Project Title:

DeepFake Detection Using Advanced Deep Learning Techniques

Objective:

The objective of this project is to develop a deep learning model from scratch to detect deepfake videos and images. The model aims to identify deepfake content by analyzing subtle artifacts and inconsistencies that are often present in manipulated media. This project seeks to combat misinformation and protect privacy by providing a reliable and efficient tool for detecting deepfakes.

We will use publicly available datasets such as FaceForensics++, DeepFake Detection Challenge Dataset, and Celeb-DF for our project.

Then we will experiment with different architectures (e.g., Convolutional Neural Networks, Recurrent Neural Networks, and Transformer-based models).

- **Existing Models:** Many current models rely on traditional Convolutional Neural Networks (CNNs) and sometimes Recurrent Neural Networks (RNNs) for sequential data.
- **Our Approach:** We plan to explore and incorporate Transformer-based architectures, which have shown significant improvements in capturing long-range dependencies and subtle inconsistencies in images and videos. This includes experimenting with Vision Transformers (ViTs) and hybrid models combining CNNs and Transformers for enhanced performance.

The proposed project aims to significantly advance the state of deepfake detection by addressing the limitations of existing models and introducing novel techniques for enhanced accuracy, efficiency, and usability. By focusing on advanced model architectures, comprehensive data augmentation, and real-time detection . Our approach promises to deliver a robust and reliable tool for combating the growing threat of deepfakes.

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