

Unsupervised Self-Verification using Facial Biometrics



Motivation

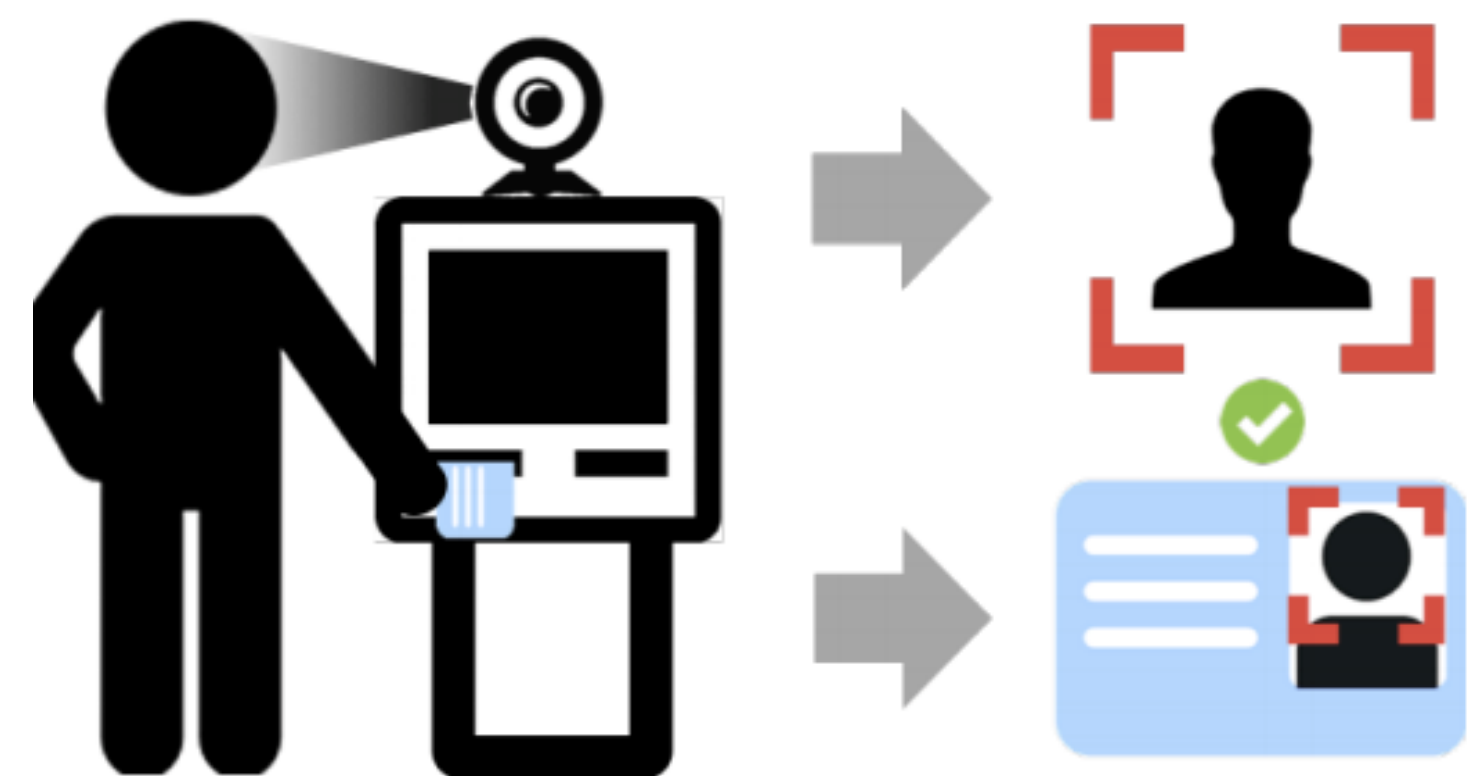
- To develop robust methods for detecting the biometric characteristics (liveness) by identifying a small set of muscular actions.
- Ageing and degradation of documents can hamper the performance of person recognition and verification.
- Video tampering/manipulation detection aims to find the traces of tampering and thereby evaluate the authenticity and integrity of the video file.

Approach

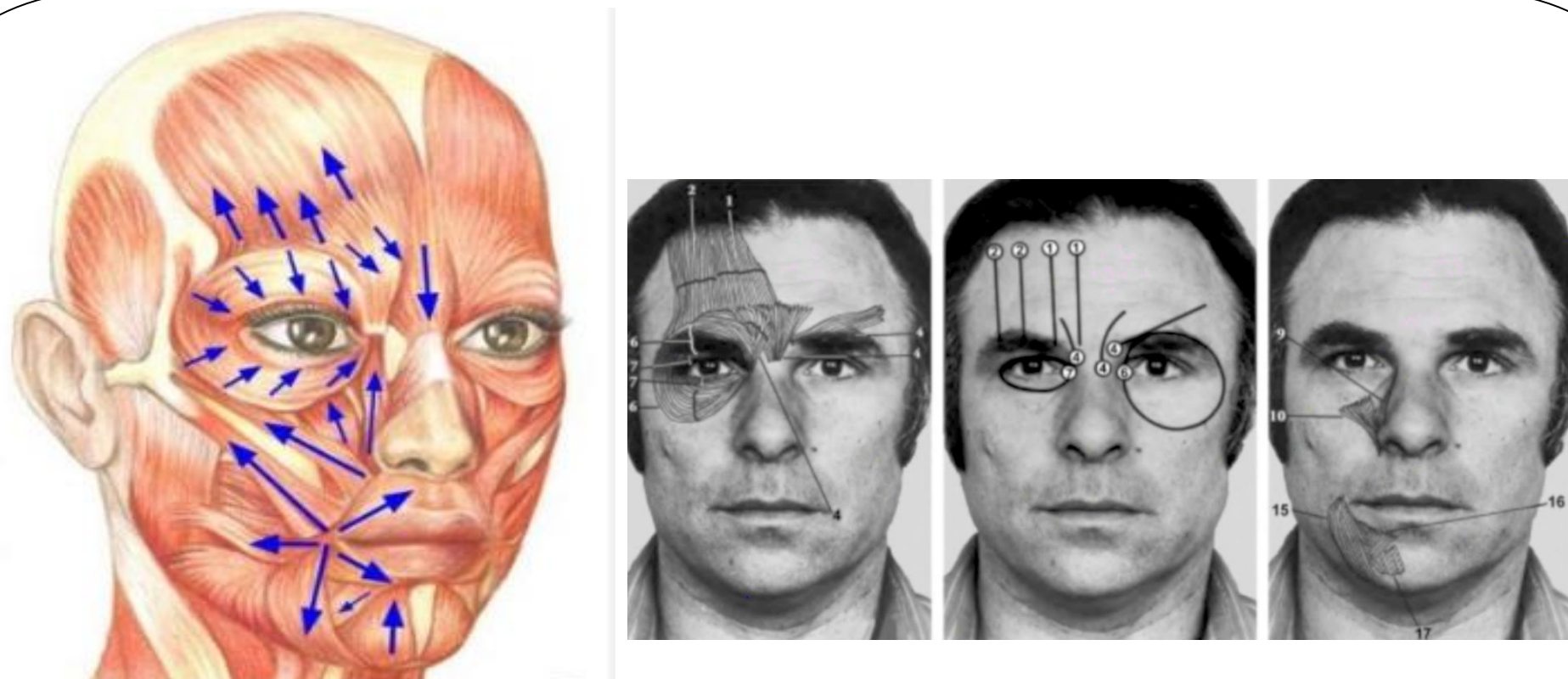
- Using EVM and other video enhancing techniques to magnify motion for detecting liveness.
- Use of texture and deep learning based approaches for liveness detection.
- Video replay and manipulation detection in the spatial domain by verifying pixel integrity.

Objectives

- Identity verification based on user-made recordings without any manual intervention by humans.
- Development of novel techniques to detect Facial Muscle Movements, Micro Expressions & Heartbeat Detection.
- To obtain a successful comparison between the selfie image & degraded documents or after ageing of person.
- Verifying the authenticity of captured data and detect manipulated videos/images.



Improving Biometric Recognition Performance



(a) Sample frames from a *Happiness* sequence

Biometric Characteristic Checks (Liveness Checks)

Original (Source) Original (Target) Manipulated



Video Forensics



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