Université Abdelmalek Essaadi
Faculté ses Sciences et techniques de Tanger
Département Génie Informatique
Master : AISD
NLP
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Lab 4

Objective : The main purpose behind this lab is to get familiar with NLP language models using Pytorch library.

Work to do :

Part1 Classification Regression:

1. By using scrapping libraries (Scrapy / BeautifulSoup), try to collect text data from several Arabic web site concerning one topic then prepare your Dataset as Below:

Text	Score
Text 1(Arabic Language)	6
Text 2(Arabic Language)	7.5

The score presents the relevance of each text (The score should be between 0 to 10).

2. Establish a preprocessing NLP pipeline (Tokenization stemming lemmatization, Stop words, Discretization, etc) of the collected Dataset.

3. Train your models by using RNN, Bidirectional RNN GRU and LSTM Architectures and tuning hyper-parameters to get the best performance.

4. Evaluate the four languages models by using standards metrics and other metrics like blue score.

Part 2 Transformer (Text generation):

Install pytorch-transformers, then load the GPT2 Pre-trained model.

1. Fine tune the pre-trained model (GPT2) to a customized Dataset (You can generate your own DataSet).

2. Generate a new paragraph according to a given sentence.

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You can follow this tutorial :
https://gist.github.com/mf1024/3df214d2f17f3dcc56450ddf0d5a4cd7

Part 3 BERT:

DataSet : https://nijianmo.github.io/amazon/index.html

1. By using Pre-trained bert-base-uncased establish the model.

2. Prepare the data and adapt the Bert Embedding Layer.

3. Fine tune and Train your model by choosing the best hyper-parameters to get an efficient model.

4. Evaluate your model by using standard metrics (Accuracy, Loss, F1 score) and other metrics like Blue score , Bert Metric, etc.

5. Give a general conclusion concerning the use of Pre-Trained BERT Model.

Notes :

- **At the end each student must give a brief synthesis about what he has learn during the proposed lab.**
- **Push the work in the Github repository and write a brief report in Github readme file.**

Tools:

Google colab or Kaggle, gitlab/github, spacy , NLTK, Pytorch.