Fingerprint identification and recognition using backpropagation neural network

ABSTRACT

Biometrics is a technology which identifies a person based on his physiology or behavioral characteristics. Fingerprint identification and recognition is a biometrics method that has been widely used in various applications because of its reliability and accuracy in the process of recognizing and verifying a person's identity. The main purpose of this paper is to develop a fingerprint identification and recognition system. The system consists of three main parts, image acquisition, processing and identification and recognition. Fingerprint images are acquired and stored in the database in the image acquisition stage. These images are then enhanced in the image processing stage by performing gray level enhancement, spatial filtering, image sharpening, edge detection, segmentation, and thinning processes. After the image has been processed, it is fed into the backpropagation neural network as input in order to train the network. After training, the neural network is ready to perform the identification and recognition operations (matching process). A neural network has been successfully developed to identify and recognize the core part of fingerprint images.