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Similarity Score Computation for Minutiae-Based Fingerprint Recognition

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Abstract

This paper identifies and analyses the factors that contribute to the similarity between two sets of minutiae points as well as the probability that two sets of minutiae points were extracted from fingerprints of the same finger. Minutiae-based fingerprint matching has been studied extensively in the literature, however, there is still a need for major improvement especially when it comes to comparing partial fingerprints. This paper looks at existing similarity measures; discusses their performance at discriminating between minutiae points from fingerprints of the same finger and of different fingers. The matching problem has been broken down into smaller subproblems which are easier to define and solve. Each of the scores discussed are analyzed and tested to see if they are able to deal with each of the matching subproblems. Results show that most scores in the literature fall in one of two ends of matching; good at discriminating impostor matches, or good at discriminating genuine matches. The authors propose a score which bridges these two types of scores and enables optimal impostor and genuine comparisons.