

Applied Deep Learning Custom Project Proposal
Question Answering on SQuAD 2.0
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Overview

After the Transformer architecture [4] was proposed at the end of 2017, many Natural Language Understanding (NLU) tasks have made huge advancements in the state-of-the-art (SOTA), such as applications in machine translation or question-answering (QA) systems.

Based on the default project on the course webpage of Stanford CS224n: Natural Language Processing with Deep Learning [1], the goal is to implement current SOTA techniques and cover various elements of NLU/Deep Learning (i.e. word embeddings, Fine-Tuning, Transfer Learning). The main dataset we will be using is SQuAD 2.0, which is a popular reading comprehension dataset for QA; the main technique we will cover is Bidirectional Encoder Representations from Transformers (BERT) [3], which has implementations in both TensorFlow and PyTorch (HuggingFace).

Given that the literature and scope of the project is quite huge, we will focus mainly on applications and trying to come up with a good analysis using existing methods.

Objectives

1. Minimal: Train a baseline model using BERT.
2. Expected: Improve the baseline using different flavours of BERT. Details written in Chapter 5 of Stanford CSr224n Project Handout [2].
3. Stretched: To be decided.

References

1. <https://web.stanford.edu/class/cs224n/>
2. <https://web.stanford.edu/class/cs224n/project/default-final-project-handout.pdf>
3. <https://arxiv.org/abs/1810.04805> BERT: Pre-training of Deep Bidirectional Transformers for Language Understanding.
4. <https://arxiv.org/abs/1706.03762> Attention Is All You Need.