Skoltech
Skolkovo Institute of Science and Technology

Thesis Changes Log

Name of Candidate: Irina Nikishina

PhD Program: Computational Data Science and Engineering

Title of Thesis: Learning Linguistic Tree Structures with Text and Graph Methods

Supervisor: Prof. Alexander Panchenko

The thesis document includes the following changes in answer to the external review process.

Oseledets:

- Added explanations for the words "hyponym" and "hypernym" in the abstract
- In comparison to RNNs, this mechanism is capable of higher parallelization and can model longer contexts because each token attends to all the tokens in the input sequence. => In comparison to RNNs, this mechanism allows for more parallelization than RNNs and therefore reduces training times.
- Added (p. 45): This section is divided in two parts. The first subsection describes machine learning models and neural network architectures used in the paper: FFNN and BERT. The second subsection focuses on the history of embeddings used in the paper and some technical details on vector representations for texts and graphs. We mention the models based on their application in the paper and not on chronological order.
- Added (p. 51): There exist many other graph-based vector representation, e.g., representations of graphs [Ivanov and Burnaev, 2018, Narayanan et al., 2017] or representations of edges [Wang et al., 2020, Gao et al., 2019], however, they lay out of scope of the thesis.
- deleted Section 5.2.4, 5.2.5 moved to related work
- added Algorithm 1 in Chapter 5

Artemova:

- Linear Regression is replaced with Logistic Regression in Section 4.2

Theodoro:

- Multiple minor grammar corrections
- Delete duplicated lines
- Delete Section 4.4 (duplicated twice in the Thesis as 2.1.1)
- We discuss the most important technical details, as they do not make any contribution to the thesis, however, they are still important for immersing in the topic and understanding the approach. => We discuss the most important technical details here, which do not make any contribution to the thesis, however, are still important for immersing in the topic and understanding the approach. We omit some advanced derivations and refer the reader to the original papers.
- Deleted:
  * hypo2path — given the input word, generate a sequence of synsets starting from the root synset and going down the taxonomy to the closest hypernym;
  * hypo2path reverse — given the input word, generate a sequence of synsets starting from the closest hypernym up to the root entity.

- Extended 6.5
- Changed the order of tables 7.6, 7.7, 7.8 and 7.9, as they do not appear in the correct order of reference

Phan:

- Deleted duplicate references
- Captions of figures are placed at bottom of the figures
- Remove the redundant close curly bracket
- Unified math notation