**Fake News Detection using NLP and Machine Learning**

**1.Introduction:**

The rise of fake news has made it difficult for people to distinguish credible information from false narratives. This project aims to develop a machine learning model that can classify news articles as real or fake using Natural Language Processing (NLP) techniques. A web-based interface was built using Streamlit to allow real-time predictions.

**2.Abstract:**

This project leverages the Fake and Real News Dataset from Kaggle to train a text classification model. Using TF-IDF vectorization and a Naive Bayes classifier, the model analyzes the text and predicts its authenticity. The final application was deployed using Streamlit, where users can input any news article and instantly receive a classification.

**3.Tools Used:**

* Python
* Pandas
* NLTK
* Scikit-learn
* Streamlit
* Joblib

**4.Steps Involved in Building the Project:**

* Loaded and merged fake and real news datasets.
* Preprocessed the text using NLTK: lowercasing, tokenization, and stopword removal.
* Converted text to vectors using TF-IDF.
* Trained a Naive Bayes classifier.
* Evaluated model using accuracy, F1-score, and confusion matrix.
* Built a Streamlit web app for real-time predictions.
* Recorded a demo video to showcase functionality.

**5.Conclusion:**

The model achieved high accuracy in detecting fake news and was successfully deployed in an interactive web app. This project demonstrates the practical application of NLP and machine learning in addressing real-world challenges. The experience helped enhance my understanding of model training, evaluation, and deployment.