



Review report of a final thesis

Reviewer: Mgr. Petr Novák, Ph.D.
Student: Bc. Tomáš Hampl
Thesis title: Predicting results of e-sports matches with matrix completion methods
Branch / specialization: Knowledge Engineering
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Evaluation criteria

1. Fulfillment of the assignment

- [1] assignment fulfilled
- ▶ [2] **assignment fulfilled with minor objections**
- [3] assignment fulfilled with major objections
- [4] assignment not fulfilled

Formally, each of the parts of the assignment is fulfilled, however some points are addressed only very briefly.

2. Main written part

45 /100 (F)

The thesis is written in coherent English and is well arranged into chapters. However, the individual chapters are unbalanced in terms of information. The literature review is comprehensive, but it lacks a summary of which available articles are relevant and which methods will be used for comparison. An unnecessarily large amount of space is devoted to describing the mechanics of Counter Strike: Global Offensive (player roles, economy, maps, game modes) without explaining which information will be used for modelling and how. In contrast, the matrix completion method and its variants are introduced only very briefly. Moreover, the methods are developed in the context of recommender and ranking systems and it is not clearly explained how they will be used to predict the winner of a match. It would be useful to explain why the analysis is divided by different game maps and why the min-max normalization is used.

The choice of a particular date for splitting the training and testing sets may not be suitable. The author himself states that the performance of teams evolves over time, so a model trained on one time period may not be successful on another. It would be better to divide the sets randomly.

The chapter describing the experiments could be better organized - it would be better to start with an overview of what experiments were conducted and then move to individual

results. The mathematical aspects of the methods belong in the Methodology chapter. Some parts are very brief (choice of threshold, number of latent factors, learning rate, hyperparameters). The achieved success rate is not particularly high. It would be good to discuss why the number of latent factors is different on individual maps. The overall success rate is missing in section 5.7. The tables are sometimes rather far from the text that references them.

After subtracting images and blank pages, the length of the thesis is below the lower recommended limit.

3. Non-written part, attachments 40 /100 (F)

The student implemented the matrix completion algorithm, managed to obtain the dataset and tested the methods on it in several variations. Unfortunately, the source codes and Jupyter notebooks are barely commented and it is not clear how they are interconnected.

4. Evaluation of results, publication outputs and awards 50 /100 (E)

Predicting the outcome of a match in e-sports is a discipline of growing importance. If the outputs and source codes were supplemented and presented more clearly, the work could serve as a basis for further publication.

The overall evaluation 45 /100 (F)

The applicant studied the method of matrix completion and its use in predicting e-sports matches. He implemented the methods and tested them on a real dataset. Unfortunately, the methodological part of the thesis is rather brief, the experiments are presented in a somewhat unorganized way and the source codes are not commented. I believe that after addressing these points, this could be a successful thesis.

Questions for the defense

Would it be possible to explain the different numbers of optimal latent factors for individual maps? Could the factors themselves be identified?

What could be the reason that the last method in part 5.7.4 did not converge?

Instructions

Fulfillment of the assignment

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.

Main written part

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. 52/2021, 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.

Non-written part, attachments

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.

Evaluation of results, publication outputs and awards

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.

The overall evaluation

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.