Ann Bigelow

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Education

Mathematics, Ph.D.   University of Wisconsin - Madison

Applied and Computational Mathematics   September 2024—Present

Applied Mathematics B.S., *summa cum laude*   University of Utah

                                                                            August 2020—August 2024

Research

Singular Value Decomposition and an Application   May—August 2023

PI: Dr. Tim Tribone, Research Associate (Mathematics)   Mathematics, Utah

- Worked in a small group to deepen our understanding of linear algebra topics.
- Proved lemmas which culminated in the process of a singular value decomposition for complex-valued matrices.
- Individually researched interesting applications of the SVD and summarized one – eigenfaces.
- Simplified the process of creating eigenfaces by offering a similar example, "eigenones," which were generated images of the number *one*.

Visualizing Hessian Matrices in MATLAB   September 2022—June 2023

PI: Dr. Alan Dorval, Director of Graduate Studies (BME)   Biomedical Engineering, Utah

- Considered the current state of visualization tools in the studies of neurological disorders.
- Created a spatial model in MATLAB, scaled to the eigenvalues and eigenvectors of the voltage function's Hessian matrix.
- Utilized ideas in mathematics and physics, including multivariable calculus, eigenspaces and manipulation of large matrices, electricity and voltage, and Gaussian surfaces.
- Worked to improve the placement of contacts during the process of deep brain stimulation treatments.

EXPERIENCES

Learning Assistant: Calculus 1, Physics 1, Precalculus, Physics 2, College Algebra   January 2023—August 2024

Center for Science and Mathematics Education (CSME)   University of Utah

- Held weekly office hours and review sessions to solidify students' understanding of beginner topics in mathematics.
- Individually led discussion sections; Attended lectures to aid instructors; Facilitated mathematical discussion.
- Contributed to weekly content preparation meetings with instructors to plan course directions and goals.

Mathematics Tutor   January—August 2023

Math Center   University of Utah

- Tutored students in calculus, linear algebra, differential equations, and introductory mathematics courses.

Peer Mentor   August 2022—May 2023

Biology Learning Center   University of Utah

- Guided first and second-year undergraduates through college by providing advice and resources to promote student involvement and success.
- Contributed to weekly meetings by discussing outreach and mentorship strategies for the implementation of our new mentorship program.

VOLUNTEERING, CONFERENCES, AND MEMBERSHIP

Math for All   University of Utah

Poster Presenter — *Singular Value Decomposition*   April 2024

Graduate Research Opportunities for Women   Duke University

Invited Participant   October 2023

Association for Women in Mathematics   University of Utah

Active Member   August 2022—August 2024

Biology Learning Center   University of Utah

Volunteer Tutor   January 2022—June 2022