

Bachelor/Master Thesis

Improving the fingerprint indexing by Triangulation

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, internet security, and digital forensics. Read more on <http://www.dasec.h-da.de/>.

Motivation & Goals

Nowadays, the development of large-scale identification systems leads to an increase of the response time in the system. In this context, indexing (workload reduction) strategies can be employed in order to reduce the search space and hence decrease the time-consuming exhaustive searches. In the context of the fingerprint biometric characteristic, minutiae representation from the delaunay triangulation has been very used for indexing. However, the process of selecting the relevant triplets to build the triangles can lead to a representation less stable due to minutiae varying quality.

Tasks

- Evaluate fingerprint samples at the minutiae level.
- Analyse if the delaunay triangles leading to better minutiae quality can improve the workload reduction in a fingerprint identification system.
- Is it possible to reduce the workload by combining multi-instance (i.e. different fingers of a same subject) triangles?. Here, take into account to compute a quality score per triangle. The quality per triangle could be computed by summing or averaging the quality scores of their minutiae.

We offer

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

Requirements

- Good programming skills in python.
- Passion and high motivation for research

Start / Period

Immediately / by appointment

Contact

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