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DeepFake Face Detection using Image Processing & Machine Learning

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Abstract: *In recent years, the rapid advancement of artificial intelligence and deep learning has led to the rise of deepfake technologies—highly convincing yet artificially generated media, particularly images and videos that manipulate human faces. While deepfakes have opened up new creative possibilities, they also pose serious threats to privacy, public trust, and digital security. The primary objective of this project is to develop an intelligent and efficient system that can accurately detect whether a given facial image or video frame is authentic or synthetically altered using deepfake techniques.*

This project leverages Convolutional Neural Networks (CNNs), a powerful deep learning model in the field of image processing, to identify minute visual artifacts and inconsistencies often present in deepfake media. The proposed system is trained on a diverse dataset comprising both real and deepfake content to ensure robust classification performance. Through pre-processing, feature extraction, model training, and classification stages, the system learns to differentiate real from fake with high accuracy.

By providing a reliable method for deepfake detection, this project contributes to safeguarding digital integrity and supporting media verification processes. The solution can be integrated into social media platforms, content moderation systems, and digital forensic tools to combat the malicious spread of manipulated media. With an emphasis on performance, accuracy, and scalability, the system aims to offer real-time and automated deepfake detection, thereby helping to mitigate the growing misuse of AI-generated media in society...

Keywords: Deepfake Detection, Convolutional Neural Networks (CNN), Image Processing, Machine Learning, Video Manipulation, Artificial Intelligence, Face Recognition, Digital Forensics, Real vs Fake Classification, Visual Artifacts Analysis, etc

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