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OHPL Learning Materials

OHPLNet

Summer 2021

Learning Module on OHPL Text Ordinal Classification

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Learning Module: Large Text Ordinal Classification Using Ordinal Hyperplane Loss (OHPL)

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Module Description

This module will cover the concept and implementation of OHPL and how it enables deep learning to be applied to ordinal classification. Students will learn how to integrate OHPL, deep learning and SOTA text embedding techniques to deliver a comprehensive solution to ordinal classification on large text. This module can be used in a graduate course that covers unstructured data analytics, such as text mining, advanced machine learning, and deep learning.

Learning Outcomes

Upon successfully completing this learning module, students will be able to

1. Explain the concept of OHPL and how it enables deep learning to be applied to ordinal classification
2. Explain SOTA text embedding techniques
3. Implement an ordinal classification solution on large text by integrating OHPL, Deep Learning and SOTA text embedding techniques

Learning Materials

1. OHPL Learning Material:
 - a. Lecture Slides: <https://digitalcommons.kennesaw.edu/ohpllearningdocs/2/>
 - b. Original paper: <https://digitalcommons.kennesaw.edu/ohplpublications/3/>
 - c. OHPL Package 1 (OHPLall): <https://digitalcommons.kennesaw.edu/ohplsoftware/3/>
 - d. OHPL Package 2 (Two State Learning): <https://digitalcommons.kennesaw.edu/ohplsoftware/4/>
2. SOTA text embedding techniques
 - a. SentenceBERT:
 - i. Original paper: <https://arxiv.org/abs/1908.10084>
 - ii. Pre-trained SentenceBERT: <https://www.sbert.net/>
 - b. InferSent: <https://github.com/facebookresearch/InferSent>
 - c. Universal Sentence Encoder (USE):
 - i. Original paper: <https://arxiv.org/abs/1803.11175>
 - ii. Pre-trained package: <https://tfhub.dev/google/universal-sentence-encoder/1>

Module Assignment

Task 1: Implementing an ordinal classification solution on a selected text data by integrating OHPL, Deep Learning, and one of the following text embedding techniques: SentenceBERT, InferSent, or USE. (70%)

Task 2: Please choose one of the following options for experimental studies (30%)

- Option 1: Comparative study of the performance of the two OHPL learning strategies: OHPLAll and OHPL-Two Stage Learning
- Option 2: Comparative study of the performance of the three text embedding techniques: SentenceBERT, InferSent, and USE.