

KRISH DESAI, PHD

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Machine learning researcher (PhD Physics, UC Berkeley) with expertise in statistical inference, optimization, and probabilistic modeling. Proven ability to solve complex problems across diverse domains, from financial markets to particle physics to computer vision. Experienced in extracting insights by analyzing noisy, high dimensional data.

Interested in opportunities to apply rigorous quantitative methods to challenging real-world problems.

EDUCATION

PhD Physics, University of California, Berkeley (3.81GPA) 2020 – 2025

Dissertation: Machine Learning Methods for Cross Section Measurements.

Advisor: Prof. Benjamin Nachman

BS & MS Mathematics and Physics, Yale University (3.85 GPA) 2017 – 2020

Distinction in Mathematics (Intensive) and Physics (Intensive)

PROFESSIONAL EXPERIENCE

Lawrence Berkeley National Laboratory *Machine Learning Researcher* October 2020 – Present

- Developed generative and adversarial models to reconstruct latent distributions from high dimensional, noisy collider data; techniques for signal recovery directly applicable to inference under uncertainty.
- Invented deconvolution algorithms for statistical estimation in distorted measurement spaces, reducing runtime cost by ~100× while maintaining precision.
- Published seven peer-reviewed papers (NeurIPS, Physical Review, European Physical Journal).

Emissary AI *Machine Learning Engineer* May 2025 – December 2025

- Developed and fine-tuned language and vision-language models for client-specific applications, including code completion and image-based IP violation detection.
- Improved model accuracy from around 30% to over 90% for medical message classification through architecture optimization and training refinements.
- Optimized training pipeline for distributed multi-GPU systems, improving scalability and throughput.

Bridgewater Associates *Investment Analyst Intern* June 2023 – August 2023

- Developed Bayesian hierarchical models to predict liquidity for trade execution, enabling data-driven selection over trader decisions and reducing transaction costs through systematic strategy optimization.

- Implemented probabilistic frameworks for systematic trading strategies to minimize transaction costs and alpha leakage subject to risk constraints, under varying market conditions.
- Backtested and optimized execution strategies under uncertainty, integrating liquidity forecasts.

Microsoft Research

PhD Research Intern

May 2022 – August 2022

- Worked directly with Jaron Lanier (Chief Unifying Scientist) on nonlocal field theory and matrix models.
- Developed operator theoretic and stochastic methods bridging discrete and continuous optimization.
- Implemented numerical simulations to validate predictions about high-dimensional operators.
- Quantitative modeling and analysis incorporated and acknowledged in [Lanier et al. \(2022\)](#).

Purple Gaze Inc.

Software Developer Intern

May 2020 – August 2020

- Developed algorithms in Python and C for glint detection in eye-tracking data, improving signal quality
- Collaborated with a small engineering team to integrate real-time processing into production software.

TECHNICAL SKILLS

Programming: Python (TensorFlow, Keras, PyTorch, NumPy, SciPy, Pandas, Matplotlib), C, Bash, Git.

Machine Learning: Generative models, normalizing flows, adversarial networks, Bayesian networks.

Quantitative Methods: Bayesian inference, deconvolution, inference with correlated data, statistical estimation under noise, uncertainty quantification, algorithmic optimization

Compute: High performance computing (parallelization, optimization), scientific software development.

SELECTED PUBLICATIONS & TALKS

Unbinned Inference with Correlated Events	<i>European Physical Journal C</i>	2025
Moment Unfolding	<i>Physical Review D</i>	2024
Neural Posterior Unfolding	<i>NeurIPS ML4PS</i>	2024

- Complete list of publications at desai.ml/publications.
- Talks and seminars at CERN, NeurIPS ML4PS, Korea Institute of Advanced Study, American Physical Society.
- Complete list of talks and seminars at desai.ml/talks.

SERVICE & AWARDS

- Peer reviewer for Nature Scientific Reports, Journal of High Energy Physics, and NeurIPS.
- UC Berkeley Physics faculty search committee member (2021–24).
- Howard L. Schultz Prize (Most outstanding graduating senior in physics, Yale)
- Elected to Sigma Xi (Scientific Honor Society) and Sigma Pi Sigma (Physics Honor Society).