

Master/ Bachelor Thesis

Develop a feature visualization framework for Morphing images

da/sec



da/sec is the biometrics and internet security research group and is affiliated with University of Applied Sciences Darmstadt and the National Research Center for Applied Cybersecurity (ATHENE). The group is led by Prof. Dr. Harald Baier and Prof. Dr. Christoph Busch. The focus of the group is on highly innovative and applied IT security research in the special fields of biometrics, internet security, and digital forensics. Read more on <http://www.dasec.h-da.de/>.

Motivation & Goals

Face morphing attack detection is a challenging task. Automatic classification methods and manual inspection are realized in Automatic Border Control gates to detect Single and Differential morphing attack detection. Based on these scenarios, it is crucial to understand what is for a machine learning(ML)/deep learning(DL) system, the location of the most relevant facial area, used to identify the morphed images. Those areas are composing of texture, shape or frequencies signals that allow us to separate the bona fide and the morph images.

Tasks

- Develop a framework to visualize the features used to classify morph/bona fide.
- Generation of one feature selection method
- Evaluation and benchmark of the implemented systems.
- *This topic is open to more than one student. Different approaches for DL or ML.*



Examples of Images with the most relevant areas in red.

Requirements

- High motivation, Interest in security technologies and biometrics
- Strong interest in research
- Good programming skills (Python or C++) are of advantage.

Start / Period

Immediately / by appointment

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