**Project Synopsis**

**Natural Language Processing:**

**Sentiment Analysis:** Perform Sentiment Analysis on tweets that you can fetch from Twitter API or use any dataset for the same.

* **What is Sentiment Analysis?**

Sentiment Analysis is the key to determine what each entry of a particular set of data indicates i.e. to determine the underlying emotion/attitude/opinion of a particular entry (review, comment, tweets, etc.).

* **How do we go about it?**

Considering the tweets, to put it in simple words, each tweet is comprised of a number of words, some words may carry a positive or negative emotion with them. Our job is to calculate the overall effect/sentiment about what the tweet is indicating – is the tone negative or positive? Is it appreciation or condemnation?

A basic approach can be:

Each positive word will have a positive score or a greater score(if comparison is made between two positive words), similarly negative words might have a lesser score or a negative score. To calculate the overall effect we will have to find the sum of the scores of all the words in the tweet and the result will be our answer!

*However errors are prone to occur*:

For example: If you are evaluating on the basis of single words,

If a tweet contains the word ‘GOOD’, you will assign it a positive score!

But what if the tweet says ‘NOT GOOD’ ?

This creates a more complex scenario.

Predicted Label

|  |  |  |
| --- | --- | --- |
|  | Positive | Negative |
| Positive | True Positive | False  Negative |
| Negative | False Positive | True Negative |

True Label

Such Complex Scenarios need more Complex Models but on the brighter side, complex models have less Bias than the simple models!

To put it in a graph:

Single Word

Multiple words

Bias of model

Hence more complex the model, less the bias.

* **How do we program it?**

We divide our dataset into Train data and Test data.

* As the name suggests that the training data is used for experimenting or rather training a model or build the model.
* The test data is used to test/evaluate the model to check it’s validation.