, Marquette University

- Delivered class instruction three times a week to 29 students and held regular office hours
- Developed and oversaw the completion of investigative projects aimed at applications in biology and medicine
- Developed a course schedule in cooperation with other faculty instructors to ensure consistency across sections

Teaching Assistant, Calculus Series August 2020 – Present
Department of Mathematical & Statistical Sciences, Marquette University

- Planned for and led breakout sessions across a range of courses from Calculus I through Differential Equations
- Provided both online and in-person instruction to class sizes up to 30 students

Teaching Assistant, Discrete Mathematics January 2020 – May 2020
Department of Mathematics, Loras College

- Led and facilitated classroom discussions in-person and online for an introductory proofs course

RESEARCH EXPERIENCE

Department of Mathematical & Statistical Sciences, Marquette University

- Developed multiple methods of obtaining spatially correlated samples from parallel partial emulators in both R and MATLAB
- Designed and built linked emulators for hydrologic coupled systems
- Conducted interdisciplinary research with hydrologists
- Designed and built parallel partial emulators for one dimensional hydrology models

GRANTS

Northwestern Mutual Data Science Institute May 2024 – June 2024
Awarded NMDSI Student Scholar Award, $5,000
Marquette University May 2021 – June 2021
Awarded Computational Sciences Summer Reading Fellowship, $1,800

PUBLICATIONS

Lyon, J., Spiller, E., Parolari, A., Minkoff, S. (2024). *Spatially Correlated Sampling From Parallel Partial Emulators*. Manuscript in preparation.

PRESENTATIONS

Oral Presentations

Lyon, J., Spiller, E. (November 2024). *Spatially Correlated Sampling from PPE for Geophysical Applications.* Bi-State Math Colloquium, Loras College, Dubuque, IA. Invited speaker.

Lyon, J., Spiller, E. (November 2024). *Spatially Correlated Sampling from PPE for Geophysical Applications.* Student Success Seminar, Marquette University, Milwaukee, WI

Lyon, J., Spiller, E., Parolari, A., Minkoff, S. (February 2024). *Spatially Correlated Sampling From Parallel Partial Emulators.* SIAM UQ 2024, Trieste, Italy

Lyon, J., Spiller, E., Parolari, A. (September 2022). *Emulating a One-Dimensional Soil Hydrology Model Using a Gaussian Process.* Summer Graduate Research Symposium, Marquette University, Milwaukee, WI

Poster Presentations

Lyon, J., Spiller, E. (October 2024). *Spatially Correlated Sampling from PPE for Geophysical Applications.* Computational Sciences Summer Research Fellows Program, Marquette University, Milwaukee, WI

MENTORSHIP AND OTHER RELEVANT EXPERIENCES

Student Success Seminar, Co-organizer, Fall 2024 – Present

- Co-organized a weekly student-led seminar to provide graduate students with presentation preparation and professional development

IMSI workshop on UQ for Multi-Physics Systems & Digital Twins, Feb 24-26, 2025

- Developed an agenda and examples for a workshop breakout meeting intended to introduce attendees to the world of emulation
- Will be leading a session where attendees will use the R package and files I developed to get hands-on experience working with both simulated and imported real-world data

Database Analyst, Change Healthcare, Summer 2019 – Summer 2020

- Produced custom reports for clients from queries of a database containing hundreds of thousands of hospitals, patients, and insurers
- Learned the native database architecture and wrote my own SQL queries to suit the needs of the requested reports from clients across the nation

Modern Algebra Tutor, Loras College, Fall 2019

- Worked with students in a one-on-one setting to enhance and enrich their understanding of the course material in a twice weekly manner

TECHNICAL SKILLS

- Programming languages
  - Proficient: R, MATLAB, C++, Python, SQL
  - Exposure: Java, JavaScript, Ruby, HTML/CSS
- Parallel programming and high performance computing

PROFESSIONAL AFFILIATIONS

- SIAM, AMS

RELEVANT COURSEWORK

- Statistical Simulation
- Scientific Computing
- Statistical Machine Learning
- Design and Analysis of Scientific Experiments
- Applied Mathematical Analysis
- Applied Linear Algebra
- Time Series Analysis
- Mathematical Statistics
- Bayesian Statistics
- Numerical Analysis
- Theory of Probability
- Parallel and Distributed Systems
- Regression Analysis
- Database Management (undergraduate coursework)
- Database Programming (undergraduate coursework)

REFERENCES

Elaine Spiller, Professor
Department of Mathematical and Statistical Sciences
Marquette University
(414) 288-3299 ▪ elaine.spiller@marquette.edu

Rebecca Sanders, Professor
Department of Mathematical and Statistical Sciences
Marquette University
(414) 288-6341 ▪ rebecca.sanders@marquette.edu

Anthony Parolari, Associate Professor
Department of Civil, Construction and Environmental Engineering
Marquette University
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