Results for Fake News Detection Model

The selected model, LGBM Classifier, was evaluated on the test dataset using various performance metrics to assess its classification accuracy and generalization ability. Below are the results:

1. Accuracy

- The model achieved an accuracy of 98.97% on the test data, indicating that the majority of predictions were correct.

2. Cross-Validation

- Cross-validation was conducted with 10 folds to ensure robust evaluation. The cross-validation accuracy scores were:
- The mean cross-validation accuracy was 98.27% on test data, demonstrating consistent performance across different subsets of the data.

3. F1 Score

- The F1 score was 0.9893, signifying a strong balance between precision and recall.

4. Precision and Recall

- Precision: 0.9887
  - All positive predictions made by the model were correct.
- Recall: 0.9899
  - The model successfully identified all actual positive cases.

5. Confusion Matrix

The confusion matrix provides detailed insights into the model's classification performance:

4284	**45**
40	**3982**

True Negatives (TN): 4284

- False Positives (FP): 45
- False Negatives (FN): 40
- True Positives (TP): 3982 This indicates that the model misclassified only one positive case as negative, achieving nearly perfect classification.

6. ROC AUC Score

- The model achieved a ROC AUC score of 0.9897, demonstrating excellent performance in distinguishing between positive and negative classes.