CASED

- Master-/Bachelor thesis -
Finger Image Quality

CRISP

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Background

Authentication and identification using fingerprints as a biometric character-istic has seen increasing usage over the past decades in a wide range of scenar-ios, spanning access control in recreational resorts and fitness centers, to iden-tification of individuals in border control and forensic investigations. Finger-prints are present in these systems and widely adopted because of their ubiqui-ty, uniqueness and relative ease of acquisition.
Fingerprint recognition is based on the detection and comparison of features inherent in the fingerprint. These features include, amongst others, the global flow of ridges, local ridge structural characteristics, and intra-ridge structures such as sweat pores. These features are negatively affected, to various de-grees, by defects in the dermal layer and circumstances specific to the captur-ing situation. Depending on the degree of the potential image quality degrada-tion, this results in a biometric performance reduction and thus a lower system performance.
Finger image quality is defined as: "a predictor of a matchers performance". The matcher's performance is strictly assessed through the similarity scores and the separation of match and non-match distributions. Fingerprints with a high quality score are expected to have a high comparison score which will be well separated from the non-match distribution. The quality score should thus convey the predicted sample utility which in turn should be correlated with the observed utility.

Task

- Apply image/signal analysis or machinelearning techniques to extract quality features
- Assess the predictive performance of the found features

Prerequisites

- Interest in image and signal analysis
- Familiar with Matlab, OpenCV
- Desire to contribute to international standards

Start

- Immediately

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