

Researching numerical linear algebra, theoretical neuroscience, machine learning.

EDUCATION	<b>University Of Illinois, Urbana-Champaign</b> B.S. Physics, <i>Specialization in Learning Theory</i>	Urbana, IL 2023 – 2027
TALKS & POSTERS	<b>Approximating Tensor Contractions with Annealed Importance Sampling,</b> Poster developed for <i>QSim 2025, New York, NY</i>	08.2025
	<b>Quantum Circuit Volume for Graph Models,</b> Poster developed for the <i>Illinois Mathematics Lab Open House</i>	12.2024
RESEARCH	<b>Vector Institute for Artificial Intelligence</b>   Toronto, Ontario <ul style="list-style-type: none"><li>• PI: Dr. Alán Aspuru-Guzik</li><li>• Learning quantum spectroscopy data with machine learning algorithms</li><li>• Implementing numerical algorithms to train, and optimize machine learning models</li></ul>	Spring 2026
	<b>AI Interpretability Group</b>   Urbana, IL <ul style="list-style-type: none"><li>• PI: Dr. Rainer Engelken</li><li>• Extending non-stationary dynamical mean-field theories to low-rank connectivity structure for recurrent neural networks</li><li>• Preprint in preparation</li></ul>	08.2025 - Present
	<b>Lab for Parallel Numerical Algorithms</b>   Urbana, IL <ul style="list-style-type: none"><li>• PI: Dr. Edgar Solomonik</li><li>• Collaborating on the development of a novel Monte Carlo algorithm for contracting general tensor networks, with applications to quantum circuit simulation.</li><li>• Developing Bayesian models for tensor CP decomposition, showing how likelihood maximization under structured covariance priors connects to alternating Mahalanobis distance minimization.</li></ul>	09.2024 - Present
INDUSTRY	<b>Space Dynamics Laboratory</b>   Ionospheric Analyst Intern <ul style="list-style-type: none"><li>• Developed a Python scraper to expedite the data collection of NICT ionograms to 600+ ionograms downloaded per hour.</li><li>• Researched numerical analysis methods to improve the noise reduction of ionograms using various filtering methods. Implemented filters in Python and Julia and ran statistical analysis (PSNR, MSE, SSIM) to compare efficiencies.</li><li>• Researched methods to improve automatic ionogram scalers using deep learning architecture (CNNs) and techniques.</li></ul>	05 - 08.2024
LEARNING	<b>Independent Study– Information Geometry,</b> with Dr. Matthew Singh	08.2025-Present
	<b>QSim Summer School – NSF RQS (hosted at IBM, NYC),</b> Lectures covering theoretical and experimental perspectives on quantum error correction, simulation, and algorithms.	08.2025
	<b>Uncertainty Quantification &amp; Machine Learning for Physical Systems – IMSI hosted at the University of Chicago,</b> Lectures on Bayesian inference, sensitivity analysis, and physics-informed neural networks, with applications to complex physical systems.	05.2025
	<b>LPNA Reading Group – University of Illinois,</b> Weekly discussions on random matrix theory, graph partitioning, tensor network applications, and quantum error correction.	01.2025 – Present
OUTREACH	<b>Membership Director SIAM @ University of Illinois,</b> SIAM@UIUC executive officer. Responsibilities include managing membership status, involvement, and recruitment.	05.2025 - Present

**PROFESSIONAL  
AFFILIATIONS**

**Society of Industrial & Applied Mathematics,**  
Member

05.2025 - Present

**COURSEWORK**

**Physics:** Quantum Information Theory<sup>G</sup>, Electromagnetism I, Classical Mechanics I & II, Special Relativity

**Mathematics:** Real analysis<sup>G</sup>, Partial Differential Equations<sup>G</sup>, High-Dimensional Statistics<sup>G</sup>, Optimal Control Theory<sup>G</sup>, Representation Theory<sup>G</sup>, Stochastic Processes<sup>G</sup>.

**Computing:** Deep Learning Theory<sup>G</sup>, Theoretical Neuroscience<sup>G</sup>, Biologically-Plausible AI<sup>G</sup>, Machine Learning, Deep Generative Models, Data Structures & Algorithms

<sup>G</sup> denoting graduate coursework

**SKILLS**

Programming: Python, C/C++, Java, Julia, Mathematica

Libraries & Frameworks: NumPy, SciPy, Pandas, Matplotlib, scikit-learn, SymPy, Jupyter

Tools & Environments: Git, L<sup>A</sup>T<sub>E</sub>X, Conda, Shell, Jupyter