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Assignment 4

NLP : Fall 1400 : Dr. Minaei
Due Wednesday, Dey 17, 1400

Contents

Problem 1

In this task you should complete the .ipynb file attached to this file. The notebook is about character-level text generation. Please follow the step by step guide in the notebook and fill all the required fields. Then proceed to the following questions.

(a)

What are the differences between vanilla RNNs and LSTMs?

(b)

Please explain how sequential models can be used to encode and decode texts.

Problem 2

In this section we will be focusing on the newer encoder models (BERT). BERT is one of the most famous language models that can encode certain features from text into its representations. You should all be familiar with the term word representations.
In this section we would like to evaluate BERT-base's performance on certain tasks. Since BERT is an encoder, we need to build a classifier on top to be able to evaluate its performance on classification tasks. Fortunately, Huggingface has made stuff much easier. Use the BERTforSequenceClassification model to classify texts. However, please note that we only need to train the classifier and the encoder's weights should be frozen during training (all the codes should be written in .ipynb files)
Please use the GLUE tasks and report BERT's performance on these tasks:

- CoLA
- STSB
- SST-2

Then proceed to the questions below.

(a)

Why do contextual word embeddings outperform static embeddings? Please explain.

(b)

Briefly explain BERT's pretraining objectives.

Notes

- All codes should be in .ipynb files with proper comments and code descriptions.
- The .ipynb files should contain output cells. Assignments with no output cells are considered as incomplete and will not receive any marks.
- Do not copy from the internet or your friends. Copied assignments will loose significant marks.