Abstract

Classification means to assign a given fingerprint to one of the existing classes already recognized in the literature. A search over all the fingerprints in the database takes a long time, so the goal is to reduce the search time and computational complexity by choosing an appropriate subset of database for search. Classifying a fingerprint images is and will remain a challenging problem in pattern recognition, due to the minimal interclass variability and maximal intraclass variability. This paper presents some intermediate results on fingerprint classification adopting a fuzzy neural network as decision stage. The classification is based on fingerprint feature extraction, which involves encoding the singular points (Core and Delta) together with their relative positions obtained from a fingerprint image. The output vector is defined in terms of membership values to the five classes, arch tented arch, whorl, left Loop and right Loop.
Three models of fuzzy neural networks were implemented and fingerprint images from CASIA-FingerprintV5 database were used for training and testing these networks. The experimental results have shown that the performance of Fuzzy neural networks is better as compared to the general neural network for fingerprint classification.

References


Index Terms

Computer Science Pattern Recognition

Keywords

Fingerprint Classification Approaches Feature extraction Singular points Fuzzy Neural Network