

ABSTRACT

Kharismadina Hijra Muhamad. 13119305

DEEPFAKE DETECTION SYSTEM ON VIDEO USING CONVOLUTIONAL NEURAL NETWORK WITH INCEPTION RESNET V2 MODEL

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Entering the 4.0 era of internet, social media has become the primary commodity for society in seeking entertainment and information. According to Google, as of 12th June 2023, there are 5.18 billion internet users worldwide, while in Indonesia alone, there are approximately 212.9 million users, which accounts for around 77% of the total population, indicating a high level of technological literacy. Social media platforms such as YouTube, Instagram, and TikTok have the highest quantity of uploaded video content on a daily basis. Within video files, there is also a significant presence of deepfake content created using AI and Faceswapping tools in specific editing software. Many irresponsible parties create and distribute deepfake videos for their own interests. Consequently, research is being conducted on the development of a video detection system that can identify deepfake content. The detection system employs the convolutional neural network (CNN) method, utilizing three different architectures: EfficientNetB5, Inception Resnet v2, and VGG16. These models will be trained using a dataset of 400 videos, consisting of 323 deepfake videos and 77 real videos. Subsequently, the models will be tested with 400 deepfake videos to measure accuracy, precision, recall, and f-score. The GPU usage of the models will also be measured to determine their efficiency during training and testing. Based on the measurements, the Inception Resnet v2 model was selected, achieving an evaluation result of 94.91% accuracy with a GPU usage of 10.5 GB. The next step involves implementing the model to detect 13 video samples, comprising 8 deepfake videos and 5 real videos. The implementation of the Inception Resnet v2 model resulted in an accuracy of 84.6% in accurately detecting deepfake and real videos.

Bibliography (1993-2021)