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## – Bachelorthesis –

### Hand and Finger Detection based on Machine Learning

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da/sec



da/sec is the biometrics and internet security research group and is affiliated with University of Applied Sciences Darmstadt and the Center for Research in Security and Privacy (CRISP). 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 [www.dasec.h-da.de](http://www.dasec.h-da.de).

#### Motivation & Goal

Touchless fingerprint recognition is a fast-growing research topic and achieves a high user acceptance and usability. A simple and flexible acquisition is achieved by capturing one finger photo e.g. with a smartphone and apply a preprocessing on it. To achieve an unconstrained acquisition setup the device should be able to detect the hand pose, provide user feedback and initiate the capturing process automatically. The goal is to evaluate different machine learning strategies for a hand and finger detection and compare them to traditional approaches.

#### Tasks

- Evaluate different machine learning approaches
- Implement a prototype
- Compare the findings to traditional approaches

#### 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
- Image and video processing experiences
- Good programming skills
- Basic knowledge of machine learning

#### By Date

By now / by appointment

#### Contact

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