



# Review report of a final thesis

**Reviewer:** doc. Ing. Pavel Kordík, Ph.D.  
**Student:** Bc. Daniel Bohuněk  
**Thesis title:** Graph-Based Fraud Detection in Recommender Systems  
**Branch / specialization:** Knowledge Engineering  
**Created on:** 2 June 2024

## 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

The assignment was fulfilled. The objectives of the thesis are clearly defined, correctly formulated, and fully met, with all assignment points satisfactorily addressed.

### 2. Main written part 100/100 (A)

The thesis is an outstanding piece of work, standing out as one of the best I have ever reviewed. It demonstrates a clear structure and comprehensive exploration of the topic. The literature review is extensive and insightful, covering both foundational concepts and recent advancements in fraud detection and recommender systems. The methodology section is detailed and well-justified, providing a robust framework for the experimental work. The clarity and depth of experiments and analysis reflect a high level of expertise and deep understanding of the subject.

### 3. Non-written part, attachments 98/100 (A)

The extent of experiments is really impressive. Code can be a bit better documented especially the contributed algorithms. Also it would be great to include setup of experiments and experimental results for better reproducibility.

### 4. Evaluation of results, publication outputs and awards 100/100 (A)

I believe the content of this thesis will be published in a reputable journal or conference. Additionally, I would recommend it for the Dean's Award due to its exceptional quality.

## **The overall evaluation**

100 /100 (A)

The thesis "Graph-Based Fraud Detection in Recommender Systems" by Daniel Bohuněk is exemplary in every aspect. The depth of research, innovative approach, and significant findings make it a standout work. The combination of detailed text, well-designed code and experiments, and impactful results warrant the highest praise.

## **Questions for the defense**

Have you considered projecting latent convolutional graph embeddings layer by layer into a two-dimensional space to visualize how classes are separated, similar to the approach in section 3.3.1, but also including the Yelp dataset?

## **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.