Abstract

A biometric identification system is an automatic pattern recognition system that recognizes a person by determining the authenticity of a specific physiological and/or behavioral characteristic (biometric) possessed by that person. Unimodal biometric systems often face significant limitations due to sensitivity to noise, intraclass variability, data quality, nonuniversality, and other factors. To improve the performance of individual matchers in such situations may not prove to be highly effective. Multibiometric systems seek to alleviate some of these problems by providing multiple pieces of evidence of the same identity. These systems help achieve an increase in performance that may not be possible using a single-biometric indicator. An effective fusion scheme that combines information presented by multiple domain experts based on the rank-level fusion integration method. The developed multimodal biometric system possesses a number of unique qualities, starting from utilizing principal component analysis and Fisher's linear discriminant methods for individual matchers (face, ear, and signature) identity authentication and utilizing the novel rank-level fusion method in order to consolidate the results obtained from different biometric matchers. The ranks of individual matchers are combined using the highest rank, Borda count, and logistic regression.
Identification of a Person Using Multimodal Biometric System

approaches. The results indicate that fusion of individual modalities can improve the overall performance of the biometric system, even in the presence of low quality data. Moreover better performance can be obtained by using ICP algorithm for ear database.

Reference


Index Terms

Computer Science Pattern Recognition

Key words

Biometric identification system logistic regression
multibiometric system

pattern recognition

principal component analysis (PCA)

rank-level fusion