Abstract

A biometric system is a secured recognition system that is used for the establishment of the personal identification of the individuals using their biometrics which are unique features and make the system more authentic. Our aim, here is to build such a system which gives more accurate confirmation of the individual identities. In this paper, we have used one biometric trait i.e. fingerprint for identification. The features of fingerprints have been extracted using different combinations of existing transforms generated by the Kroneckar product of two transforms at a time to form hybrid transform. The existing orthogonal transforms which are used here are DCT, DFT, Walsh, Haar and Kekre. By generating the energy matrix and extracting the features by varying the energy threshold from 95% to 99.99% efficiency of the fingerprint biometric system obtained is up to 94.64% with the hybrid transform (DCT and Walsh combination).

References

Hough transform,” in Int'l Joint Conf. on Biometrics, October 2011, pp. 1–7.
Signal Processing Conference (EUSIPCO), (Vienna, Austria), pp. 1221-1224, September 2004.
"Identification of multi-spectral palmprints using energy compaction by Hybrid wavelet", 2012
5th IAPR International Conference on Biometrics (ICB), 2012.
Identification using Partial Fingerprint”, 2013 Seventh International Conference on Complex,
Intelligent, and Software Intensive Systems.
6. Manvjeet Kaur, Mukhwinder Singh, Akshay Girdhar, and Parvinder S. Sandhu,
“Fingerprint Verification System using Minutiae Extraction Technique.” World academy of
7. Hoi Le, The Duy Bui, “Online fingerprint identification with a fast and distortion tolerant
11. Jie Y, Fang Y, Renjie Z., Qifa S. fingerprint minutae matching algorithm for real time
system. Pattern Recogn 2006; 39:143-6
13. Mohammed Alkhathami, Fengling Han and Ron Van Schyndel, “Fingerprint Image
Protection Using Two Watermarks Without Corrupting Minutiae”, 2013 IEEE 8th Conference on
Industrial Electronics and Applications (ICIEA).

Index Terms

Computer Science Security

Keywords

Biometrics; Recognition; Transformations; Wavelets; Kroenecker product; Hybrid transform;
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