# Mahdi Qezlou

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## Employment

**Data Scientist** | University of Texas, Austin | 2024 – Present
• Lead machine learning and AI projects in astronomy for causal inference and forecasting.
**Research Fellow** | University of California, Riverside | 2018 – 2024
• Led three major machine learning projects to infer the behavior of complex systems.

## Education

**Ph.D. in Machine Learning for Astrophysics** | University of California, Riverside | 2018 – 2024
• Developed machine learning and statistical tools to infer properties of astrophysical systems.
**M.Sc. in Physics** | University of California, Riverside | 2018 – 2019
**B.Sc. in Physics** | Sharif University of Technology | 2013 – 2018

## Skills

**Programming:** Git, Bash, Python, C, SQL, TensorFlow, PyTorch, XGBoost, AWS/Google Cloud, Apache Spark, Tableau, Matplotlib
**ML & Statistics:** Bayesian/Frequentist statistics, stochastic processes, Deep Learning (CNN, NLP), Generative AI. Strong math and computation background, actively engaged in ML literature.
**Languages:** English (Fluent), Persian (Fluent), Turkish (Intermediate)

## Highlighted Project Leadership

**Experimental Design, Success Metrics, Causal Inference, Decision Making under Uncertainty** | 2018 – Present
• **Objective:** Experimental design on 20+ dimensional feature space for inference and forecasting under uncertainty in astrophysical data.
• **Challenges:** Expensive forward modeling, sparsely sampled space, need for fast surrogate models for MCMC.
• **Contribution:** Designed Gaussian Process and generative AI surrogate models with percent-level accuracy at 1/100th computational cost. Enabled fast MCMC-based causal inference across high-dimensional space.
• **Techniques:** Experimental design, A/B testing, Bayesian & frequentist modeling, deep learning, generative AI (Diffusion Models, Normalizing Flow)
• **Tools:** Python, SQL, TensorFlow, AWS, Apache Spark (Databricks)
• **Collaboration:** Worked with Software/ML engineers at TACC; presented to DOE, NASA, and Air Force.
• **GitHub:**https://github.com/qezlou/lya_emulator_full