**Depression Detection on Twitter**

Depression is a common chronic disorder. Despite the awareness, many people are still uneducated of the mental health problems. Depression is the major cause of suicide. People often use social media, to express their emotions and feelings. Depressive tweets are increasing day by day since the lockdown was imposed due to COVID-19. Thus, early detection of depression, is a very crucial step in solving mental health issues. This project aims to create a depression detection model, using Natural Language Processing (NLP) and Machine Learning. To get the depressive tweets to train the model, I am scraping real tweets using an opensource library called snscrape. As the model is as good as the data used to train it. After doing a comprehensive literature review, I tried various methods to scrape the potentially depressive tweets. And to see the trend of the no of mentions of the word “Depression” on twitter, I scraped all the tweets containing the keyword “Depression” for 10 continuous days and plotted their count which is shown below.

Each day contains around 12,000 tweets. So, I’m using uniform random sampling to take a sample of 10 days in the period “March 2020” – “Feb 2021”.

After that I’m cleaning out the tweets which seems promotional, contains too many hashtags, contains links etc. After all these cleaning I’m getting around 95,000 potentially depressive tweets. These tweets will be labelled as Depressive.

For the positive (non depressive tweets) I’m using the Sentiment140 dataset which is publicly available and contains the 1.40 million tweets and around 8,00,000 tweets are with positive sentiment. To make the dataset balanced I’m taking the equal number of tweets from both the dataset.

After curating the dataset, I performed the standard preprocessing steps like removing stopwords, stemming, expanding contraction, cleaning links and hashtags. The words were converted to a numerical score using tf-idf technique and fitted a Naïve Bayes Classifier on top of that. This is the same model I used in my last semester. But I improved the accuracy from 73% to 93%, which is significant.

**Future Work**:

1) Explore different text classification model.

2) Deploy the model on a website and allow the users to take check depression for friends and family.

3) Try to create a depression profile if the username is given.

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