

Enhancing Face Recognition Security: Anti-Spoofing and Liveliness Detection using YOLO Algorithm

Abstract:

Applications for face authentication are widely used in our daily lives. Nevertheless, hackers may trick face recognition systems using presentation attacks (PA), which include using printed images, electronic photos and videos as well as 3D face masks. Face anti-spoofing (FAS) is designed to ensure the security of the face recognition system in order to prevent this. In order to learn more discriminative features and frame the spoofing detection as a binary classification problem, the early deep learning-based techniques make use of CNN. This project's main goal is to develop a liveliness and anti-spoofing system that can quickly and accurately distinguish between real and fake faces. This project suggests integrating the YOLO (You Only Look Once) algorithm, which is based on Convolutional Neural Networks (CNNs). Since YOLO can detect objects in real-time, it can be used to spot spoofing attempts in pictures and videos. Through the utilization of YOLO's deep learning capabilities and grid-based methodology, the suggested system is able to precisely identify and distinguish real human faces from spoofing objects like printed images, movies, and masks. YOLO's integration with face recognition systems improves security by making sure that only real, authentic faces are identified and verified. This project aims to demonstrate the efficacy and dependability of the suggested through experimental evaluation and validation.

Key words: Face authentication, Spoofing attacks, YOLO algorithm, Convolutional Neural Networks (CNNs)

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