Abstract

With the increasing focus on the automatic personal identification applications, biometrics specifically fingerprint identification is the most reliable, secure and widely accepted technique. The automatic fingerprint identification systems have two important steps, such as fingerprint (a) image enhancement and (b) minutiae matching. In this paper, we develop a fingerprint image enhancement as well as matching algorithm based on directional curvature technique (DCT) of local ridges and a modified Tree based matching approach. In the preprocessing stage, the Fingerprint is De-noised, Binarised, Thinned and the approximate core points are calculated by DCT algorithm. The Minutiae points are extracted by template filtering over the image. Identifying all the minutiae accurately as well as rejecting false minutiae is another issue, addressed in this paper. The Minutiae Matching Score is determined using a modified Tree
Matching algorithm with assigned probability value with its level priority. The study reveals that the proposed modified Tree Matching algorithm has better matching percentage for different fingerprints as well as low quality fingerprint image compared to the existing algorithms.

References

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Index Terms

Computer Science
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Biometrics  Fingerprint identification  Directional curvature technique  binarisation  Tree matching algorithm
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