**Instructions**

BERT stands for **B**idirectional **E**ncoder **R**epresentations from **T**ransformers. BERT has become a new standard for Natural Language Processing (NLP). It achieved a whole new state-of-the-art on eleven NLP task, including text classification, sentiment analysis, sequence labeling, question answering, and many more. Now we can easily apply BERT to our model by using Huggingface Transformers library. The library already provided complete documentation about other transformers models too.

It is designed to pre-train deep bidirectional representations from unlabeled text by jointly conditioning on both left and right context. As a result, the pre-trained BERT model can be fine-tuned with just one additional output layer to create state-of-the-art models for a wide range of NLP tasks. BERT is pre-trained on a large corpus of unlabelled text including the entire Wikipedia(that’s 2,500 million words!) and Book Corpus (800 million words). This **pre-training** step is half the magic behind BERT’s success. This is because as we train a model on a large text corpus, our model starts to pick up the deeper and intimate understandings of how the language works. This knowledge is useful for almost any NLP task.

**Dataset:**

For this project, we are using “Sentiment of Climate change” dataset available on data.world. <https://data.world/crowdflower/sentiment-of-climate-change>

**Steps for performing the sentiment Analysis using BERT**

1. You are required to install transformers for using BERT model using command

**!pip install transformers**

1. In this example, I am using **DistilBertModel.**
2. Initialize the model. Tokentize the input using BERT Tokenizer.
3. Then do padding to make up the same length for all sentences.
4. Then prepare the attention mask by converting all the numbers to 1 except 0.
5. Since we are using Pytorch for this, you are required to convert both padded input and attention mask into torch tensors.
6. Supply both the inputs to the model and the model will provide you the last hidden state which would be used to extract the features that will become the input.
7. Data is ready for the sentiment analysis.
8. You can use any ML/DL model for sentiment analysis.
9. In this project, we have used Logistic regression. You can try other model to improve the performance.

Above approach is our approach for sentiment analysis using BERT. You can try another approach and try how you could improve the performance.