Bachelor Thesis Review

Faculty of Mathematics and Physics, Charles University

Thesis author	Mkrtich Hovsepyan
Thesis title	Deep Learning Models for Product Mapping
Year submitted	2024
Study program	Computer Science
Specialization	Artificial Intelligence
Review author	doc. Mgr. Martin Pilát, Ph.D. Reviewer
Department	Department of Theoretical Computer Science and Mathematical Logic

Overall

	good	OK	poor	insufficient
Assignment difficulty		X		
Assignment fulfilled	X	X		
Total size *… text and code, overall workload*		X		

The goal of the thesis was to evaluate deep learning methods in the area of product mapping. The student fulfilled this goal by running a wide range of experiments with a large number of different methods on four different datasets. While the experiments are quite comprehensive, the textual part of the thesis is rather weak. The implementation, on the other hand, is quite well-done.

Thesis Text

	good	OK	poor	insufficient
Form *… language, typography, references*		X	X	
Structure *… context, goals, analysis, design, evaluation, level of detail*		X	X	
Problem analysis		X	X	
Developer documentation	X	X		
User Documentation	X	X		

The text is the weakest part of the thesis. The description of the existing methods is quite brief and relevant references to literature are missing in some parts (e.g. in Introduction, or Sections 1.1 and 1.3.1). It is also not very clear how the models for feature extraction are used. This should be described more explicitly. I also miss some reasoning for using the models only as preprocessors, especially in case of the image models, where all the images are reduced only to a single number obtained by a pre-processor. This number is then used as an input to a relatively large model. It would make more sense to use the longer vectors that are obtained from the pre-processors directly. It is also not clear, how word2vec is used as a text preprocessor – the model transforms a single word to an embedding, but it is somehow used to preprocess longer texts in the thesis. This should be explained much better.

The student performed a really wide range of experiments, that show interesting results, however, their description is also quite weak. Most of the thesis is just tables with results with only a short paragraph that mostly repeats the numbers without any further explanations.

The documentations are in a readme in the attached file and are very detailed.

Thesis Code

	good	OK	poor	insufficient
Design *… architecture, algorithms, data structures, used technologies*		X		
Implementation *… naming conventions, formatting, comments, testing*		X		
Stability		X		
The implementation corresponds to its goal – to run the experiments. It is written in Python using standard deep learning libraries and standard conventions. Public function are well-commented.				

Overall grade   Very Good
Award level thesis   No

Date August 26, 2024   Signature