Peer 1

Investigation of timing in markets of automated trading agents using BSE simulation platform

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1 PEER REVIEW

What is the project trying to achieve, why that is important and how is it different from previous work?

The objectives of the project are adding a time priority mechanism in the simulator Bristol Stock Exchange (BSE), and investigating how it will affect the performance of automated trading agents. In comparison to human traders, many previous works have proved that automated trading agents are better since they are able to analyse data observed in markets and make trades incredibly fast. As a matter of fact, speed is the main factor that leads to the success of automated trading agents. Nevertheless, the experimental systems including BSE provided so far allow automated trading agents to trigger the trade however long it needs, which contradicts the real world exchange markets. Therefore, improving the time element in BSE to favour faster algorithms, aiming to simulate closer real-world markets, is in need.

How is the student going to approach the project and how will the student know if the project met its goals?

The student has a clear understanding of how trade happens in the markets. A detailed investigation of how BSE performs in each time step has been carried out. Several different trading algorithms such as Giveaway (GVWY), Zero Intelligence Constrained (ZIC), Shaver (SHVR), Sniper (SNPR), Zero Intelligence Plus (ZIP) and Adaptive Aggression (AA) will be used as the test objects. Three different experimental layouts will be implemented. Throughout the experiments, the performance of different trading algorithms will be observed and analysed. Finally, the results observed in OpEx and ExPo will be compared to the results given by modified BSE, aiming to examine if modified BSE is appropriate, then the performance analysis can be done to see how time element affects the automated trading agents. Due to the previous research, AA is superior to other algorithms, although, with the improvement of experiment simulation, the results would probably differ.

How does the student plan to achieve the deliverables and mitigate risks, and is this planning approach appropriate?

Overall, about eight weeks are planned for actual experiments. In total, more than three weeks are reserved for writing up the thesis. About one and a half weeks will be used to design how to improve the BSE, whereas it does not mention how long it will take to practically improve the BSE. Two weeks will be used to implement experiments in the original BSE and analyse the results. In the same way, another two weeks will be used to implement experiments in OpEx and ExPo and analyse the results. Finally, about one week is reserved to implement experiments in the new BSE and analyse the results. I suggest that more time should be spent on implementing experiments in the new BSE since if the improvement does not work or any system bugs occur, more time will be required. There are three risks that have been considered in the thesis. For most of the risks, a fair amount of pre-research is important and necessary.

How well was the research proposal presented and formatted?

The structure of the research proposal is well organized. The proposal started with clear objectives of the project. The introduction indicates the importance of time in the markets. Moreover, the specific information of the BSE and the different trading algorithms are described in the section of technical background. The part of the literature review demonstrates the results of previous works, and estimate the results given by this project will probably be different which increases the interest of the project. The methodology presents more details about what/how the experiments will be done. In the sections 'TECHNICAL BACKGROUND' and 'LITERATURE REVIEW', adding some subtitles or some short conclusion between the paragraphs would help readers to better understand the idea of the sections. A small format error is found in figure 1 where its description is set apart.

What should be improved before the student embarks on their project?

Instead of studying all of the different trading algorithms, focusing on 2-3 algorithms would simplify the analysis. Hence, more research about specific trading algorithms which will be investigated in the project will be better. The description of the methodology is well done, although more details can be considered before embarking on the project, such as what is the different market conditions. More risk analysis can be considered in further work. For example, about model misconception, the way of measuring can be incorrect in the first place.

Give a mark out of 100 using the modified thesis project marking scheme and justify the mark given.

I give 73/100. The report is very well organised and the explanation is accurate. The proposal presents very extensive knowledge of specified experimental system BSE. The student clarified the appropriate methodology of research before the research itself by referring to primary sources. However, apart from the format error mentioned above, there are a few other expression errors. For instance, "a limit price is allocated it is allocated to both a buyer and seller" is supposed to be "a limit price is allocated to both a buyer and seller".