

## LIANG (ADAM) ZOU

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### EDUCATION

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#### NEW YORK UNIVERSITY

New York, NY

##### The Courant Institute of Mathematical Sciences

**M.S. in Mathematics in Finance** (expected - December 2019)

- **Coursework:** Portfolio Optimization, Statistical Arbitrage, Derivatives Pricing, IR and FX, Market Microstructure, Stochastic Calculus, Continuous Time Finance, Risk Management, Econometrics

#### INDIANA UNIVERSITY

Bloomington, IN

**B.S. in Applied Mathematics & Statistics - High Distinction** (May 2018)

- **Coursework:** Machine Learning, Monte Carlo, Time Series, Probability, Stochastic Process, ODE
- Programming & Software:** Python (Expert), R (Expert), Java, SQL, Git, SPSS, SAS, Hadoop, Spark

### EXPERIENCE

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#### FIDELITY INVESTMENTS INC.

Boston, MA

**Data Science Intern** (May 2019 - August 2019)

- Applied decision trees to interpret monetary transaction error of work items predicted by neural networks; visualized drivers for quality control and risk management with feature importance
- Developed recommender systems for employee benefit plans using empirical Bayesian methods, beat baseline (frequentist approach) by 25% to 30% decrease in SSE in back test
- Calibrated beta distribution using maximum likelihood and least square, validated goodness of fit via statistical tests including Kolmogorov-Smirnov, Anderson-Darling, and Cramer-von Mises
- Designed backtesting framework to evaluate customer segmentations among 19M users in Spark

#### FULKRUM, AI

New York, NY

**Data Scientist Intern** (March 2019 - May 2019)

- Built Ridge Regression model to predict property's gross rent based on factors including economy, locations and crimes, and improved model accuracy using cross validation
- Designed automated system to compute prepayment penalty on mortgage-backed securities in Python, assisted banks in identifying loans for refinancing offers

#### MEGAPUTER INTELLIGENCE INC

Bloomington, IN

**Data Analyst Intern** (May 2018 - August 2018)

- Utilized non-linear machine learning techniques including random forest, neural network, and CHAID to predict regulatory risk given taxonomy data of bank customer complaints (252K rows)
- Implemented under-sampling and over-sampling to handle imbalanced dataset; performed model selection based on k-fold cross validation to control overfitting, achieved an accuracy of 99.48%
- Performed lexicon based Sentiment Analysis on employee reviews of accounting firms after creating taxonomy; identified most significant issues associated with locations and job titles

#### GUANGZHENG HANG SENG ADVISORY

Guangzhou, China

**Research Intern** (July 2017 - August 2017)

- Generated buy/sell signals based on technical factors such as moving averages and daily returns of Shanghai Stock Exchange Index, along with 50% decrease in operation time
- Researched portfolio optimization of insurance fund based on RAROC framework under VaR

### PROJECTS

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#### **Machine Learning in Stock Return Prediction**

- Constructed ridge regression, random forest, and XGBoost to predict stock returns of U.S. largest 100 companies by market capitalization
- Improved predictability by model stacking and feature selection based on stock correlations

#### **Monte Carlo Simulation in Option Pricing and Variance Reduction**

- Implemented Monte Carlo to price exotic options based on local volatility of equities
- Applied antithetic variate, importance sampling, and stratified sampling to reduce MC errors

#### **SABR Model Calibration**

- Calibrated SABR model for implied volatility of FX options under market convention with ATM, 25d BF, 25d RF quotes and constructed volatility smile curve