



– Master-/Bachelor Thesis –

Explainable Differential Manipulation Detection

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. Christoph Busch. The focus of the group is on highly innovative and applied IT security research in the special fields of biometrics. Read more on www.dasec.h-da.de.

Motivation & Goal

Manipulated images can be used to gain unauthorised access and spread misinformation. Consequently, methods for detecting such images have been proposed. Promising results have been achieved using differential detection where pairs of images (a trusted and suspected image) are used to decide if an image (the suspected) has been manipulated. However, most current approaches provide no explanations of the decision outcome, which can be a problem from a legal perspective. For example, the EU recently introduced through the GDPR the “right to an explanation”.

Therefore, the goal of this project is to design a method for visually explaining the decision outcome of a differential manipulation detection algorithm.

Tasks

- Develop or adopt an algorithm for visually explaining the decisions taken by a differential manipulation detection algorithm
- Evaluate your algorithm on a database of digitally manipulated images

We offer

- Incentives for the student to work on this project (work within scientific context and in close collaboration with researchers)

Requirements

- Interest in biometric systems and computer vision
- High motivation and creativity
- Analytical and programming skills

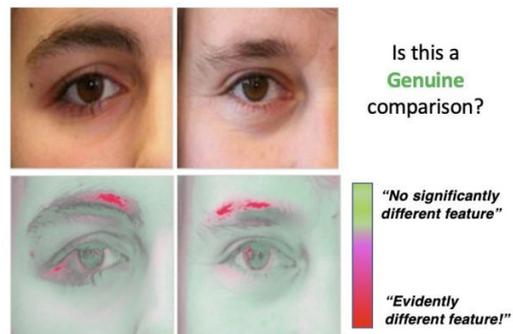
By Date

By now / by appointment

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* Image taken from [1]

[1] Brito, J., & Proenca, H. (2021). A Deep Adversarial Framework for Visually Explainable Periocular Recognition. In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) Workshops (pp. 1453-1461).