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Detecting Deepfake Faces with CNN and LSTM Models

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Abstract: *Trust in digital media is seriously jeopardized by deepfake videos made with sophisticated generative models, which enable realistic but fake content that is hard for people to recognize. In this paper, a hybrid ResNeXt-50 and Long Short Term Memory (LSTM) architecture is used to combine spatial and temporal cues in a video-based deepfake detection system that uses face regions extracted from each frame. The model is trained using preprocessed face-only clips from public benchmark datasets like FaceForensics++, Celeb-DF, and the Deepfake Detection Challenge, as well as a recent Kaggle deepfake video corpus. The suggested method is integrated into a Django web application that enables users to upload a video and receive a real/fake prediction in close to real time. It achieves promising accuracy and balanced precision–recall on held-out videos. These findings show that face-region preprocessing and joint CNN-LSTM modeling offer a practical and efficient way to detect deepfake videos.*

Keywords: Django, video forensics, LSTM, ResNeXt-50, deepfake detection, transfer learning

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