

EDUCATION

Kansas State University

PhD in Applied Mathematics

Manhattan, KS, USA

May 2027

Dr. William L. Stamey Mathematics Scholarship - Awarded to top-performing students for research

2025-2026

Nanyang Technological University

Bachelor of Science (Honours with Distinction) in Mathematical Sciences (Pure Mathematics)

Singapore

June 2022

President Research Scholar - Awarded to top-performing students for the Undergraduate Research

2019-2021

INDUSTRIAL/ WORK EXPERIENCE

Project Officer, Nanyang Technological University

Summer 2022

- Worked with Dr. Andrew James Kricker to develop a numerically-stable, large-scale sparse eigenvalue numerical scheme to compute virtual homological spectral radii using Fox differential calculus. Computationally verified an open problem involving a lower bound conjecture, stemming from Geometric Topology, for a small class of surfaces.

Machine Learning Intern, Institute for Infocomm Research, A*Star, Singapore

Fall 2021

- Worked on predictive maintenance for cranes to determine the Remaining Useful Life (RUL) of components using multivariate regression on sensor data to forecast failures before they occur. Gained exposure to IoT communication protocols (like MQTT) used in real-time industrial sensor systems.

ACADEMIC EXPERIENCE

Graduate Research Assistant, Kansas State University

Fall 2022 - Current

- Solved the inverse problem of reconstructing 3D molecular geometry from fragment-ion momenta in Coulomb explosion imaging, achieving ~ 0.1 a.u. per-atom error ($R^2 > 0.98$) across different isomers, outperforming equivariant/geometry-informed architectures; benchmarked MLP vs. VAE on up to 10M simulated samples (PyTorch, Optuna, A40). (*J. Chem. Phys.* **164**, 244304, 2026)
- Architected unsupervised PDE-based deep learning numerical schemes utilizing TensorFlow with a spectral-based physics-informed loss function, derived using asymptotic and Fourier analysis. Able to recover unknown parameter within 25% relative error despite 10% noise, reducing time taken from 5 hours to 0.5 hours. Presented in an invited talk at IPMS 2026, Malta (slides).

Graduate Teaching Assistant, Kansas State University

Fall 2022 - Current

- Coordinated MATH 551: Applied Matrix Theory class over the summers of 2022 and 2026 to over 30 students. I designed the course syllabus, conducted lectures and set the homework assignments, exams and grading rubrics.
- Led discussions with students in over 12 classes (MATH 551: Applied Matrix Theory, MATH 340: Elementary Differential Equations and MATH 220: Calculus I) with an average teaching evaluation of 4.73/5.0.
- Won the Center for the Integration of Undergraduate, Graduate and Postdoctoral Research Graduate Scholarship for mentoring undergraduate students in research. Topic: *Active manipulation of Helmholtz scalar fields using physics-informed neural networks.*

PROJECTS

OpenAI's AI Agent Security - Multi-Step Tool Attacks Kaggle Competition

Summer 2026

- Implemented various deterministic red-teaming multi-step attack search algorithms (including a probe-based template race algorithm, a Go-Explore and Rainbow-teaming-style attack search algorithms) that drives tool-using LLM agents (GPT-OSS 20B, Gemma 4 26B-A4B) across safety guardrails into unsafe tool calls (data exfiltration, destructive writing). Rank: 797/4215, top 20%.

SKILLS

Programming Languages: Python, MATLAB, LaTeX, SQL.

Agentic tooling: Claude Code.

Cloud & DevOps: GitHub, Docker.

Libraries & Framework: PyTorch, scikit-learn, pandas, Numpy, HuggingFace, TransformerLENS

Coursework: An Introduction to Statistical Learning, Mathematics of Deep Learning, AI and Mathematics, Deep Learning, Pattern Recognition & Machine Learning, Functional Analysis, PDEs.

Courses: BlueDot AGI Strategy course, ARENAs (Virtual)

Competitive Programming: Codeforces (Specialist Rank)

Service: Reviewer for NeurIPS2026 workshop