REAL & FAKE NEWS DETECTION:

This project focuses on detecting fake news using deep learning by analyzing text patterns in news articles. It begins by processing the data, where a **Keras Tokenizer** converts the text into numerical sequences, making it understandable for machine learning models. Since news articles vary in length, **padding** is applied to ensure all inputs are of the same size. The model is built using an **LSTM (Long Short-Term Memory) network**, which is particularly effective in handling sequential text data by learning dependencies between words. To improve performance, **Conv1D and MaxPool1D layers** extract key features from the text before passing them to the LSTM. An **Embedding Layer** further enhances the model’s understanding by converting words into dense vector representations, allowing it to capture relationships between words. The model is trained using **Binary Cross-Entropy Loss**, which helps distinguish between real and fake news, and is optimized using the **Adam Optimizer** for faster and more accurate learning. After training, the model is saved and can be used to predict whether a given news article is real or fake. To maintain consistency in text processing, **Pickle** is used to store and reload the tokenizer, ensuring that new inputs are processed in the same way as the training data. This enables users to input any news article and quickly receive a prediction on its authenticity.