Review of Bachelor's Thesis

Student: Kočí Jan
Title: Recommender System for Web Articles (id 22020)
Reviewer: Kesiraju Santosh, UPGM FIT VUT

1.   Assignment complexity   **more demanding assignment**
The task is to study and implement an recommendation system for web articles. The task more than moderately difficult as it involves understanding of various kinds of systems and comparisons with baseline systems.

2.   Completeness of assignment requirements   **assignment fulfilled**
The assignment is fulfilled. The thesis covers the task and dataset description in detail.
The student collected custom dataset from developers.redhat.com over a period of 6 months. Comparison of proposed system with baseline systems was provided.

3.   Length of technical report   **in usual extent**
The thesis covers the description of the task and datasets in detail. The proposed system, implementation and evaluation schemes are also explained in their respective chapters.

4.   Presentation level of technical report   **75 p. (C)**
The task and dataset are very well written and explained. The baseline systems are described in detail with supporting equations. However, the proposed system is not explained in full detail, instead skip-gram model for learning word embeddings is explained. Its adaptation to the current task is not explained with the equations. This could lead to certain confusion. The experimental section lacks in details regarding the effects of hyper-parameters.

5.   Formal aspects of technical report   **80 p. (B)**
The thesis is well written and easily understandable. However, there are few grammatical mistakes and unusually long sentences. For example: Last sentence from first paragraph.

6.   Literature usage   **81 p. (B)**
The thesis covers traditional methods and details of recent methods in brief. For example, detailed explanation is lacking for hybrid and deep learning models. Content based models and SVD are very well described. All the major works are covered in the bibliographic references.

7.   Implementation results   **78 p. (C)**
The implementation of proposed and baseline systems are packaged into a single repository following object oriented principles. However, the experimental section lacks in details about the choice / effect of hyper-parameters. This might make it difficult to replicate the experiments.

8.   Utilizability of results
The current work proposes to use document embeddings (doc2vec) and negative sampling from skip-gram model to train the recommendation system. It uses existing models and algorithms for solving a well defined problem on a custom (new) dataset.

9.   Questions for defence
1) Why was the negative sampling chosen instead of the complete objective function, given that the dataset is of moderate size? Why only 20 negative samples?
2) The experiments showed that the proposed skip-gram based under-performs as compared to the baseline ALS system. What are the reasons? (Apart from the size of the dataset)

10.   Total assessment   **79 p. good (C)**
The strengths of the thesis are: (1) Detailed literature survey and justifications of datasets and their limitations in building recommendation systems. (2) Novel approach based on document embeddings and negative sampling for approximating the objective. (3) Detailed comparison with baseline systems.
The weaknesses are: (1) The proposed model is not explained in detail, instead skip-gram based word embedding method is explained. (This was resolved after direct interaction with the student). (2) No in-depth investigation of why the proposed model is under performance as compared to the baseline system.

In Brno 30. May 2019

....
signature