**Estimating the sentiments of twitter posts regarding coronavirus using pretrained language models and fine-tuning them**

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We are facing an unprecedented situation which is affecting not only our physical health but also our mental health. We are tackling with all we have to fight this unseen enemy but the fight to keep our mental health balanced is not quite visible. The first step to such endeavor is to know and recognize compromised mental health. As human nature goes, words we speak and write could be an indicator of individual’s mental health. In this century of social media platform, it is easier to collect and analyze what people write than ever before.

Therefore, we propose a pipeline that will collect the data (tweets) from Twitter, categorize the tweets based on their multi-class sentiments using pretrained language model and visualize a statistical analysis of the mass sentiments on a given period of time. This will help us understand how human think on a mass level. Such information will help law enforcement agencies, government to understand if the mass population is happy, unhappy, panicked, raged and so on. This model can give update on near real-time scenario offset by the time required to data collection and processing.

**Technical Details**: BERT and NLTK pretrained models are proposed to apply on twitter data related to coronavirus. Both of them have their merits in estimating human sentiments. One of the advantages of using pretrained model is to reduce the time required to train the model from scratch. Fine tuning the models on available annotated twitter data and after that benchmarking the models would give us a more appropriate model to predict on the coronavirus tweets. Later, the output would be visualized in a statistical manner on a spread of time which will give us an understanding of we are behaving in this pandemic.

Output: understanding the human emotion over a specific period of time regarding the corona virus. It is a good tool to catch the human thoughts regarding a specific matter.

**Dataset:** We will have two datasets, one for fine-tuning and benchmarking which is annotated. The dataset has four columns, ‘tweet\_id’, ‘sentiment’, ‘author’, ‘content’. The ‘tweet\_id’ column holds unique id for each of the tweets, ‘sentiment’ column has 13 unique sentiments comprised of 'empty', 'sadness', 'enthusiasm', 'neutral', 'worry', 'surprise', 'love', 'fun', 'hate', 'happiness', 'boredom', 'relief', 'anger'. ‘author’ column indicates the twitter account from which the tweets have been posted and the ‘content’ column holds the tweet itself. We will use this dataset to fine tune the pretrained models and benchmark them.

In the second part, we will feed the better model with the second twitter dataset that would be collected from twitter API. From this step, we will predict human emotion on a collective level. We cannot evaluate the model based on the second dataset as it would not be annotated. We will have to rely on the models’ performance based on the first annotated dataset.