IT314 Software Engineering Team 28

Feasibility Study Report

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Overview

A desktop software to predict the ups and downs of stock prices listed in major stock exchanges over the world.

Target Audience

Investors, Banking and Finance Institutions, Business Analysts

Mentors

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Developers

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Document Revision History

Version	Primary Author(s)	Description	Reviewer(s)	Date
1	Shaleen Kumar Gupta and Jaimin Khanderia	Preliminary Analysis	Khyati Mahajan	29/1/2016

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1. Introduction

Stock prices are possibly one of the most inhumanly unpredictable things in the known universe. It is immensely difficult for amateur investors to safely trade stocks without much knowledge and time. It would be of great help to this faction of investors, if someone could tell them the odds of a stock price going up or down.

To their sorrow, the hard reality is that every such investor cannot hire a financial advisor or a stock broker. However, humans have been able to develop advanced machine learning techniques to study historical data and make reasonably accurate predictions in situations like this. The team plans to develop such a machine learning algorithm using random walks and advanced deep learning techniques to predict the ups and downs of stock markets and help user gather an idea about how the stock price may change.

This would be particularly useful to amateur investors who neither have much expertise nor time to do adequate market research and analysis. They can check the approximate future stock prices predicted by this software and invest accordingly.

The aim of this feasibility report is to evaluate and analyze the potential of the project and the practical concerns which the team may face working in a team of eight people with different skill sets.

2. Feasibility

2.1 Technical

Given the advanced nature of the algorithm, we would require a highly skilled set of individuals in the team. To the team's luck, there are three people in the team who have had prior experience in advanced machine learning techniques.

However, the team does realize that developing such a software would require a thorough understanding of both the stock market domain and the expertize in machine learning.

Also, working on a desktop application from scratch would require extensive knowledge of desktop application development. Moreover, developing a nice user interface would require extensive understanding of Human Computer Interaction, which is definitely not a strength of our team.

As far as the software stack is concerned the team plans to use the Sklearn module in Python for the machine learning aspect. To develop the user interface for the desktop application we plan to use PyQt since it would be portable to both Linux and Windows operating environment.

Considering the expertise required for developing the application, each and every team member will have to spend enough time learning the machine learning techniques which pushes this project towards the infeasibility side.

2.2 Economic

2.2.1 Cost Wise

One good thing about this software is that the development of this software would not incur any significant costs apart from the server hosting charges. The only costs that could have been present are possibly the sweat cost of the developers and hardware requirements which comes at a very insignificant cost since all the developers will be working on their personal computers which they also use for other purposes.

Moreover, all the softwares required for the development of this software are available free of cost.

However, the application will require a server which will have to be bought, and hence we will incur a cost for purchasing the server to be used.

From a client's perspective, she/he will only incur costs in the sense that an internet connection will be required to access the desktop application.

2.2.2 Time Wise

We will require around 70 person hours per week to finish the project as per our preliminary estimate.

2.3 Legal

The tools used for the purpose of this project are all Free and openly available and hence do not contain legal clauses in their use. The data that we will be using is freely available over the internet for such analysis. However, scraping some websites for data might be prohibited, but the team will try to ensure that the source websites are chosen accordingly.

2.4 Scheduling

The team will prepare milestones and set up a detailed timeline in the project proposal.
As per our preliminary analysis of the amount of time required to acquire the needed skills (considering the knowledge base of the team) and implement the plans made charted for the course, we believe the project will require more time than three

months.

3. Conclusion

As per the feasibility analysis furnished above, we conclude that the project is not feasible for us. It will entail a lot of missed deadlines to finish within three months, which is undesirable for the software development process. Also, there are many available softwares which help with progress tracking, though not in the way we had in mind, but feasible to be used by users. Moreover, we cannot make a calculated estimate of how accurate our prediction model will be.
We are, hence, deciding not to move ahead with this project.

4. References

[1] KAZUHIRO KOHARA, TSUTOMU ISHIKAWA, YOSHIMI FUKUHARA, YUKIHIRO NAKAMURA; Stock Price Prediction Using Prior Knowledge and Neural Networks

[2] Kyoung-jae Kim, Ingoo Han; Genetic algorithms approach to feature discretization in artificial neural networks for the prediction of stock price index