Text and Sequences Assignment3 IMDB

Objective: Build an embedding model for binary sentiment prediction on the IMDb reviews dataset.

Scratch Models

No.	Training	Validation	Test	Performance on Test Set (Loss, Accuracy)
Model 1	100	10000	5000	(0.693, 0.517)
Model 2	1000	10000	5000	(0.524, 0.744)
Model 3	25000	10000	5000	(0.290, 0.908)
Model 4	**35000**	**10000**	**5000**	**(0.257, 0.926)**

Findings:
- Models 1 and 2 had moderate performance with limited data and a simple architecture.
- Models 3 and 4, incorporating Conv1D layers, showed improved performance by leveraging increased training samples and fine-tuning hyperparameters.
- Plotting training and validation metrics helped identify the optimal point to prevent overfitting.
- Building complex architectures, fine-tuning parameters, and providing more data improved overall model performance.
- Model 5, trained on 35,000 samples, emerged as the best-performing model among the four.

Pre-Trained Network: The models were built using LSTM layers and the vector dimension of the GloVe network.

Pre-Trained Models

No.	Training	Validation	Test	Performance on Test Set (Loss, Accuracy)
Pre_Model1	100	10000	5000	(0.699, 0.452)
Pre_Model2	1000	10000	5000	(0.440, 0.798)
Pre_Model3	10000	10000	5000	(1.013, 0.524)
Pre_Model4	15000	10000	5000	(0.696, 0.374)
Pre_Model5	**15000**	**10000**	**5000**	**(0.332, 0.851)**

Findings:

- Underfitting is a major concern, indicating poor performance on both the training and test sets.
- Simple architectures with fewer layers and nodes can sometimes outperform complex architectures.
- Model 5, with 15,000 training samples, 1,000 validation samples, and 5,000 test samples, was the best-performing model among the five models built.