

OPPONENT'S EVALUATION OF THE MASTER'S THESIS

Student: Msc. Peng Li

Opponent: Doc. RNDr. Martin Kotyrba,
Ph.D.

Study program: **Engineering Informatics**
Study course/Specialization: **Information Technologies**
Academic year: **2022/2023**

Master's Thesis topic: **AI for Stock Trading**

The thoroughness of the elaboration, its validity and the difficulties resolved in the thesis.

This thesis focused on investigating the application of artificial intelligence technology in stock trading. Various neural network models were utilized to predict the prices of AAPL, MSFT, TSLA, META, and GOOG stocks. The performance of these models was analysed, compared, and discussed. The performance and potential of all these models were carefully examined, obtaining interesting outcomes. This study can contribute to further research in the fields of AI, algorithms, finance, and computer science.

The method and level of the concepts resolved in the thesis.

There were used the long short-term memory neural network (LSTM), regression feed – forward neural network (RFFNN), classification feed – forward neural network (CFFNN), deep reinforcement learning (DRL) and the particle swarm optimization (PSO) optimized RFFNN (RFFNN-PSO) models in the thesis. The results showed the DRL model had the best performance, but the LSTM and RFFNN showed the great potential to predict stock prices too. All these models were described in detail in the theoretical part. The core of this thesis lies in the practical part, where a comparative experimental study was carried out whose outputs were analysed in detail.

The level of the student's thesis topic and elaboration and its contribution(s).

The design, implementation and evaluation of the experiments is the student's own work. An important finding concerns the PSO method, which can significantly improve the tuning of hyperparameters, especially for complex models, and thus contribute to more accurate and efficient prediction models.

In the conclusion, the author summarizes the focus of future research. I would recommend publishing selected parts of this work.

The formal aspects of the thesis, errors and mistakes in the technical aspects.

As concerning the formal aspect of the thesis, I have no significant comments. Only figures are not of adequate quality. The choice of literature is sufficient and corresponds to the topic of the thesis. The thesis has a logical structure and the individual chapters are appropriately related to each other.

Questions relating to the defence of the thesis.

- How did you set the parameters when implementing each model?
- Did you try real trading on the stock exchange, for example through a demo account?

Overall evaluation of the thesis:

The Opponent shall grant a mark according to the ECTS classification scale:

A – Excellent, B – Very Good, C – Good, D – Satisfactory, E – Sufficient, F – Insufficient

An “F” grade also means "I do not recommend the thesis for defence."

I recommend this thesis to be defended and suggest the following evaluation:

A – Excellent.

In the case of an evaluation grade of “F – Insufficient”, please supply the main shortages and reasons for this assessment.

Date: 1. 6. 2023

Thesis Opponent's Signature: