Halley Fritze

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EDUCATION

Ph.D, Mathematics 2019-Present
University of Oregon
M.S, Mathematics June 2021
University of Oregon
B.S.Mathematics May 2017
North Dakota State University

RESEARCH INTERESTS

- ☐ Topological Data Analysis with Applications in Genomics, Neuroscience, Data Science, and Machine Learning.
- ☐ The Mapper algorithm and its use to infer topological features from high-dimensional data.

TECHNICAL SKILLS

Programming Languages:

- Python
- R
- LaTeX

Select Python Packages:

- scikit-learn
- giotto-tda
- Keras/TensorFlow
- Pytorch
- Tskit
- igraph
- Plotly

RESEARCH EXPERIENCE

Stanford Genome Technology Center January 2023 - Present
Stanford University
Analyzing cell behavior in patients with ME/CFS.

Data Science Bootcamp Spring 2022
Erdos Institute
Survey of Data Science and using Python for machine learning.

Computational Neuroscience Lab Rotation March 2022 - June 2022
University of Oregon
Modeling decision making behavior in mice with advanced hidden Markov models.

Kern Ralph Co-Lab January 2022-Present
University of Oregon
Constructing an algorithm in Tskit to minimize edges in photogenic tree sequences and infer coalescent haplotypes.

Marie Vitulli Scholar's Program October 2019 - June 2020
University of Oregon
Year long program researching Hyperbolic Geometry and Graph Theory.

MSRI Summer Graduate School:
From Symplectic Geometry to Chaos July 2018
University of California Berkeley
2 week conference on symplectic geometry and dynamics related to the n-body problem.

Summer REU June - July 2016
Sam Houston State University
Analysis of a Mathematical Model of the Carolina Wolfberry (*Lycium Carolinianum*) Plant: an essential food source for the endangered wooping crane (*Grus Americana*).

TEACHING EXPERIENCE

Graduate Employee September 2019 - Present
University of Oregon

- Intro to Probability and Statistics (Math 243)
  - Lead Discussion Leader: Fall 2023
  - Discussion Leader: Spring 2021, Spring 2022
  - Instructor of Record: Summer 2020, Summer 2022
- Calculus II (Math 252) Instructor of Record: Winter 2022
- Calculus I (Math 251):
  - Discussion Leader: Winter 2021, Fall 2021
  - Instructor of Record: Fall 2022
- College Algebra (Math 111) Discussion Leader: Fall 2020

Graduate Teaching Assistant August 2017 - May 2019
North Dakota State University

- Gave biweekly classes to supplement professor's lectures, along with weekly quizzes, and grading exams.
- Tutored at NDSU's tutoring center once a week in addition to teaching.
- Calculus I (Math 165): Fall 2017
  - 2 sections of standard lecture by professors. I gave students examples and problems to work on in class.
- Calculus II (Math 166): Spring 2018, Fall 2018, Spring 2019
  - 1 section of standard lecture and 1 section of active style class taught by professors for each semester. For the active learning classroom the students worked on worksheets in groups.

PRESENTATIONS & ACADEMIC SERVICE

AWM Graduate Student Chapter: Vice President September 2022-Present
University of Oregon

AWM Graduate Student Chapter: Committee Chair October 2020 - Present
University of Oregon

Chair of the Social and Professional Enrichment Committee.

AMS Graduate Student Chapter: Member at Large May 2020 - May 2021
University of Oregon

Founding member to the University of Oregon's graduate student chapter of the AMS.

Speaker: Analysis/Geometry Seminar April 2019
North Dakota State University

Lefschetz Fibrations.

UCode Girl Mentor October 2018 - May 2019
Fargo, ND

Mentor program for high school girls wishing to pursue STEM. Mentoring girls wanting to pursue math through a year long project on network diagrams and graph theory.