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## A Survey on Deepfake Detection Techniques using Deep Learning and Convolutional Neural Networks

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Abstract: In today's digital landscape, the proliferation of deepfake technology—synthetically altered media generated using deep learning—has raised critical concerns regarding the authenticity and integrity of visual content. Deepfakes pose threats in domains such as misinformation, political manipulation, identity theft, and digital fraud. This study presents a CNN-based deepfake detection system capable of identifying manipulated images and videos by analyzing spatial inconsistencies introduced during synthetic content generation. The model is trained on labeled datasets and evaluated using standard metrics including accuracy, precision, recall, and F1-score. A user-friendly GUI is developed using Tkinter to facilitate interactive real-time detection. By integrating robust machine learning techniques with practical implementation, this work contributes to ongoing efforts to safeguard digital trust.

Keywords: Deepfake Detection, CNN, Digital Media Forensics, Image Manipulation, Misinformation, Deep Learning



