Abstract

Fingerprint identification system is mainly consisted of fingerprint achieving, fingerprint classification and fingerprint matching. Fingerprint matching is the key to the system and effects on the precision and efficiency of the whole system directly. Fingerprints are matched mainly based on their fingerprint texture pattern which can be described with the orientation field of fingerprints. A fingerprint, which has the different orientation angle structure in different local area of the fingerprint and has a texture pattern correlation among the neighboring local areas of the fingerprint, can be viewed as a Markov stochastic field. A novel method of fingerprint matching, which is based on embedded Hidden Markov Model (HMM) that is used for modeling the fingerprint’s orientation field, is described in this paper. The accurate and robust fingerprint matching can be achieved by matching embedded Hidden Markov Model parameters which were built after the processing of extracting features from a fingerprint, forming the samples of observation vectors and training the embedded Hidden Markov Model parameters.
Reference


Index Terms

Computer Science
Pattern Recognition

Key words

Fingerprint identification
Fingerprint matching
Hidden Markov Model
Orientation field