Transformation based Approach of Combining Iris and Fingerprint Biometric at Confidence Level

Abstract

Unimodal Biometric systems depending on information from single trait has many limitations. These are noisy input, inability to enroll into system, unacceptable error rates, spoofing and universality of traits. Multibiometric systems is likely to enhance the recognition accuracy by integration the evidence presented by multiple sources of information. In this paper a multibiometric system using transformation based fusion of two most used biometric traits, fingerprint and iris at confidence level is proposed. Features are extracted from individual biometric modalities by efficient algorithm. These features are first matched with their corresponding templates to compute the corresponding match scores. Match scores obtained from different traits are then transformed using different techniques and combined by simple sum rule to generate a fused match score. The proposed framework is evaluated using standard database. This system overcomes limitation of unimodal biometric system and gives improved performance accuracy. An equal error rate achieved by this system is 0.400. The benefit of this approach is that, it does not require any estimation as in density based approach or a large number of training score as in classifier based approach. Image or feature level fusion is expected to result in better performance, but this approach outperforms feature level as well as decision level fusion of iris and fingerprint.
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- CASIA Iris Image Database http://www.cbsr.ia.ac.cn/irisdatabase

Index Terms

Computer Science

Security

Keywords

Biometric unimodal multibiometric match score confidence level fusion

ROC.