Sabrina Fowler

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Education

Doctor of Philosophy, Mathematics, *University of Nebraska-Lincoln* — expected December 2026
Master of Science, Mathematics, *Missouri State University* — May 2021
Bachelor of Science, Applied Mathematics, *Missouri State University* — December 2019
Minors: Computer Science and Spanish

Work Experience

Research Intern, *Georgia Tech Research Institute* — May 2024 - present
- Develop novel analytical methods for sponsored research programs as part of a cross-functional team
- Process and analyze large-scale datasets including network traffic logs and biological sequence data
- Design, train, and evaluate deep learning models for anomaly detection and classification

Graduate Teaching Assistant, *University of Nebraska-Lincoln* — August 2021 - present
- Independently design and manage all deliverables for an upper-level proofs course, including curriculum, assessments, and evaluation criteria
- Collaborated with department leadership to ensure quality and consistency across multiple course sections of a large-enrollment general education requirement course
- Redesigned course workbook and assessment materials, integrating reference content with problem sets and creating aligned digital exercises

Projects

SAND: Sheaf Analysis of Network Data — GTRI

Applied sheaf-theoretic methods to model and analyze network traffic structure, building a mathematical framework for identifying anomalous patterns indicative of cyber threats. Analysis involved creating feature vectors for rolling-time windows over the course of one day's activity and then passing these vectors through an autoencoder. Experimental results showed significantly higher autoencoder loss during red team attacks compared with benign data.

ERA Mathematics Curriculum Development — UNL

Distilled UNL's intermediate algebra and pre-calculus curricula into focused review tracks for the College of Engineering's inaugural readiness program for incoming students, and served as instructor for the pre-calculus cohort. Program continues to run annually.

Skills

Programming	Python (PyTorch, TensorFlow, scikit-learn, pandas, NumPy), C++, Perl, SQL
Tools	Git, HTML, LaTeX
Mathematics	Macaulay2, Mathematica, MATLAB