

Improve fingerprint recognition with hamming distance and enriched clustering with GA

Elaheh Kafshi Taghiabadi¹; Mohamad Abdolahi²; Mehrdad Jalali³

¹ Department of Computer, Islamic Azad University, Mashhad, Iran

² Department of Computer, Islamic Azad University, Khaf, Iran

³ Department of Computer, Islamic Azad University, Mashhad, Iran

ABSTRACT

In this paper a new method is proposed to improve fingerprint recognition methods with converting fingerprint features to a simple binary code. To achieve best result after preprocessing and feature extraction, fingerprint image convert to two 64 bits code that lead to small database and flexible comparison. A simple algorithm is used to convert features to binary codes with more speed than algorithms using feature coordinate. Also, due to independent to real coordinate and location it has better accuracy. Two level thresholds are used to convert gray level image to binary image and very good quality with less false minutia is achieved that lead to more accuracy and speed. Preprocessing methods used in this paper are effectively robust on rotation and scaling in fingerprint. To increase the accuracy and speed a classification method is used to reduce the search space. Enriched clustering with GA using in this method and better result and high accuracy is achieved.

KEYWORDS

Biometric systems; minutiae extraction; fingerprint recognition; hamming code; Genetic Algorithm