Review report of a final thesis

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Reviewer: doc. Ing. Štěpán Starosta, Ph.D.

Thesis title: Market signal algorithm based on image recognition

Branch of the study: Knowledge Engineering

Date: 10. 6. 2019

Evaluation criterion:	The evaluation scale: 1 to 4.
1. Fulfilment of the assignment	**_1 = assignment fulfilled,_** _2 = assignment fulfilled with minor objections,_ _3 = assignment fulfilled with major objections,_ _4 = assignment not fulfilled_

Criteria description:
Assess whether the submitted FT defines the objectives sufficiently and in line with the assignment; whether the objectives are formulated correctly and fulfilled sufficiently.
In the comment, specify the points of the assignment that have not been met, assess the severity, impact, and, if appropriate, also the cause of the deficiencies. If the assignment differs substantially from the standards for the FT or if the student has developed the FT beyond the assignment, describe the way it got reflected on the quality of the assignment's fulfilment and the way it affected your final evaluation.

Comments:
The fulfillment of the second part of item 4 of the assignment - discussion on possible improvements - is debatable: there is very little on the matter in the Conclusion and Future Research. In the context of the work, I don't consider this to be a significant problem.

Evaluation criterion:	The evaluation scale: 0 to 100 points (grade A to F).
2. Main written part	*65 (D)*

Criteria description:
Evaluate whether the extent of the FT is adequate to its content and scope: are all the parts of the FT contentful and necessary? Next, consider whether the submitted FT is actually correct – are there factual errors or inaccuracies? Evaluate the logical structure of the FT, the thematic flow between chapters and whether the text is comprehensible to the reader. Assess whether the formal notations in the FT are used correctly. Assess the typographic and language aspects of the FT, follow the Dean's Directive No. 26/2017, Art. 3. Evaluate whether the relevant sources are properly used, quoted and cited. Verify that all quotes are properly distinguished from the results achieved in the FT, thus, that the citation ethics has not been violated and that the citations are complete and in accordance with citation practices and standards. Finally, evaluate whether the software and other copyrighted works have been used in accordance with their license terms.

Comments:
Chapter 1 focuses on theoretical background. The contents are adequate. However, there are some minor problems, for instance:
The term Bollinger bands, used in the text, is explained in the caption of Figure 0.1 Figures in Introduction and Chapter 1 are unreadable (or very hard readable) because of the chosen colors and (font) size. The example in the first bullet on page 7 seems irrelevant. The RSI seems to be missing in Figure 1.4. The text is sometimes hard to understand (for instance, the definition of a time frame of page 9 - what is the length of pieces of the dataset?; What are the numbers on the edges of the graph in figure 1.8?; How does one go from a perceptron (1.3.1) to an ANN (1.3.2)?). There are some errors: on page 11, the formula for D_n^t seems to be wrong, on page 13, the sequence sma is not defined (is it ma?). There are also some wild claims such as "Bitcoin stay an entirely digital currency that is not connected to anything real" on page 16.

Chapter 2 describes the proposed solution. The main issue is that some details are either missing or it's hard to connect the information.Some of the steps in 2.1 are unclear - how is step 6 performed? What is "A tangent of the line" it step 5? The notation of 2.1 when specifying the set DS is not used later 2.2, thus it is not entirely clear what are the input of the networks 1, 2 and 3. Moreover, on page 33, it says that the 2nd network is an appendix of the first which does not correspond to Figure 2.1. Is the second netowork the Data ANN or not? The existence of section 2.2.1 is confusing. It seems to partially redescribe the feature construction of 2.1.

Chpater 3, evaluation, gives no information about all the performed tests and the choice of paramaters. The term epoch is used, but not explained.

The thesis is written in English. It is too informal and contains many grammar errors, mainly with articles. The choice and usage of references seems reasonable.

Evaluation criterion:	The evaluation scale: 0 to 100 points (grade A to F).

3. Non-written part, attachments

90 (A)

Criteria description:

Depending on the nature of the FT, comment on the non-written part of the thesis. For example: SW work – the overall quality of the program. Is the technology used (from the development to deployment) suitable and adequate? HW – functional sample. Evaluate the technology and tools used. Research and experimental work – repeatability of the experiment.

Comments:

The code is very well organized and well described, including an installation guide. There are some minor problems, but I deem them insignificant.

Evaluation criterion: The evaluation scale: 0 to 100 points (grade A to F).

4. Evaluation of results, publication outputs and awards

75 (C)

Criteria description:

Depending on the nature of the thesis, estimate whether the thesis results could be deployed in practice; alternatively, evaluate whether the results of the FT extend the already published/known results or whether they bring in completely new findings.

Comments:

The code is reusable and, to some extent, easily modifiable. The best achieved accuracy is 69%, which is close to luck, and its dependence on the used data is not discussed. However, I am convinced that the output may serve as a good basis for a future work on the topic.

Evaluation criterion: No evaluation scale.

5. Questions for the defence

Criteria description:

Formulate questions that the student should answer during the Presentation and defence of the FT in front of the SFE Committee (use a bullet list).

Questions:

1. What are main frequencies mentioned in the caption of Figure 1.6 on page 16?
2. What is the exact relation the final dataset DS given in section 2.1, section 2.2 and Figure 2.1?
3. What specific modification can you propose to try achieving a better accuracy?

Evaluation criterion: The evaluation scale: 0 to 100 points (grade A to F).

6. The overall evaluation

79 (C)

Criteria description:

Summarize which of the aspects of the FT affected your grading process the most. The overall grade does not need to be an arithmetic mean (or other value) calculated from the evaluation in the previous criteria. Generally, a well-fulfilled assignment is assessed by grade A.

Comments:

The text of the thesis is missing some important details and contains some issues. The implementation is clear, and one can find the specific details there, and reuse it. The proposed method is interesting, but lacks explanation.

Signature of the reviewer: