

## – Master-/Bachelor Thesis –

### Biometric image captioning for Facial Analysis Explainability

#### 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](http://www.dasec.h-da.de).

#### Motivation & Goal

As the use of biometrics broaden from criminal justice to border control, the decision made by biometric algorithms affect our daily lives more and more. As it is stated by law, users have the right of reply against algorithms in cases where a decision is perceived as unfair or misaligned with the values of the institutions involved. For this reason, explaining the algorithms' decisions to users is required. However, as many algorithms behave as **"black boxes"** these explanations are not easy to obtain. Hence, we need to develop good quality textual explanations for biometric images, particularly accurate facial descriptions.

#### Tasks

- Get familiarized with state-of-the-art image-to-text algorithms (BERT, CLIP, HuggingFace).
- Evaluate the accuracy of the captions created by these algorithms on facial images.
- Report and analyze the results.

#### Requirements

- High motivation and creativity.
- Programming experience.
- Good communication skills.
- Interest in computer vision.



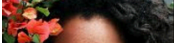






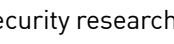
#### By Date

By now / by appointment

#### Contact

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	A middle-aged man who has black hair.
	A side view of a middle-aged man who is smiling.
	A middle-aged man with big nose, and small eyes.
	A middle-aged man with stubble beard and mustache.
	A middle-aged man wearing eyeglass in head.
	A young woman with curly thick black hair.
	A young woman with long face and long nose.
	A young woman with big lips and big eyes.
	A young woman is surrounded with various flower.
	A young woman wearing necklace.