Abstract

This paper is proposed of determining the gender through fingerprints. Finger prints verification is one of the most reliable personal identification method and it plays a very important role in forensic application like criminal investigation. Finger prints has been used as a biometric for the gender identification because of its unique nature and do not change throughout the life of an individual. Estimating the gender of fingerprints is an emerging field and many methods using the fingerprint physical features like the ridge count and the ridge thickness have been used so far. This study highlights various ridge and minutiae related methods which are based on the basis of some features of finger such as ridge count, ridge density, ridge to valley area ratio(RVA) and ridge width for fingerprint identification and gender classification through
fingerprints. Different algorithms have analysed for fingerprints based gender classification in this paper such as Singular Value Decomposition (SVD), Principle Component Analysis (PCA), Neural Network (NN), Adaptive Resonance Theory (ART), Fuzzy-C Means (FCM), Linear Discriminate Analysis (LDA), k-nearest neighbour (k-NN) classifier. These algorithms provide different recognition rates and performances hence their comparative study can prove useful for the designing of an efficient and robust fingerprint identification system allowing its successful application on security authentication. To classify a given fingerprint image as male or female, we extracted the most significant features such as RVA and Ridge density from the existing database. These features were then used to train the ANFIS classifier. The experimental results showed that the proposed system can be used as a prime candidate in forensic anthropology with a higher accuracy than NN and Fuzzy individually.

References

A Study on Various Methods based on Gender Classification through Fingerprints

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Index Terms

Computer Science Information Science

Keywords

K-nn Classifier Rva Lda Fcm Neural Network Art Pca.