SHIJIA (SCARLETT) LIU
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EDUCATION

NEW YORK UNIVERSITY New York, NY
The Courant Institute of Mathematical Sciences
MS in Mathematics in Finance (expected – Dec. 2020)

- ***Current Coursework:*** Risk and Portfolio Management (VaR, CAPM, PCA), OOP in Java, Monte Carlo Simulation, Stochastic Calculus, Swaps, Interest Rate Models, Option Pricing and Greeks

UNIVERSITY OF MINNESOTA – TWIN CITIES Minneapolis, MN
BA in Mathematics (May 2019)

- ***Coursework:*** Markov Chain, Merton's Risk Neutral Pricing Method and Black-Scholes Formula, Optimization, Dynamic and Probability Models, Numerical Analysis, Heat and Wave Equation
- ***Awards:*** High Honors in Mathematics, High Distinction in Degree, Dean's List

EXPERIENCE

BANK OF CHINA Shanghai, China
Corporate Finance Summer Analyst (Jun. 2018 – Aug. 2018)

- Conducted equity research in R.Y.B Education Company and wrote research reports for initiations of coverage, proprietary databases and tailored industry news
- Analyzed data by using R and built financial models to evaluate existing and potential projects of the company and then developed unique insights by leveraging this data
- Integrated income statement, balance sheet and cash flow statements as well as performed Ratio Analysis to evaluate the company's financial performance

HSBC Hong Kong, China
Financial Advisor Assistant (Jun. 2017 – Aug. 2017)

- Illustrated currency-linked deposits to retail investors and provided suggestions based on their financial situations, investment experience and investment objectives
- Performed scenario analyses based on exchange rate movements and various risk disclosure

PROJECTS

Portfolio Optimization (Python)

- Created the portfolio object by using Mean-Variance method based on data of stocks in Quandl
- Estimated covariance and correlation matrix on stock returns. Found the portfolio that maximizes Sharpe ratio and analyzed its risk and return
- Visualized the efficient frontier for portfolio objects with different constraints to compare and analyzed the portfolios' performances by Treynor Measure
- Strengthened the portfolio by applying Black-Litterman approach and compared their sensitivity

Option Strategy Trading (Python)

- Constructed strangle option strategy for Alibaba based on speculation of large price fluctuation and facilitated the trade at Investopedia with desired strike price
- Simulated in Python with stock price movement following random walk with large volatility
- Analyzed resulting profits/losses and performed sensitivity analyses with varying variables

Applications of SVD in PCA, Latent Semantic Indexing and Collaborative Filtering (MATLAB)

- Performed PCA by using SVD on the covariance matrix to reduce the dimensionality of a dataset.
- Implemented SVD on Collaborative Filtering used in the recommender systems to make automatic predictions, and Latent Semantic Indexing to overcome synonymy and polysemy in the text
- Realized the procedure of SVD in MATLAB and plotted stairstep graph of the cumulative sum of singular values to visualize the number of principal components which explain the majority of data

COMPUTER SKILLS/OTHER

Programming Languages: Java, Python, MATLAB, R
Other Software: Bloomberg, Microsoft Office
Languages: Mandarin (native), English (fluent)