4.18 Facial Regions for Presentation Attack Detection (RPA)(0.8)

Investigate and evaluate several facial regions for Face Presentation Attack Detection.

4.18.1 Background

In order to detect whether a sample stems from a live subject or from an artificial replica, most Presentation Attack Detection (PAD) approaches have analysed the whole face images, which lead, in many cases, to a detection performance degradation. Since many artefacts created in the fabrication of Presentation Attack Instruments take place on a local face part and not over the whole face, it would be the utmost importance to determine which would be the most suitable human face regions for facial PAD.

4.18.2 Task

- Develop a robust algorithm to extract different facial regions (i.e., mouth, nose, eyes, etc).
- Develop a single Deep learning or handcraft-based approach for face PAD.
- Benchmark the proposed approach for the extracted facial regions.
- Analyse which facial region is the most suitable to distinguish a bona fide from an attack presentation.

4.18.3 Expected Outcome

- A comprehensive report describing the proposed deep learning or handcraft-based solution as well as the algorithm to extract facial regions.
- Benchmark the proposed deep learning or handcraft-based approach for different facial regions in compliance with the ISO/IEC 30107-3 evaluation metrics for biometric PAD (i.e., APCER and BPCER).

4.18.4 Starting Reading and other Material

- J. Fierrez, R. Vera-Rodriguez, J. Ortega-Garcia. Combination of face regions in forensic scenarios. Journal of forensic sciences, 2015.
- Lázaro J. González-Soler, Marta Gomez-Barrero, Christoph Busch. On the Generalisation Capabilities of Fisher Vector based Face Presentation Attack Detection. In arXiv:2103.01721, 2021.
- CASIA Face Antispoofing
- DET curve software.
- Code to calculate PAD-scores