Assignment 4, Implementing BERT from Scratch

Requirements:

Please refer to the references on BERT to implement the complete structure as well as the fine-tuning.

1, Implementation without AI frameworks such as Pytorch, Tensorflow, if in Python, suggested to use Numpy.

2, Implement the embedding layer, including token embedding, positional embedding and segment embedding.

3, Implement the transformer encoder, such as BERT-Base, Albert. (Multi-head attention, residual connection, LN, FC, MLM)

4, Implement fine-tuning for at least one purpose, such as NMT, Chatbot, sentiment analysis.

5, Evaluation of your implementation is essential, which includes compare of pre-trained BERT model with public available model and providing measurement matrix.

It is highly recommended using different programming languages other than python, and design your own api specification that will satisfy complete deep-learning programming, and also try parallel of training using multi-threads or gpus if available.

Notice

1, Gen code is acceptable but requires to satisfy above.

2, You need to demonstrate you understand and capable of this implementation.

3, Therefore, must run and provide detailed results, such as the model (save in file), confusion matrix and other evaluations.

4, Reports on key points of your design and implementation.

5, Recommended datasets include: