2016 IEEE International Conference on Biometrics (ICB), 13-16 June 2016, Halmstad, Sweden

Performance analysis of a hybrid fingerprint extracted from optical coherence tomography fingertip scans

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ABSTRACT:

The Hybrid fingerprint is a local-quality-specific blend of the surface and internal fingerprints, extracted from optical coherence tomography scans. Owing to its origin, and the manner in which it is obtained, the Hybrid fingerprint is a high-quality and secure fingerprint acquisition solution. This research entails a detailed description of the Hybrid fingerprint, the techniques involved to produce it, and a performance analysis of it. A dataset of 282 fingertip scans was established. Two recognised minutiae extraction and fingerprint matching algorithms were applied to assess the performance of the Hybrid fingerprint. The best equal error rate measured was 1.25%. NIST NFIQ scores and orientation certainty level scores indicated the superiority of the Hybrid fingerprint compared to the internal fingerprint.