

Andrew Lizarraga

Email: andrewlizarraga@ucla.edu

Homepage: <https://drewrl3v.github.io/>

LinkedIn: <https://www.linkedin.com/in/andrew-lizarraga/>

Google Scholar: <https://scholar.google.com/citations?user=KUDS8uwAAAAJ&hl=en>

ACADEMIC

BACKGROUND

University of California, Los Angeles (UCLA)

Ph.D. Statistics

Sep 2022 – Jun 2026 (Expected)

GPA: 4.0 / 4.0; Co-advised by Prof. Ying Nian Wu and Prof. Shantanu H. Joshi

University of California, Santa Barbara (UCSB)

B.S. Mathematics

Sep 2014 – Jun 2018

GPA: 3.5 / 4.0

LANGUAGES

/LIBRARIES

Python, C, C++, CUDA, Pytorch, Huggingface

DOMAIN

KNOWLEDGE

AI 4 Science: Medical Imaging, Astrophysics, Robotics

AWARDS

National Science Foundation - Graduate Research Fellowship

Sep 2023 – Jun 2026

UCLA Gene Block Merit Award

Sep 2022 – Jun 2023

UCLA Graduate Summer Research Fellowship

Jun 2022 – Sep 2022

TEACHING

EXPERIENCE

UCLA STATS 100A: Introduction to Probability

Jun 2025 – Sep 2025

UCLA STATS 100A: Introduction to Probability

Jun 2024 – Sep 2024

WORK

EXPERIENCE

UCLA, Department of Statistics and Data Science

Sep 2022 – present

Research Assistant, Advisors: Prof. Ying Nian Wu and Prof. Shantanu H. Joshi

Diffusion Models:

- Collaborated with UCLA Physics and Astronomy to develop diffusion models linking galaxy morphology, age, and redshift; established the first strong correlation between redshift and morphological structure.
- Developed generic inverse-problem solver using diffusion priors with posterior updates via short-run MCMC, achieving state-of-the-art results with reduced computational cost.

• Representation Learning:

- Demonstrated that standard deep networks (AE, VAE, VQ-VAE, WAE) fail to capture anatomical structure in high-dimensional medical scans. Proposed *Diff-VQ-VAE*, introducing latent space constraints to improve medical robustness.

• Decision Making and Planning:

- Developed the *Latent Plan Transformer*, an unsupervised sequence model that performs decision-making by inferring a latent variable conditioned on target returns to guide policy execution.
- Created the *Latent Adaptive Planner*, integrating reinforcement learning and dynamic programming while maintaining Transformer scalability for dynamic manipulation and robotics tasks.

- **Andrew Lizarraga**, Eric Hanchen Jiang, Jacob Nowack, Morgan Himes, Jonathan Soriano, Yun Qi Li, Ying Nian Wu, Bernie Boscoe, Tuan Do. *Modeling Galaxy Morphology Evolution Through Cosmic Time via Redshift Conditioned Diffusion Models* | (In Review) - *Astrophysical Journal*
- **Andrew Lizarraga**, Eric Hanchen Jiang, Jacob Nowack, Yun Qi Li, Ying Nian Wu, Bernie Boscoe, Tuan Do. *Learning the Evolution of Physical Structure of Galaxies via Diffusion Models* | *Neurips-MLP4S 2024*
- Eric Hanchen Jiang, Yasi Zhang, Zhi Zhang, Yixin Wan, **Andrew Lizarraga**, Shufan Li, Ying Nian Wu. *Unlocking the Potential of Text-to-Image Diffusion with PAC-Bayesian Theory* | (In Review) *ICLR 2026*

LLM/Transformer

- Donghun Noh, Deqian Kong, Minglu Zhao, **Andrew Lizarraga**, Jianwen Xie, Ying Nian Wu, Dennis Hong. *Latent Adaptive Planner for Dynamic Manipulation* | *CoRL 2025*
- Morgan Himes, Samiksha Krishnamurthy, **Andrew Lizarraga**, Srinath Saikrishnan, Vikram Seenivasan, Jonathan Soriano, Ying Nian Wu, Tuan Do. *Multi-Modal Masked Autoencoders for Learning Image-Spectrum Associations for Galaxy Evolution and Cosmology* | *Neurips-MLP4S 2025*
- Jinxing Li, Jacob Bortnik, Qiushuo Wang, Yingnian Wu, **Andrew Lizarraga**, Mirana Angel, Beibei Wang, Qianzhuang Wen, Jeffrey Jiang. *Modeling ring current proton distribution using MLP, CNN, LSTM, and transformer networks* | *Frontiers in Astronomy and Space Sciences*
- **Andrew Lizarraga**, Edouardo Honig, Ying Nian Wu. *From Stochastic Parrots to Digital Intelligence* | *WIRES Computational Statistics 2025*
- Edouardo Honig, **Andrew Lizarraga**, Zijun Frank Zhang, Ying Nian Wu. *Better Prompt Compression Without Multi-Layer Perceptrons* | *Neurips-AFM 2025*
- Deqian Kong, Dehong Xu, Minglu Zhao, Bo Pang, Jianwen Xie, **Andrew Lizarraga**, Yuhao Huang, Sirui Xie, Ying Nian Wu. *Latent Plan Transformer: Planning as Latent Variable Inference* | *NeurIPS 2024*

Representation Learning

- **Andrew Lizarraga**, David Lee, Antoni Kubicki, Ashish Sahib, Elvis Nunez, Katherine Narr, Shantanu H. Joshi. *Alignment of Tractography Streamlines Using Deformation Transfer via Parallel Transport* | MICCAI - CDMRI 2021
- Vikram Seenivasan, Srinath Saikrishnan, **Andrew Lizarraga**, Jonathan Soriano, Bernie Boscoe, Tuan Do *Combining datasets with different ground truths using Low-Rank Adaptation to generalize image-based CNN models for photometric redshift prediction* | Neurips-MLP4S 2025
- Elvis Nunez, **Andrew Lizarraga**, Shantanu H. Joshi. *SrvfNet: A Generative Network for Unsupervised Multiple Diffeomorphic Functional Alignment* | CVPR - DiffCVML 2021
- Jie Ren, Xinhao Zheng, Jiyu Liu, **Andrew Lizarraga**, Ying Nian Wu, Liang Lin, Quanshi Zhang. *Monitoring Primitive Interactions During the Training of DNNs* | AAAI 2025
- **Andrew Lizarraga**, Brandon Taraku, Edouardo Honig, Ying Nian Wu, Shantanu H. Joshi. *Differentiable VQ-VAE's for Robust White Matter Streamline Encodings* | IEEE - ISBI 2024
- **Andrew Lizarraga**, Katherine L. Narr, Kirsten A. Donald, Shantanu H. Joshi. *StreamNet: A WAE for White Matter Streamline Analysis* | PMLR - GeoMedIA 2022