

## In this week we will do the sentiment analysis using naive Bayes algorithm. We h

**Notebook:** Natural Language Processing

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In this week we will do the sentiment analysis using naive Bayes algorithm. We have implemented the following operations:

1. First we will use process the word in the data in the format {(word,sentiment),#count}
2. First step of the NB is to identify the number of classes.
3. Then we will find the probability of each class .  $P(\text{pos}) = \frac{\# \text{pos}}{\# \text{total}}$ . And same for negative probability
4. The prior probability represents the underlying probability in the target population that a tweet is positive or negative . In other words , if we had no specific information and randomly picked a tweet , then what will be the probability that it would n positive or negative, that is called negative.

i.e  $P(\text{pos})/P(\text{neg})$ .

5. Then we will find the probability of positive and negative of a word.  $P(W_{\text{pos}}) = \frac{\text{freq pos} + 1}{(N_{\text{pos}} + V)}$ . Here freq pos is the frequency of word in positive class,  $N_{\text{pos}}$ , total number of positive words and  $V$  is the number of unique word in the whole document. Here +1 is doing for laplace smoothing.
6. Likelihood  $\log(P(W_{\text{pos}})/P(W_{\text{neg}}))$
7. Now comes the Naive bayes,  $P = \log \text{prior} + \text{summation}(\text{likelihood})$