

# ANIKET DESHPANDE

(+1) 908-421-1543  
aniket4@illinois.edu  
aniketdeshpande.com

---

EDUCATION	<b>University Of Illinois, Urbana-Champaign</b> Urbana, IL <i>B.S. Physics, Specialization in Mathematical Physics</i> 2023 - 2026 ( <i>expected</i> ) <ul style="list-style-type: none"><li>• <i>Relevant Coursework:</i> Machine Learning Theory, Numerical Analysis, Stochastic Processes, Statistics &amp; Probability I &amp; II, Data Structures &amp; Algorithms, Real Analysis, Quantum Information Theory, Quantum Mechanics I, Electromagnetism I, Classical Mechanics I &amp; II, Special Relativity &amp; Mathematical Methods, Differential Equations, Abstract Linear Algebra</li><li>• <i>Research Interests:</i> Tensor methods for quantum information, quantum-inspired modeling for mathematical finance, physics-informed machine learning, &amp; neural computation</li><li>• Minors in Mathematics and Scientific Computing</li></ul>
PROJECTS	<b>Quantum Circuit Volume for Graph Models</b> 08.2024 - 12.2024 <ul style="list-style-type: none"><li>• Developed quantum circuit methods to simulate graph channels, optimizing simulation cost and complexity analysis for quantum walks in the birth-death process.</li><li>• Constructed lower and upper bounds of <math>\mathcal{O}(\sqrt{n})</math> and <math>\mathcal{O}(n)</math>, respectively, for simulation length of a quantum random walk on a birth-death process.</li><li>• Poster developed with the <i>Illinois Mathematics Lab</i> available on website.</li></ul>
RESEARCH	<b>Computation &amp; Neurodynamics Lab</b>   Urbana, IL 01.2025 - Present <ul style="list-style-type: none"><li>• Developing and applying neural-symbolic regression techniques to uncover interpretable mathematical models from complex datasets, enhancing understanding of underlying neural mechanisms.</li><li>• PI: Dr. Matthew Singh</li></ul> <b>Lab for Numerical Parallel Algorithms</b>   Urbana, IL 09.2024 - Present <ul style="list-style-type: none"><li>• Performing research in quantum complexity and quantum Monte Carlo methods for tensor networks.</li><li>• Implementing Monte Carlo methods for contractions (traces, etc.) of arbitrary tensor networks.</li><li>• PI: Dr. Edgar Solomonik</li></ul> <b>Polymer Physics Theory Group</b>   Urbana, IL 08.2024 - 01.2025 <ul style="list-style-type: none"><li>• Performed computational simulations of free-draining bottle brush polymers with explicit side-chains using a coarse-grain model</li><li>• Refactored and improved coarse-grain model using stochastic differential equations and brownian motion results. Implemented the model in C.</li><li>• Visualized relationships between various physical attributes of the bottle brush polymers in Python.</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 scalers using deep learning architecture (CNNs) and techniques.</li></ul>
SKILLS	<b>Programming:</b> Python, C/C++, Java, Julia, Mathematica <b>Libraries:</b> Matplotlib, SciPy, NumPy, Pandas <b>Utilities:</b> Anaconda, Git, Jupyter, Shell, L <sup>A</sup> T <sub>E</sub> X