

Researching numerical linear algebra, theoretical neuroscience, machine learning.

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| EDUCATION | University Of Illinois, Urbana-Champaign Urbana, IL <i>B.S. Physics, Specialization in Learning Theory</i> 2023 – 2027 <ul style="list-style-type: none"> • <i>Completed:</i> High-Dimensional Statistics^G, Deep Learning Theory^G, Dynamical Systems^G, Representation Theory^G, Deep Generative Models, Machine Learning, Time Series Analysis, Stochastic Processes, Quantum Information Theory, Data Structures & Algorithms • <i>In Progress:</i> Real Analysis^G, Partial Differential Equations^G, Numerical Parallel Algorithms^G ^G denoting graduate coursework |
| TALKS & POSTERS | Approximating Tensor Contractions with Annealed Importance Sampling, 08.2025 Poster developed for QSim 2025, New York, NY Quantum Circuit Volume for Graph Models, 12.2024 Poster developed for the Illinois Mathematics Lab Open House |
| RESEARCH | Vector Institute for Artificial Intelligence Toronto, Ontario Spring 2026 <ul style="list-style-type: none"> • PI: Dr. Alán Aspuru-Guzik • Learning quantum spectroscopy data with machine learning algorithms • Implementing numerical algorithms to train, and optimize machine learning models AI Interpretability Group Urbana, IL 08.2025 - Present <ul style="list-style-type: none"> • PI: Dr. Rainer Engelken • Extending non-stationary dynamical mean-field theories to low-rank connectivity structure for recurrent neural networks • Preprint in preparation Lab for Parallel Numerical Algorithms Urbana, IL 09.2024 - Present <ul style="list-style-type: none"> • PI: Dr. Edgar Solomonik • Collaborating on the development of a novel Monte Carlo algorithm for contracting general tensor networks, with applications to quantum circuit simulation. • Developing Bayesian models for tensor CP decomposition, showing how likelihood maximization under structured covariance priors connects to alternating Mahalanobis distance minimization. |
| INDUSTRY | Space Dynamics Laboratory Ionospheric Analyst Intern 05 - 08.2024 <ul style="list-style-type: none"> • Developed a Python scraper to expedite the data collection of NICT ionograms to 600+ ionograms downloaded per hour. • 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. • Researched methods to improve automatic ionogram scalers using deep learning architecture (CNNs) and techniques. |

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| LEARNING | <p>Independent Study– <i>Information Geometry</i>, with Dr. Matthew Singh</p> <p>QSim Summer School – <i>NSF RQS (hosted at IBM, NYC)</i>, Lectures covering theoretical and experimental perspectives on quantum error correction, simulation, and algorithms.</p> <p>Uncertainty Quantification & Machine Learning for Physical Systems – <i>IMSI hosted at the University of Chicago</i>, Lectures on Bayesian inference, sensitivity analysis, and physics-informed neural networks, with applications to complex physical systems.</p> <p>LPNA Reading Group – <i>University of Illinois</i>, Weekly discussions on random matrix theory, graph partitioning, tensor network applications, and quantum error correction.</p> | <p>08.2025–Present</p> <p>08.2025</p> <p>05.2025</p> <p>01.2025 – Present</p> |
| OUTREACH | <p>Membership Director <i>SIAM @ University of Illinois</i>, SIAM@UIUC executive officer. Responsibilities include managing membership status, involvement, and recruitment.</p> | <p>05.2025 - Present</p> |
| PROFESSIONAL AFFILIATIONS | <p>Society of Industrial & Applied Mathematics, Member</p> | <p>05.2025 - Present</p> |
| SKILLS | <p>Programming: Python, C/C++, Java, Julia, Mathematica Libraries & Frameworks: NumPy, SciPy, Pandas, Matplotlib, scikit-learn, SymPy, Jupyter Tools & Environments: Git, \LaTeX, Conda, Shell, Jupyter</p> | |