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HOCHSCHULE DARMSTADT
UNIVERSITY OF APPLIED SCIENCES

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National Research Center
for Applied Cybersecurity

# – Master-/Bachelor Thesis –
## GAN-based contactless Fingerprint Generation

**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**

For training and testing machine learning algorithms for fingerprint recognition huge databases are required. For this reason it is of interest to generate synthetic images of contactless and contact-based fingerprint samples. Generative Adversial Networks (GANs) are one way to generate a huge variety of different samples from one subject.
The goal of this project is implement a GAN to generate contactless fingerprint samples.

**Tasks**

- Research the state-of-the-art of fingerprint generation using GANs
- Implement a GAN for synthetic contactless fingerprint generation
- Analyse the generated samples with respect to diversity and stability

**We offer**

- Incentives for the student to work on this project (work within scientific context, international collaboration, work on project in collaboration with companies)

**Requirements**

- High motivation and creativity
- Experiences with machine learning especially GANs
- Image processing experiences (esp. OpenCV)

**By Date**

By now / by appointment

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