

Deep Fake Detection

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Abstract: *With the increasing computational power, the creation of indistinguishable human synthesized videos, known as deepfakes, has become remarkably easy. These realistic face-swapped deepfakes have raised concerns as they can be utilized for malicious purposes such as causing political unrest, fabricating terrorism events, spreading revenge porn, and blackmailing individuals. In this research, we present a novel deep learning-based method that effectively distinguishes AI-generated fake videos from real ones. Our approach focuses specifically on detecting replacement and reenactment deepfakes. We harness the power of Artificial Intelligence (AI) to combat the challenges posed by AI itself. The core of our system lies in a ResNext Convolutional Neural Network, which extracts frame-level features. These features are then used to train a Long Short-Term Memory (LSTM)-based Recurrent Neural Network (RNN) that classifies videos as either manipulated (deepfake) or authentic (real). To ensure real-time applicability and enhance the model's performance on real-world data, we evaluate our method using a large and balanced dataset. This dataset is prepared by blending various available datasets, including Face Forensic++[1], Deepfake Detection Challenge[2], and Celeb-DF[3]. Additionally, we demonstrate how our system achieves competitive results through a simple and robust approach. In summary, our research aims to address the challenges posed by deepfakes by utilizing AI technologies. By leveraging a ResNext CNN and LSTM-based RNN, we successfully detect and classify manipulated videos. Through extensive evaluation on mixed and balanced datasets, we showcase the effectiveness and efficiency of our approach in real-time scenarios*

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