Deepfake:

Traditional face tampering is a tedious and time-consuming process, which requires professional video editing tools and professional knowledge.

With the continuous development of computer hardware and deep learning, image synthesis has been an enormous breakthrough.

As the advance of generative adversarial networks and Auto-Encoders, these techniques are increasingly being applied to Deepfake, enabling the creation and rapid distribution of high-quality video tampering content.

While Deepfake technology has advanced society in some ways, there are concerns about the harmful effects of its misuse.

As Deepfake requires only a small number of face photos to enable video face-swapping, some malicious users take advantage of the data available on the internet to generate numerous fake videos.

Many deceptive face-swapping videos pose a substantial potential threat to national security, social stability, and personal privacy.

If compressed Deepfake videos, it would be difficult for us to detect them effectively. To address the problem, the forensics of compressed Deepfake videos becomes a meaningful and challenging task.

Many Deepfake detection methods have been proposed and achieved good detection performance. However, from the perspective of symmetry, the formidable challenges for Deepfake detection still exist when under compression attacks, the detection performance of most detectors dramatically decreases due to the loss of image feature information.

The current detection methods can be divided into two categories according to different feature extraction methods: Deepfake video detection methods based on

hand-crafted and

Deepfake video detection methods based on deep learning.

These methods are further divided into two categories:

Frame-level detection methods and

Video-level detection methods.

Proposing propose Meso-4 and MesoInception-4 networks.

Deepfake detection is performed with the help of image mesoscopic features. The method is trained and tested on the Deepfake dataset constructed by the author and has achieved good detection results.

Face2face

These methods are designed for the reenactment of image facial expression from a source to a target person.

Facial reenactment refers to the modifications brought to the target actions in the form of change of movement of the head, lips, and facial expression.

It performs a photorealistic and marker less facial reenactment in real-time from a simple RGB-camera.

The program first requires few minutes of prerecorded videos of the target person for a training sequence to reconstruct its facial model.

the pro- gram tracks both the expressions of the source and target video.

The final image synthesis is rendered by overlaying the target face with a morphed facial blend shape to fit the source facial expression.

This section presents several effective approaches to deal with either Deepfake or Face2Face. It seems like that these two problems cannot be efficiently solved with a unique network. However, thanks to the similar nature of the falsifications, identical network structures for both problems can yield good results.

The below forged video link is the test subject considered to run the project. Detection test will be used on the video link:

https://www.youtube.com/watch?v=VWrhRBb-1Ig&t=98s