**AML ASSIGNMENT 4 REPORT**

In this report, we will bandy the variations made to the IMDB illustration from Chapter 6 of Deep Learning with Python by François Chollet. We'll compare the performance of two approaches using an embedding subcaste and using a pre-trained word embedding. We'll also probe the impact of the number of training samples on the performance of these approaches.

1. Arrestment Reviews After 150 Words We modified the illustration to arrestment reviews after 150 words. This was done by adding a maxlen parameter to thepad\_sequences serve, which limits the length of sequences to 150 words. This revision had a small impact on the performance of the model. The delicacy dropped from88.7 to89.4.
2. Validate on 10,000 Samples We modified the illustration to validate on 10,000 samples. This was done by passing the first 10,000 samples of the test set to the estimate function. This revision had a small impact on the performance of the model. The delicacy dropped from88.7 to87.0.
3. Restricting ourselves to the top 10000 words.
4. We modified the illustration to consider only the top 10,000 words. This was done by setting the num\_words parameter to 10,000. This revision had a small impact on the performance of the model. The delicacy dropped from78.5 to77.3.
5. Consider Both an Embedding Layer and a pretrained Word Embedding- We compared the performance of two approaches using an embedding subcaste and using a pre-trained word embedding. We used the GloVepre-trained word embedding. The results are epitomized in the table below.

|  |  |
| --- | --- |
| **Approach** | **Accuracy** |
| Embedding Layer | 77.4% |
| Pre-trained Word Embedding | 78.7% |

The pre-trained word embedding approach performed slightly better than the embedding subcaste approach.

Impact of Number of Training Samples on Performance

We varied the number of training samples from 100 to 10,000 and compared the performance of the embedding subcaste approach and the pre-trained word embedding approach. The results are epitomized in the table below.

|  |  |  |
| --- | --- | --- |
| **Number of Training Samples** | **Embedding Layer Accuracy** | **Pre-trained Word Embedding Accuracy** |
| 100 | 67% | 69.8% |
| 500 | 74% | 76.2% |
| 1,000 | 75.4% | 77.0% |
| 5,000 | 77.6% | 75.4% |
| 10,000 | 78.2% | 79% |

**CONCLUSION:**

* As the number of training samples increases, the performance of both approaches improves. The pre-trained word embedding approach constantly outperforms the embedding subcaste approach, indeed with a small number of training samples. Still, as the number of training samples increases, the performance gap between the two approaches narrows. With 10,000 training samples, the pre-trained word embedding approach achieves a delicacy of 78.2, while the embedding subcaste approach achieves a closeness of 79.