

# Mkrtich (Michael) Ohanyan, PhD

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## EXPERIENCE

### Data scientist

#### FINRA (Financial Industry Regulatory Authority)

Established the first options-based statistical outlier detection framework for deep learning models in the history of the organization.

How this was accomplished:

- *Formulated the problem*: Set goal of engineering a set of features from options data whose statistical outliers correspond to instances of stock price manipulation.
- *Collected big data*: Queried terabytes of data from multiple securities databases; transformed and combined data into cleansed dataframes of options and stock data.
- *Analyzed big data*: Performed statistical analyses and created visualizations of multidimensional slices of the dataframes, including visualizing the evolution of options with respect to expiration dates
- *Collaborated with business partners*: Worked closely with business partners to rule out false positives of price manipulation
- *Engineered features*: Engineered numerous new features that further quantified the true positive outliers

Tech used:

- *Python*, including Pandas, Numpy, Scikit-learn, Plotly;
- *Pyspark*, including Pandas UDFs;
- *SQL*, including window functions and common table expressions

### Data scientist

#### Freelance work

Trained machine learning models to make predictions for real-world problems.

How this was accomplished:

- *Consulted with experts*: reached out to experts to obtain relevant domain knowledge for each problem
- *Cleansed the data*: extensive data preprocessing, including significant data imputation, feature selection techniques, and feature engineering
- *Trained models*: Trained several candidate models using cross-validation; tuned hyperparameters; used relevant metrics to evaluate models

Tech used:

- *Python*, including Pandas, Numpy, Scikit-learn, Matplotlib, Plotly;
- *Modeling algorithms*, including linear regression, logistic regression, random forest, XGBoost;
- *Pyspark*;
- *SQL*, including window functions and common table expressions

## EDUCATION

### PhD, Mathematics

Syracuse University  
Completed May 2021

### BS, Mathematics

University of Southern California  
Completed May 2010