

DEEP LEARNING_LAB 2

TASK

Implement the Text classification with CNN model with new data which is not used in the class.

1. INTRODUCTION

CNN stands for convolutional neural networks. In machine learning CNN is nothing but a artificial neural network which is used visualize the image. Convolutional is nothing but a sliding window function which is applied to a $n \times n$ matrix. CNN has an input layer and an output layer and also a multiple hidden layer. CNN has a multilayer algorithm for supervised learning which helps to have the minimal preprocessing. Convolution and Sub sampling are the ones among the four main features of CNN.

2. OBJECTIVES

The dataset contains about 10k sentences out of which half of the sentences are +pos and half of them are -neg. The dataset what we have used is Customer Review for distinct products like phones, laptops, cameras. So the main objective is to build a CNN model which helps us in finding out the +pos reviews and the -nev reviews.

3. APPROACHES/METHODS

The dataset is divided into half +pos and -neg and the sentences are also divided into words. The words are embedded into low-dimensional vectors in the very first layer of CNN. Convolutional is applied on the embedded words which can be obtained from the first layer. The result which is obtained from the second layer has been classified by using a softmax layer. While executing the training data or the test data placeholders has been created by

using the command `tf.placeholder`. By using this command we can input the batch size and shape of the input. Dropout is also a convolutional method which is used to regularize the neural networks. By giving the input data we can calculate the cross entropy loss per each class and the accuracy of the model.

4. WORKFLOW

Below is the workflow for the CNN model:

- Reading the dataset and grouping the similar category of data
- Generating the labels for all the words and building the vocabulary.
- We need to build a graph for our model once the data preprocessing is done.
- `tf.placeholder` is the command used for creating placeholders for both inputs and the outputs.
- Activation function is used to make the input data nonlinear.
- The model is trained in such a way that the output variables varies non-linearly with the input data.
- Every input variable is multiplied with their respective weights and in the next step these data is used as the input to any kind of activation function depending on the requirement.
- We have built the model and the loss function is calculated along with the accuracy of the generated model.
- Final step is to visualize our data in the form of a graph by using the tensor board.

5. DATASETS

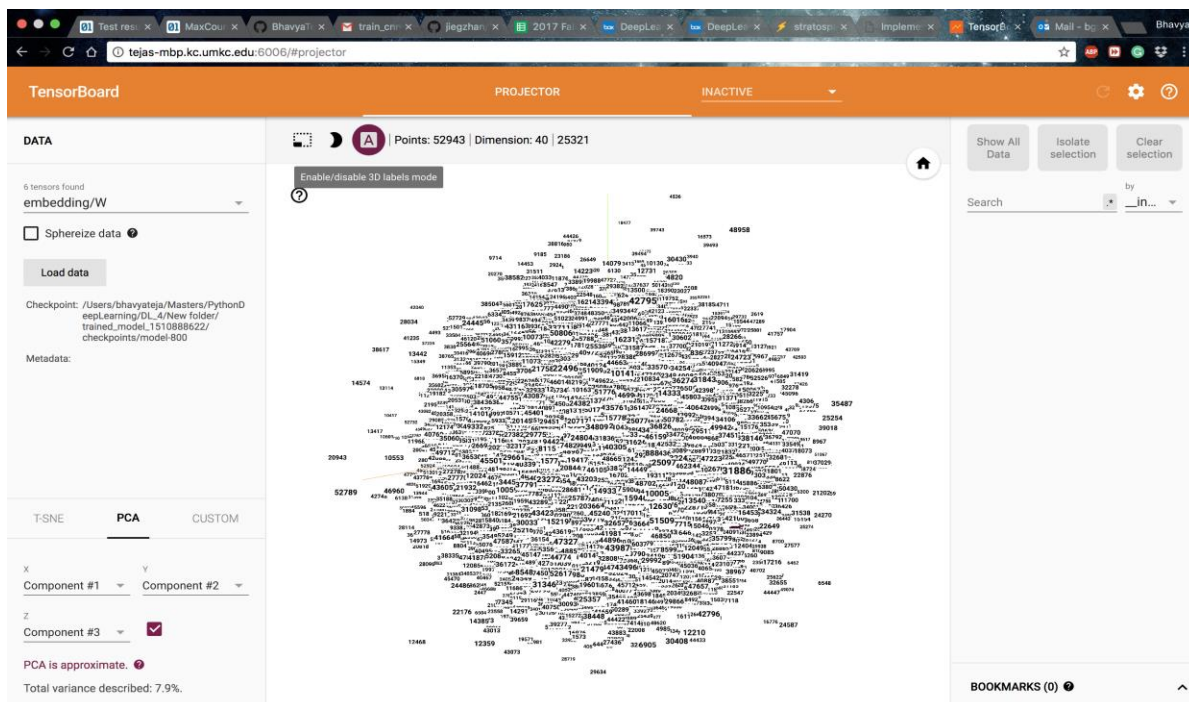
Here my dataset is regarding the reviews of the customers for different products. The main task is to find out the total +pos reviews and the total -neg reviews.

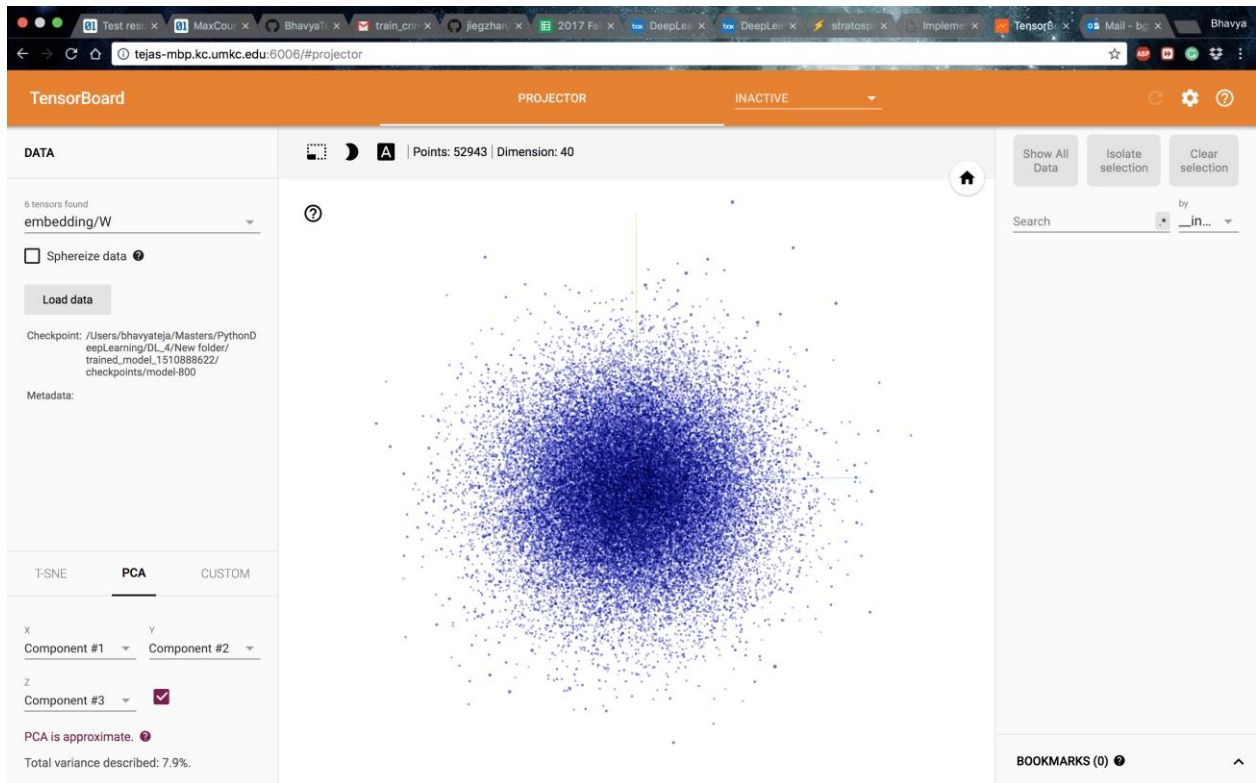
6. PARAMETERS

The parameters that should be considered while building a model for CNN classification are size of input/output layers, size of hidden layers, vocabulary size, size of the filters and the numbers of neurons per layer.

7. EVALUATION & DISCUSSION

The model which is built by using a CNN classification can be viewed on the tensor board by taking the user data as the input.





8. CONCLUSION

The best way to build a suitable model is by trail and error method and we can do it effectively by using the cross validation. CNN with one layer of convolution will perform well when compared to the multiple layer.