Dongbing Han

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Education Background

Columbia University, Fu Foundation School of Engineering and Applied Science — New York, USA
Bachelor in Computer Science, GPA: **3.58/4.00**; GRE: **328 (V159+Q169)** — Expected 05/2023

Dickinson College — Carlisle, USA
Bachelor in Mathematics and Quantitative Economics, GPA: **3.94/4.00** (Mathematics: **4.00/4.00**) — 08/2018-08/2023

- Honors: Alpha Lambda Delta, The Henry P.Cannon Memorial Prize in Mathematics (Awarded to #1 Sophomore), Dean's List all semesters

Core Courses:

- Data Structure, Advanced Programming, Introduction to Databases, Artificial Intelligence, Cloud Computing, and Big Data, Intermediate Micro & Macro, Econometrics, Game Theory, Multivariable Calculus, Probability and Statistics I&II, Numerical Methods, Abstract Algebra, Differential Equations, Real & Complex Analysis, Time Series Analysis, Stochastic Processes (in progress)

Project Experience

Columbia Exchange Platform (COMS 6998 Cloud Computing and Big Data) — 03/2022-05/2022

- Developed a campus second-hand goods trading platform based on the AWS platform and received widespread attention; the project used S3, Cognito, SES/SNS, CloudWatch, RDS (connecting with MySQL database), etc.
- Responsible for the development of web modules including product uploading, modification, search, and deletion

Squid Game (COMS 4701 Artificial Intelligence) — 11/2021-12/2021

- Employed Python and adversarial search algorithm to implement a Squid Game which is required to defeat the other group's code. We defeat eight of ten opponents.
- The game is a two-person game on a 7x7 board; every turn, a player moves and then throws a trap. To win, you must trap your opponent such they can't move before they trap you.

The Mathematics of Gossip (MATH 271 Differential Equations) — 03/2021-05/2021

- Analyzed potential application of the SIR model to stimulate and better understand the spread of gossip in society.
- Studied the Anthropomorphized Sensitivity Analysis to illustrate contextual significance of parameters and translate social characteristics into mathematical language using the Gossip Model, a compartmental model of SIR coded in Python; concluded that the SIR model can be used to simulate more complex scenarios with high realistic validity

Professional Experience

CITIC Securities Co., Ltd. — Shenzhen, China
Summer Intern at Investment Banking Department — 06/2021-07/2021

- Participated in the due diligence of an IPO project of an IC company, independently wrote draft of Equity Financing Business Plan, Feasibility Study and Investment Decision Report and accepted by associates
- Assisted in financial verification, employed comparative valuation (P/B, P/S, EV/EBITDA) and based on the assumptions of WACC, FCF and CAPM, assisted analysts in initially establishing a DCF model to predict the company's financial status in the next 5 years, and conducted risk analysis such as sensitivity analysis.

China Merchants Securities Co., Ltd. — Shanghai, China
Winter Intern at Industry Research Department — 12/2020-01/2021

- Independently analyzed photovoltaic glass and lithium industries, collected, and sorted out various data by Wind and Bloomberg and completed three industry research reports and presentations
- Analyzed macroeconomic events and trends (eg. Annual Government Work Report and Central Economic Work Conference) and monitored industry downside risks and industry swings.

Research Experience

Financial Markets and Portfolio Research (with Prof. Alexei Chekhov, Columbia University) — 06/2022-08/2022

- Performed Markowitz and Index model with ten stocks twenty years price data to find the regions of permissible portfolios with additional five constraints.
- Concluded that Index model tends to have higher return in low-risk areas when seeking efficient frontier and lower return and loss when seeking inefficient frontier. Markowitz performs better to find risk-efficient portfolios for all constraints. The index model may be better than the Markowitz model since it minimizes estimations (the correlation between stocks) by linking them to a single index.

Returns and Volatility in Chinese and U.S. Equity Markets in the Context of Fed Rate Hikes — 07/2022-09/2022

- Analyzed the Returns and Volatility in Chinese and U.S. Equity Markets in the Context of Fed Rate Hikes by employing a VAR model, and an ARMA-GARCH model in stable.
- The research results confirmed previous conjectures and some theoretical judgments, which show a somewhat negative net effect caused by a higher exchange rate on the Chinese stock market and a negligible influence on the US stock market in the premise of rigidity in the short period of the firm's product price and omits other potential outside variables.

Additional Information

- **Computer Skills:** Skillful user of C/C++, Python, MATLAB, Java, HTML/CSS/JavaScript, R/R-studio, Assembly (Mips), MySQL/PostgreSQL, Stata, Racket/Prolong, Minitab
- **Tools & Frameworks:** Amazon AWS, Git, Linux, Figma, Google Cloud, Vim, React, Flask, Bootstrap, Node.js
- **Certificates:** Udemy, C++ Programming, Quantitative Finance & Algorithmic Trading in Python; Coursera, Introduction to Data Science in Python, Introduction to Financial Engineering and Risk Management.
- **GitHub:** https://github.com/hando189890 **LinkedIn:** https://www.linkedin.com/in/dh3071/