MASTER THESIS

Fingerprint Alteration Detection

Motivation & Goal   The ever wider application of automatic fingerprint recognition systems to law enforcement and immigration control purposes has motivated attempts to avoid identification by fingerprint alterations. The subjects can try to change their fingerprint patterns in many ways, varying from fingertip abrading, burning and cutting up to sophisticated surgical procedures, and therefore a necessity exists for an automatic detection of altered fingerprints.

Task   The main task is to implement a pipeline for detecting unnatural changes and anomalies in 2D fingerprint images. Apart from development on local datasets, the thesis provides the opportunity to travel and cooperate with our patrners, in order to test and tune the algorithms on a large-scale real-world database of altered fingerprints.

Fig. 1 - Real-world altered fingerprints

Prerequisites

- good programming skills
- interest in graphics and image processing

Contact

Ctirad Sousedik
ctirad.sousedik@hig.no

Christoph Busch
christoph.busch@hig.no

Norwegian Biometrics Laboratory, Nislab, Gjovik University College

Reading and Other Material   Jianjiang Feng; Jain, A.K.; Ross, A., "Detecting Altered Fingerprints", 20th International Conference on Pattern Recognition (ICPR), 2010

Soweon Yoon; Jianjiang Feng; Jain, A.K., "Altered Fingerprints: Analysis and Detection", IEEE Transactions on Pattern Analysis and Machine Intelligence, 2012

J. Ellingsgaard, C. Sousedik, C. Busch: "Detecting Fingerprint Alterations by Orientation Field and Minutiae Orientation Analysis", in Proceedings of the 2nd International Workshop on Biometrics and Forensics, 2014