Self-Assessment Essay

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My senior design project is about creating a stock market prediction application. This application takes both stock values market data and past prediction results as inputs and uses machine learning as well as a model called Recurrent Neural Networks to process information and train itself from this big data set to make prediction regarding the stock's performance in the future. The advantages of what our Stock Prediction can do is that it can also look back at its past prediction at certain data points in time to compare that with the actual results on the market to improve itself and thus make better judgements and predictions subsequently. To get the previous stock data, our group currently plan on importing information from several sources and external APIs such as the Alpha Vantage API, the Google Finance API, etc... and choose the most accurate results from these sources. I hope that after working on this project, I will develope an interest on the field of Machine Learning as well as being able to develop a useful, working application that can be utilized in the future. Also, I hope to improve my coding skills and ability to learn something new and apply that knowledge in my project with succesful results.

Over the past four years working towards my college degree in Computer Science, I have taken several courses that teach me several fundamental concept in Machine Learning as well as prepare me for this senior project. My most favorite course is without a doubt Data Structure which introduced me to several algorithms and really push my coding ability to the limits by having to solve real-world challenges with various approaches and choose the best among them. It also teaches me the concept of Object-oriented programming which is probably the most used design paradigm in real world software engineering. Discrete Math combines both mathematical concepts and some important data structures such as sets, hash tables to optimize the algorithms which might come useful in working within the Machine Learning field. I even took a course in Artificial Intelligence last semester that was definitely the most relevant topic to Machine Learning and designing effective Neural Networks. Finally, the Software Engineering course has helped me learn about how to utilize the different software engineering patterns and apply it to my upcoming application that would work well and be easy to scale in the future.

During those four years, I have also done co-ops and internships for several different size companies that have prepared me for this project. During my third co-op working for a start-up

that specializes in online eCommerce shopping website, I learned how to develop an automated Facebook chatbot that extracts data from a third-party API and display it in the form of messages to the customers. There, I learned a lot about what JSON format is and also how to utilize JSON objects that's received from submitting a GET request to the server that contains all the necessary information about the store's products. Those will definitely be helpful in guiding me on how to retrieve stock data from external APIs to use for the project's data set. My last co-op working for an ed-tech company called Course Hero especially makes use of machine learning in order to customize and sort the courses to appeal to each different students using the platform. I was able look into how they were collecting information about which products or design works well and and what needed to be changed in the future.

I am extremely thrilled to be able to participate in this senior project since it revolves around Machine Learning - a really new and booming field in Technology and Software Engineering. Also, this helps me prepare for the path of becoming a data scientist in the future should I choose to enroll in a graduate program. Learning all this new, exciting technology to me is so much more worth it than learning old, outdated software such as learning to make a desktop application. This project also gives me plenty of opportunities to work with our university's professors and advisors, as well as other teammates who share the same interest. The learning curve should also be very high as well - some might even need a student's basic background about Machine Learning, but I feel ready to embrace the challenge.

After our project is finished, we expect to come up with a solution to make a strategical prediction and inform the user of which stock to do in the future. Our goal is to limit the risk to as low as possible and to improve our application over time. At first, we will need to collect and study the financial report data to determine which factors to focus on which could have the most impact on the stock market values. We would then create a Recurrent Neural Network model and trains itself with this data set over time to improve itself and make better predictions after each sequence of decisions. If we can somehow conclude that our model's prediction outcome reach closer and closer to the real results on the market, it means that our project is a success.