LAPTOP REVIEW CLASSIFICATION NLP

Model Performance Summary – LSTM for Review Classification

Dataset Overview

- The dataset contained laptop reviews along with product names.
- After removing duplicate entries, we retained 42 unique reviews.
- We added 10 synthetic reviews (5 positive, 5 negative) to enrich the data.
- Final dataset size: 52 reviews
- Labels used:

  1 = Positive review

  0 = Negative review

Model Used

We built a sentiment classifier using an LSTM (Long Short-Term Memory) network, which is effective for processing and understanding sequences of text.
The model included:

- An embedding layer to convert words into vector format
- An LSTM layer with 128 memory units
- A dense output layer with a sigmoid function for binary prediction

Train-Test Split

- **Training data**: 70% of the dataset
- **Testing data**: 30% of the dataset (16 reviews approx.)

Evaluation Metrics (on Test Set)

Accuracy - 53.8%

Precision - 0.50

Recall - 0.52

F1 Score - 0.49

Positive class (1): F1 score ≈ 0.65, Recall ≈ 79%

Negative class (0): F1 score ≈ 0.33, Recall ≈ 25%

Confusion Matrix

	Predicted: Positive	Predicted: Negative
Actual: Positive	11	3
Actual: Negative	9	3

Key Observations

- The model performs better on positive reviews, likely because the dataset is slightly imbalanced or the language in positive reviews is easier to learn.

- Performance on negative reviews is weaker, suggesting the model may need more training data or better feature representation.

- Given the small size of the dataset and the fact that reviews were both real and synthetic, the results are acceptable and reflect the constraints.