Faculty of computers and AI

Cairo university

NLP course

CHATGPT SENTIMENT ANALYSIS

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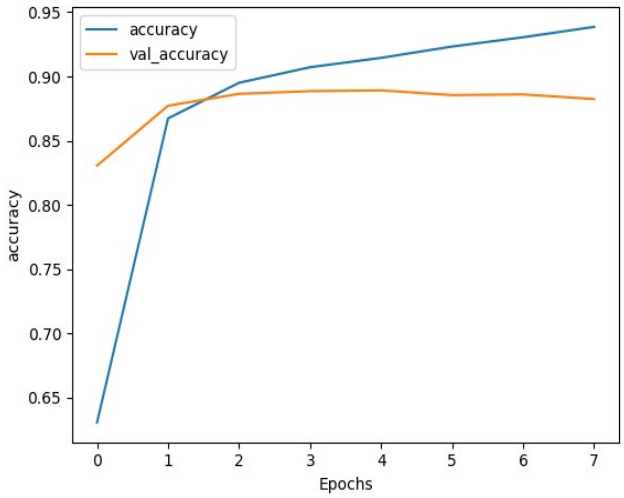
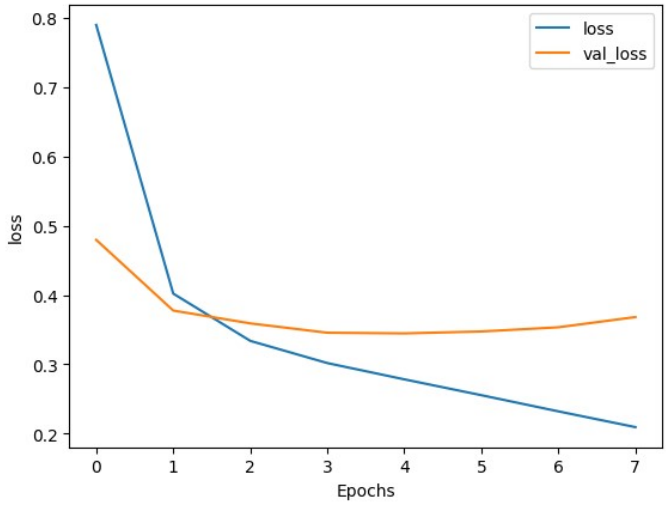
CNN:

After cleaning data and word stemming, Testing accuracy = 86%

Balance labels to be 70,000 for negative values, 56,000 for positive values and 56,000 for neutral values. Testing accuracy = 85%

When replacing stemming with lemmatization, testing accuracy became 87%.





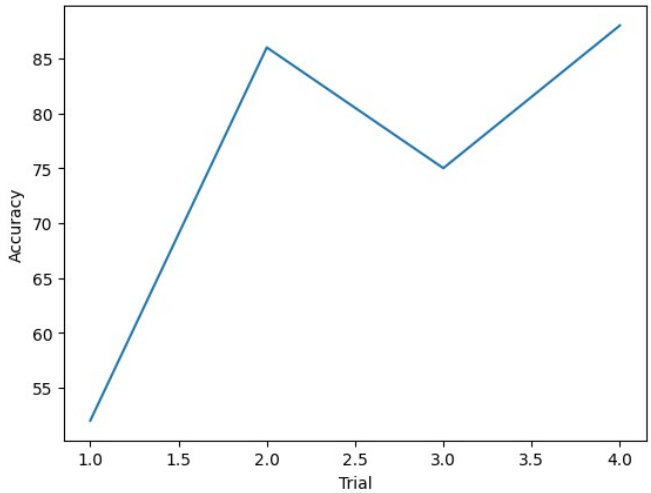
Graph:

Trail 1: relu layer → accuracy= 52%

Trail 2: softmax layer → accuracy 86%

Trail 3: relu and softmax layer and pool size = 4 → accuracy = 75%

Trail 4: relu and softmax layer and pool size = 2, max=140, max words = 7000 → accuracy = 88%



Cnn testing : 87

+ Code + Markdown

```
#@title ***Measuring the model***

def get_measurements(true_y, pred_y, average='micro'):
    return {
      "accuracy": accuracy_score(true_y, pred_y),
      "recall": recall_score(true_y, pred_y, average=average),
      "precision": precision_score(true_y, pred_y, average=average),
      "fscore": f1_score(true_y, pred_y, average=average),
  }
predicted_labels = model1.predict(X_test, verbose=1)
get_measurements(y_test,  np.argmax(predicted_labels, axis=1))
```

```
1048/1048 [==============================] - 2s 2ms/step
{'accuracy': 0.883384532792508,
 'recall': 0.883384532792508,
 'precision': 0.883384532792508,
 'fscore': 0.883384532792508}
```

Best Accuracy:

Prediction:

```
enter sentence or x for exit:  fine
1/1 [==============================] - 0s 119ms/step
  Tweets   labels
0  fine   neutral
enter sentence or x for exit:  my name is ahmed
1/1 [==============================] - 0s 21ms/step
             Tweets labels
0  my name is ahmed     bad
enter sentence or x for exit:  good morning
1/1 [==============================] - 0s 21ms/step
         Tweets   labels
0  good morning  neutral
enter sentence or x for exit:  it helps
1/1 [==============================] - 0s 22ms/step
     Tweets   labels
0  it helps  neutral
enter sentence or x for exit:  good results when i use this tool i like it and it helped me and better than google
1/1 [==============================] - 0s 21ms/step
                                        Tweets labels
0  good results when i use this tool i like it an...   good
enter sentence or x for exit:
```

+ Code + Markdown

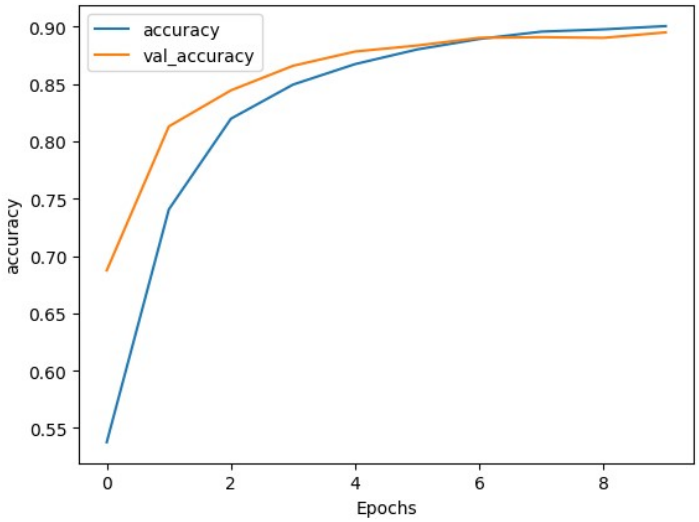
LSTM:

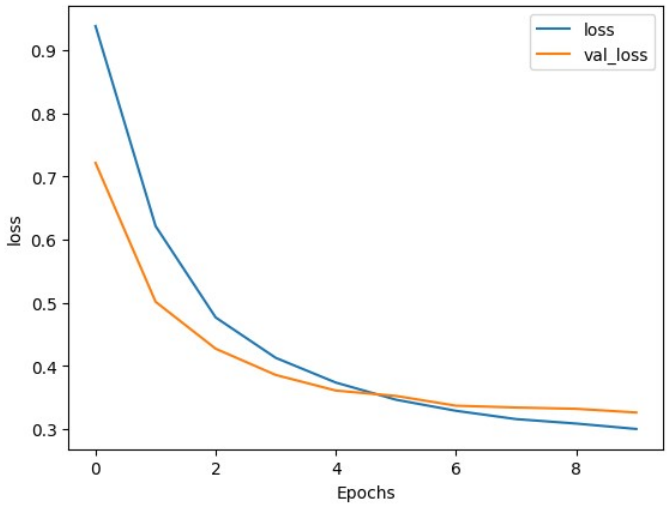
After cleaning data and word stemming, Testing accuracy = 87%.

Balance labels to be 70,000 for negative values, 56,000 for positive values and 56,000 for neutral values. Testing accuracy = 86%.

When replacing stemming with lemmatization, testing accuracy became 87%.

Graph:



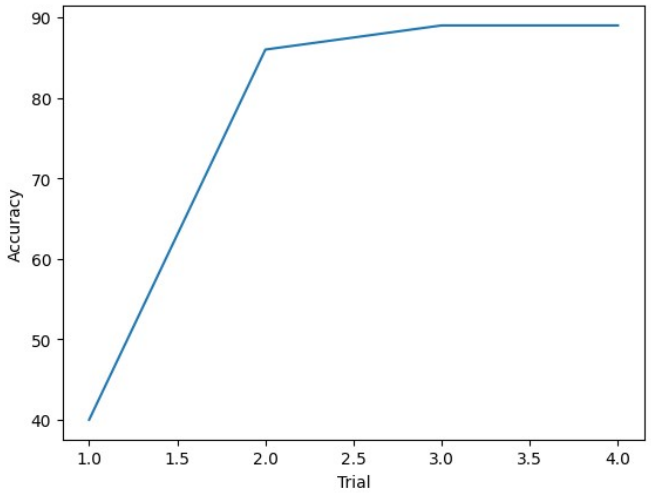


Trail 1: relu layer only → accuracy = 40%

Trail 2: softmax layer and alpha = 1 → accuracy = 86%

Trail 3: relu and softmax layer ,max=140 and max words = 7000 → accuracy = 89 %

Trail 4: softmax layer and alpha = 0.0001 → accuracy = 89%



Best Accuracy:

testing

[76]:
```
def get_measurements(true_y, pred_y, average='micro'):
    return {
      "accuracy": accuracy_score(true_y, pred_y),
      "recall": recall_score(true_y, pred_y, average=average),
      "precision": precision_score(true_y, pred_y, average=average),
      "fscore": f1_score(true_y, pred_y, average=average),
  }

predicted_labels = model2.predict(X_test, verbose=1)
get_measurements(y_test,  np.argmax(predicted_labels, axis=1))
```

```
1048/1048 [==============================] - 46s 43ms/step
```

[76]:
```
{'accuracy': 0.8945390557427898,
 'recall': 0.8945390557427898,
 'precision': 0.8945390557427898,
 'fscore': 0.8945390557427898}
```

+ Code + Markdown

Prediction:

```
enter sentence or x for exit:  chatgpt is an AI helpful tool to help solve complex problems and take less time than traditional way i like it
1/1 [==============================] - 0s 58ms/step
                                              Tweets labels
0  chatgpt is an AI helpful tool to help solve co...   good
enter sentence or x for exit:  need more improvement
1/1 [==============================] - 0s 58ms/step
                  Tweets labels
0  need more improvement     bad
enter sentence or x for exit:  nothing
1/1 [==============================] - 0s 58ms/step
    Tweets labels
0  nothing    bad
enter sentence or x for exit:  i think priceless
1/1 [==============================] - 0s 59ms/step
             Tweets   labels
0  i think priceless  neutral
enter sentence or x for exit:  x
```

+ Code + Markdown