

Researching theoretical neuroscience, deep learning theory, & quantum information.

EDUCATION	<b>University Of Illinois, Urbana-Champaign</b>	Urbana, IL
	<i>B.S. Physics, Specialization in Learning Theory</i>	2023 – 2027
	<ul style="list-style-type: none"> <li>High-Dimensional Statistics<sup>G</sup>, Deep Learning Theory<sup>G</sup>, Dynamical Systems<sup>G</sup>, Representation Theory<sup>G</sup>, Deep Generative Models, Machine Learning, Time Series Analysis, Stochastic Processes, Quantum Information Theory, Data Structures &amp; Algorithms</li> </ul>	
	<sup>G</sup> denoting graduate coursework	
TALKS & POSTERS	<b>Approximating Tensor Contractions with Annealed Importance Sampling,</b>	08.2025
	Poster developed for QSim 2025, New York, NY	
	<b>Quantum Circuit Volume for Graph Models,</b>	12.2024
	Poster developed for the Illinois Mathematics Lab Open House	
RESEARCH	<b>Computation &amp; Neurodynamics Lab</b>   Urbana, IL	01.2025 – Present
	<ul style="list-style-type: none"> <li>Developing symbolic AI methods for Floquet decomposition of linear time-periodic systems using exponential maps with structured generators and implementing closed-form monodromy matrix factorizations.</li> <li>Applying block-diagonal parameterizations with zero-mean constraints to neural oscillator networks, enabling analytic recovery of periodic dynamics from discrete trajectory samples without time-ordering integrals for interpretable neural code analysis.</li> <li>PI: Dr. Matthew Singh</li> </ul>	
	<b>Lab for Parallel Numerical Algorithms</b>   Urbana, IL	09.2024 - Present
	<ul style="list-style-type: none"> <li>Collaborating on the development of a novel Monte Carlo algorithm for contracting general tensor networks, with applications to quantum circuit simulation.</li> <li>Investigating randomized methods such as TensorSketch for efficient estimation of trace-like quantities in large-scale tensor networks.</li> <li>PI: Dr. Edgar Solomonik</li> </ul>	
INDUSTRY	<b>Space Dynamics Laboratory</b>   Ionospheric Analyst Intern	05 - 08.2024
	<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 scalars using deep learning architecture (CNNs) and techniques.</li> </ul>	
LEARNING	<b>Independent Study– Information Geometry,</b>	08.2025–Present
	with Dr. Matthew Singh	
	<b>QSim Summer School – NSF RQS (hosted at IBM, NYC),</b>	08.2025
	Lectures covering theoretical and experimental perspectives on quantum error correction, simulation, and algorithms.	
	<b>Uncertainty Quantification &amp; Machine Learning for Physical Systems – IMSI hosted at the University of Chicago,</b>	05.2025
	Lectures on Bayesian inference, sensitivity analysis, and physics-informed neural networks, with applications to complex physical systems.	
	<b>LPNA Reading Group – University of Illinois,</b>	01.2025 – Present
	Weekly discussions on random matrix theory, graph partitioning, tensor network applications, and quantum error correction.	

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	<b>Society of Industrial &amp; Applied Mathematics,</b> Member	05.2025 - Present
SKILLS	Programming: Python, C/C++, Java, Julia, Mathematica Libraries & Frameworks: NumPy, SciPy, Pandas, Matplotlib, scikit-learn, SymPy, Jupyter Tools & Environments: Git, $\text{\LaTeX}$ , Conda, Shell, Jupyter	