Mariana Khachatryan, PhD

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Experience

- **Erdös Institute Data Science Bootcamp** — Columbus, OH
  Data Science Fellow — *Sep. 2024 - Dec. 2024*
  - Led a team of PhD researchers in building machine learning models for predicting car price and identifying key features driving model prediction using SHAP values, achieving R^2 of 0.88.
  - Communicated findings to stakeholders (CarMax, Upstart); built reproducible codebase in Python with Git.

- **Florida International University (FIU)** — Miami, FL
  Postdoctoral Research Associate — *Jan. 2020 - May 2023*
  - Used Python, probability and statistics for exploratory data analysis, data engineering and model development for particle physics data from GlueX experiment at Jefferson Lab. Developed data analysis strategy and timeline.
  - Used Least Squares and unbinned Likelihood statistical methods to clean data via Probabilistic Event Weightings. Implemented multivariate classification algorithms in C++ to identify π_1 exotic meson. Applied bootstrapping techniques for error estimation. Worked in a large collaboration with over 300 research scientists.
  - Participated in collection, monitoring and quality check of big data.
  - Mentored 2 PhD students. Delivered presentations for technical and non-technical audiences. 40+ publications in peer reviewed journals. Recognized with a Certificate of Appreciation from Executive Dean.

- **Old Dominion University** — Norfolk, VA
  Research Assistant — *Jan. 2014 - 2019*
  - Utilized MS SQL to process the Jefferson Lab CLAS collaboration (over 200 physicists) e2a experiment data. Used C++ for Monte Carlo simulations, error estimation and prediction of Electron-beam energy reconstruction. Mentored junior researchers. Received recognition and award. Data analysis results published in Nature journal. 3 media appearances (ODU1, ODU2, JLab).

Skills

- **Languages**: : SQL, Python(Libraries: Numpy, SciPy, Pandas, Matplotlib, Tensorflow, Scikit-learn), Microsoft Power BI (view reports), C/C++, Shell, Latex.
- **Soft skills**: : Teamwork, project management, problem solving, presenting.

Selected Machine learning and Deep learning Projects

- **Clothing Sales Forecasting Jun. 2025 GitHub URL**: Developed time series forecasting models using LSTM networks and Linear Regression to predict clothing sales trends.
- **Car sales price prediction Nov. 2024 GitHub URL**: Predicted car sales price based on various features.
- **Facemask identification, July 2024 GitHub URL**: Used convolution neural network (CNN) from keras, tensorflow to predict whether the person in the picture wears a face mask.

Certifications

- **Erdös Institute Data Science Bootcamp, December 2024**: Data collection, Exploratory data analysis, Data cleaning, Regression, Inferential Statistics, Time Series, Classification, Ensemble learning, Neural Networks
- **Udemy - The Complete SQL Bootcamp, April 2024**: Learned reading and writing complex queries to a database
- **Udemy - Python for Machine Learning & Data Science Masterclass, May 2024**: Completed projects for topics including Regression, Classification, Natural Language Processing (NLP) and Unsupervised Learning
- **Udemy - Complete Tensorflow 2 and Keras Deep Learning Bootcamp, July 2024**: Covered topics include ANNs, CNNs, RNNs, NLP, Forecasting, AutoEncoders, Generative Adversarial Networks

Recognition & Awards

- **Certificate of Appreciation**: Florida International University Executive Dean (2021)
- **Research Excellence**: Jefferson Science Associates Graduate Fellowship (2018-2019)
- **1st Place Prize**: Jefferson Lab Users Organization Poster Competition (2018)

Education

- **Old Dominion University (ODU)** Norfolk, VA
  PHD in Experimental Nuclear Physics *December 14, 2019*

Languages

- **English**: Fluent
- **Russian**: Fluent
- **Armenian**: Native speaker