

# The State of Live Deepfake Detection in Streaming Platforms

Mr Mounesh Arkachari<sup>1</sup>, Utkarsha Sadalage<sup>2</sup>, Omkar Naik<sup>3</sup>, Prajwala Chandake<sup>4</sup>, Pooja Sonnad<sup>5</sup>

Department of Information Science and Engineering<sup>1-4</sup>,

Alvas Institute of Engineering and Technology, Mijar, Mangalore, India

**Abstract:** Deep learning has become a transformative technology that is widely applied across various fields, including healthcare, autonomous systems, and multimedia processing. One of its most controversial uses is in the generation of DeepFake videos, which are created using a deep learning method called Generative Adversarial Networks (GANs). These networks generate highly realistic fake content by swapping faces, altering facial expressions, changing gender or age, and creating entirely synthetic individuals. While DeepFake technology has creative applications in film-making, virtual reality, and gaming, its misuse poses significant threats. Malicious use cases include financial fraud, spreading misinformation, political manipulation, cyberbullying, and the erosion of public trust. Due to the high quality and realism of DeepFakes, detecting such videos with the human eye is extremely difficult, prompting the need for automated detection systems. Researchers have developed numerous deep learning-based models to tackle this issue. Convolutional Neural Networks (CNNs), including ResNet, VGG16, EfficientNet, and XceptionNet, are effective in extracting spatial features from video frames. Recurrent Neural Networks (RNNs), such as Long Short-Term Memory (LSTM), are used to analyze temporal dependencies across sequences of frames. Some studies also integrate CNNs with RNNs or attention mechanisms to improve performance. Recently, Vision Transformers (ViT) and hybrid deep learning models have shown promising results in DeepFake detection tasks. Pre-trained models, transfer learning, and ensemble approaches are also employed to boost detection accuracy. This paper presents a comparative study of various deep learning techniques for detecting DeepFake videos, analyzing their effectiveness, challenges, and potential future improvements using popular datasets like FaceForensics++, DFDC, and Celeb-DF.

**Keywords:** Deepfake video detection, Convolutional neural network (CNN), Recurrent neural network (RNN), Support vector machine (SVM)

