KAIWEN (KAI) ZHOU

(917) 497-9701 // kaiwen.zhou@nyu.edu // linkedin.com/in/kaiwen-zhou // https://github.com/kaiwen-zhou

EDUCATION

Expected 05/25 **NEW YORK UNIVERSITY** New York, NY
The Courant Institute of Mathematical Sciences
M.S. in Mathematics in Finance
- ***Expected Coursework:*** time series analysis, alternative data, fixed income, BARRA-style Implicit Risk-Factor Model, EM algorithm, Hidden Markov Models (HMMs), Gibbs Sampling

09/19 - 05/23 **NEW YORK UNIVERSITY** New York, NY
The Courant Institute of Mathematical Sciences
B.A. Honors in Mathematics, Minor in Computer Science
- ***Undergraduate Coursework:*** probability, bayesian statistics, SVD, PCA, differential equations, numerical methods, linear & non-linear optimization, regression, ensembling, clustering, CNN
- ***Graduate Coursework:*** portfolio theory, Ito's Lemma, Black-Scholes, Hull-White model, Monte Carlo, PDE implicit scheme, local volatility, VaR, GARCH, Feature Map Regression, AdaBoost
- ***Honors/Awards:*** Dean's List (2019-2023), Magna Cum Laude, Phi Beta Kappa

PROJECTS

NYU COURANT New York, NY

01/23 - 05/23 **Analysis of Portfolio Allocation Schemes (Python)**
- Analyzed CAPM theory, mean-variance optimization, APT model and Black-Litterman model and summarized findings in report
- Adopted and implemented Attilio Meucci's mean-variance optimization (MVO) framework proposed in his book *Risk and Portfolio Allocation*
- Applied APT model that generated views for latent factors and used that to predict mean and variance of return via Bayesian scheme
- Backtested and compared performance of different MVO and Black-Litterman-APT allocation schemes using 10 years' weekly data; derived insightful findings

01/22 - 05/22 **Pricing an Exotic Option Using Hull-White Model (Python)**
- Developed an object-oriented programming (OOP) framework for efficient data collection and web-scraping, incorporating data such as Nikkei-225 index and US Treasury yield curve
- Calibrated Hull-White model parameters using cubic splines to determine key values and dynamics for essential calibration
- Generated final price approximation for Quanto Option using Monte-Carlo simulation

09/22 - 12/22 **Prediction of a 4-Fingered Robot Hand Given RGB+Depth Images (Python)**
- Designed and implemented convolutional neural network (CNN) model to predict finger positions from **RGBD** images, achieving an RMSE error of less than 0.00414
- Explored various neural network structures and fine-tuned hyperparameters through grid search to construct an optimized model

01/23 - 05/23 **Image Recovering and Line Fitting With Different Machine Learning Techniques (Python)**
- Evaluated performance of random forest, gradient boosting, and feature map regressors with amplified data or regularization using 5-fold grid search cross-validation
- Compared performance of exponential and B-spline feature maps on regression tasks involving polynomial and periodic datasets

01/23 - 05/23 **LSA-based Recommender (Python)**
- Implemented prediction model for generating top-5 closest tweets to a given tweet using tfidf_vectorizer and TruncatedSVD, as well as nltk package for lemmatization

COMPUTATIONAL SKILLS / OTHER

Programming Languages: Python, LaTeX, Java
Languages: English (fluent), Mandarin (native)