Academic Statement of Purpose
--Shilun (Sherry) Dai

My passion for Financial Engineering stemmed from a challenging portfolio management assignment which has exploited my knowledge of portfolio management, enhanced my execution ability, and further assured my confidence in digging into this field. The project aims to manage risks for ten companies by mimicking real-world trading in financial derivatives. It was tricky to start because it was my first time working as a "risk manager" for companies. Following the pricing techniques in textbooks (i.e., beta pricing, CAPM, Black-Scholes, etc.) and their annual financial reports, I made hedge arrangements for companies that profit from downstream products, such as Tiffany and speculated for those who live upon arbitrage opportunities (e.g., mining companies). The course professor acknowledged my analysis as a valid, rigorous, and insightful report. After fulfilling my responsibilities as an "employee," out of curiosity, I continued to work as a "trader" who has $200 million in a real-time trading platform called RPM (Rotman Portfolio Manager). To gain profit from the stock market, I first investigated the stock price trend for underlying assets (i.e., commodities, exchange rates, gold ETF, etc.) within one year, based on which I created portfolios containing call/put options or futures. Then, I executed the designed strategies but ended up with a mediocre portfolio that balanced profit and loss. Not satisfied with the outcome, I conducted extensive research on several authoritative finance websites, such as Yahoo Finance. Throughout the investigation, I learned that economics inextricably intersects with politics, breaking news, and ongoing events from all walks of life. Therefore, my portfolio design should not only be based on "numbers" but on "humanity" and diversification. Doing so drastically increased my portfolio value, and the strategies helped me gain $42 million out of $200 million in one month. Due to the rapid increase, I was awarded the title of "Class Best Trader", and I end up getting 93/100. The satisfaction of designing portfolio strategies and the sense of accomplishment motivated me to take a further step in financial engineering.

In my junior year, due to an interest in machine learning, I joined a research team to explore the relationship between heterogeneity described by a convolutional neural network (CNN) image features and the "between-group heterogeneity" of the dataset measured by population descriptors. The first challenge our

team encountered was accessing and describing between-group heterogeneity, which was unfamiliar to us. Reckoning previous statistics courses, I proposed using Cochran's Q as a metric to measure the deviation of each group's mean deviation from the grand. The suggestion opened up new horizons for this project, and the data analysis process went smoothly. Finally, the predicted accuracy of the tested model result proved that Cochran's Q was a solid measure in quantifying the between-group heterogeneity. The positive project results manifested my research capabilities and placed my problem-solving skills to the test.

The invaluable internship opportunities with The Wawanesa Mutual Insurance Company and Intact Financial Corporation in 2022 honed my data analysis-related skills learned from class, further expanded my mastery of Visual Basic for Applications (VBA), SAS, SQL, and prepared me for the challenging actuarial internship with Munich Reinsurance Company of Canada. It was arduous at first because I took charge of handling big data with the traditional software Excel which was time-consuming. However, it was also rewarding because I automated the data analysis process using R and visualized in PowerBI, which saved 80% of our time and was indeed a life-saver for our team. My enhanced ability in data science, teamwork, communication, and time management further assures my potential to succeed in your Finance program.

I look forward to unleashing my knowledge of financial investment methods to keep abreast of the latest developments in this field as a quantitative analyst in the short run, and in the long run, I plan to return to China and establishing my own quantitative "for-profit" hedge fund in the long run, expanding its operations overseas and investing in the North American markets, as they present significant growth opportunities. Overall, the MFE program at NYU fits my interests and ambitions very well due to its characteristics of being practical and career-oriented. The rigorous coursework such as Financial Economics, research opportunities, and the capstone program at your university will further sharpen my skills and help me reach my full potential. I feel it is a privilege to be a NYU "bobcat", contributing my professional insights, data-analysis knowledge and skills, and conscientious nature to your program to make a difference. Thank you so much for your consideration of my application!