h_da hochschule darmstadt fachbereich informatik

member of EUT+ EUROPEAN UNIVERSITY OF TECHNOLOGY

ATHENE National Research Center for Applied Cybersecurity

– Master-/Bachelor Thesis –

Leveraging Human Super-detector Visual Attention for Improved Differential Morphing Attack Detection

da/sec

da/sec is the biometrics and security research group and is affiliated with Hochschule Darmstadt and the National Research Center for Applied Cybersecurity (ATHENE). The group is led by Prof. Dr. Christoph Busch and Prof. Dr. Christian Rathgeb. The focus of the group is on highly innovative and applied security research in the special fields of biometrics. Read more on www.dasec.h-da.de.

Motivation & Goal

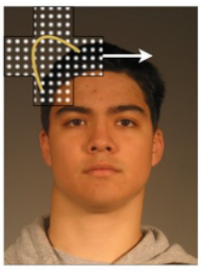
Human and algorithm fusion is gaining importance for operational scenarios across almost all fields. The goal of this work is to explore potential improvement upon current D-MAD systems performance by combining the gained insights of visual attention patterns from well-performing humans into a ViT (or similar SOTA architecture), with conceivable approaches ranging from focusing image patch creation on relevant facial regions determined by high human visual attention over weighting of self-attention windows to introducing a modified cross-attention module which takes into account high-proficiency human knowledge.

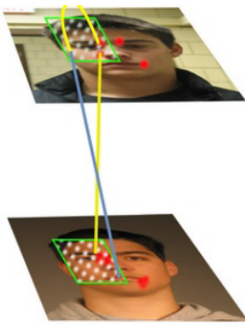
Tasks

- Analyse the State of the art for differential MAD
- Develop one or more strategies to introduce human visual attention into a current deep-learning architecture or training process
- Evaluate the systems' performance in comparison to the previous State of the art

Requirements

- High motivation, interest in security technologies and biometrics
- Good analytical skills
- Programming proficiency (preferably Python)





By Date

By now / by appointment

Contact

Robert Nichols
robert.nichols@h-da.de

h_da
Faculty of
Computer Science

ATHENE–National Research Center for Applied Cybersecurity
da/sec – biometrics and security research group
Schöfferstraße 8b
64295 Darmstadt