Assignment 3, Part 2 – Jash Dedhia

Our senior design project will be utilized to develop a backtesting financial strategy program. The program will enable users to test different investment and trading strategies on past market history to estimate the performance before actual execution on live markets. As a computer science and finance student, I regard this project as the chance to integrate my technical and analytical abilities and financial decision-making. It is where computer science, finance, and information modeling interact. Best design of algorithms and creating accurate simulations interest me most because they are most related to computing to real financial problems. This project is the best reflection of my professional and academic career, so it is difficult but rewarding for my future professional life.

My coursework has well equipped me for this. I acquired CS 2028 Data Structures and CS 4071 Design & Analysis of Algorithms how to calculate efficiency and improve performance, which is quite crucial when backtesting huge data. I acquired the ability of database designing and querying from CS 4092 Database Design/Development, which is quite crucial when working with financial data. These courses like CS 5165 Cloud Computing and CS 5168 Parallel Computing allowed me to design scalable and high-performance systems. FIN 3080C Business Finance and OM 3080 Operations Management from business school allowed me to equate financial modeling and decision-making with technical tools. These courses allow me to apply technical as well as financial considerations to the project.

My co-op experiences gave me real-world problem-solving skills. I worked on technical tasks, learned to adapt quickly, and managed projects in professional settings. Beyond technical work, being a Resident Advisor at the University of Cincinnati taught me leadership and communication as I supported over 300 residents and built community engagement. These roles gave me teamwork, adaptability, and accountability skills that will help me contribute effectively to the project.

I would like to work on this project since this is the intersection of computer science and finance. I also worked on a project named Quantitative Financial Insights and Optimization, where I applied statistical modeling to improve forecast accuracy. I gained the potential of financial technology from the above project, and this capstone would be a natural extension. I am excited about developing a platform that delivers real value to investors by translating raw market data into actionable intelligence. It also aligns very closely with my personal academic interests as well as my future professional fintech goals.

My approach is to break the project into phases: gathering and pre-processing finance data, building an extensible backtesting environment, incorporating efficient algorithms, and cross-validating results with visualization. I will use agile methods, review each week, and build iterative milestones. The ultimate goal is an operational prototype that can backtest many strategies and provide metrics like returns, volatility, and risk-adjusted performance. I will measure my success in terms of how effectively the system works, generates accurate outputs, and is documented properly to be easily replicated in the future. I will also determine my success in terms of feedback from Omkar and advisor Hrishikesh Bhide and if the project reflects the significance of backtesting in finance.