James A. Nguyen

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Education

University of California, Irvine, CA **Sep 2022 - Sep 2025**
Bachelor of Science, Applied and Computational Mathematics *3.76 GPA*
Concentration in Data Science, Minor in Statistics

Relevant Coursework: Numerical Linear Algebra, Deep Learning and Neural Networks, Stochastic Processes, Real and Complex Analysis, Mathematical Optimization

Research experience

Undergraduate Research Assistant, Statistics **Jun 2025 - Present**
Donald Bren School of Information and Computer Sciences, UC Irvine

- Among 16 undergraduates admitted to the Summer Institute for Biostatistics (SIBS, NIH/NIAID REU)
- Created pipeline in RStudio to process patient data and analyze effect of HIV on Tuberculosis treatment outcomes before and after universal access to Antiretroviral Therapy in Botswana
- Produced pointwise metrics to evaluate spatial correlation between individual participants and justify assumptions of independence in regression modeling
- Tuned random forest to identify nonlinear effects by variable importance plots

Undergraduate Researcher, Mathematics **Sep 2024 - Sep 2025**
School of Physical Sciences, UC Irvine

- Proposed and optimized alternative sampling approaches using MATLAB to row-iterative projection methods for solving large-scale linear feasibility problems
- Developed algorithm to cluster within linear systems to diversify sampling by orthogonality
- New methods promote 100 percent faster convergence and better approximation error than Sampling Kaczmarz-Motzkin algorithm applied to the common case of ill-conditioned and overdetermined systems

Computational Research Assistant, Data Science **Jun 2024 - Jan 2025**
Fortin Lab - Center for the Neurobiology of Learning and Memory *Irvine, CA*

- Among only 6 undergraduates selected for funded position to continue research beyond SoCal Data Science Research Fellowship (NSF REU)
- Developed and applied pointwise sliding-window analysis of correlation in Python for multinomial sequence detection in neuronal firing ensembles
- Analyzed KL-divergence between Poisson-simulated hypothesis distribution and observed decoding probability distribution
- Tuned an LSTM neural network in TensorFlow to produce unprecedented decoding accuracies

Publications, presentations

A. Baniasad*, S. Chao*, J. Nguyen*, E. Tian*, C. Modongo, V. Minin, J. Sebastian, and S. Shin. HIV Remains a Risk Factor for Unfavorable Tuberculosis Treatment Outcomes in the Era of Universal Access to Antiretroviral Therapy in Botswana, medRxiv, 340699, 2025, preprint available at doi.org/10.1101/2025.11.26.25340699

J. Nguyen*, O. Presnyakov*, A. Radhakrishnan*. Read Between the Hyperplanes: On Spectral Projection and Sampling Approaches to Randomized Kaczmarz, arXiv, 2025, preprint available at arxiv.org/abs/2511.03055.

* - joint first authors

Technical skills

Git, Google Cloud Platform, LaTeX, MATLAB, NumPy, Pandas, Plotly, Python, PyTorch, R/RStudio, Scikit-Learn, SQL, TensorFlow, Tidyverse, VS Code, Matplotlib