

Master Thesis Review

Faculty of Mathematics and Physics, Charles University

Thesis author Aydin Ahmadli

Thesis title Probabilistic Models for Recommender Systems

Submitted 2022

Program Computer Science **Specialization** Artificial Intelligence

Review author Mgr. Marta Vomlelová Ph.D. **Role** Advisor

Position Department of Theoretical Computer Science and Mathematical Logic

Review text:

The thesis studies probabilistic models for recommender systems, implements the CTMP model and analyzes its behaviour on two public datasets.

The text is well structured with illustrative figures, pseudo-codes of algorithms and results represented in tables and graphs.

The author provides a detailed introduction into the theory of probabilistic models. He presents the variational inference method both in general and specifically for the used probabilistic model. Since the model contains a part that cannot be solved directly by the variational inference the gradient algorithms OPE and BOPE are introduced.

The model used for experiments is described in Section 7 together with its learning, inference and prediction.

The experiments are performed on two public datasets. He performs a basic text preprocessing to get the short text description into features. The model performance is comparable to the model in literature, it is slightly better in precision. The author analyzes sensitivity to hyperparameters, sparsity, transferability of the learned model.

The student has shown his ability to effectively investigate a research topic, pre-process data, fit the proposed model, and evaluate it.

I recommend the thesis for defense.

I suggest to not consider the thesis for the annual award.

August 30th, 2022

Signature: