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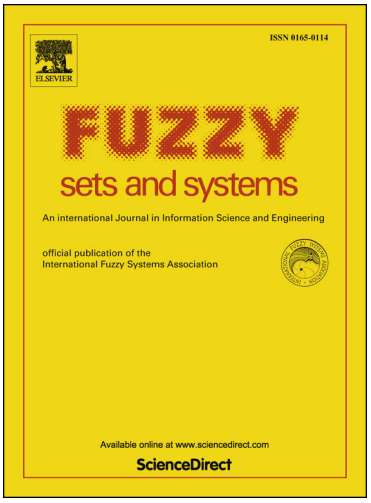

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Fuzzy Pattern Recognition-based Approach to Biometric Score Fusion Problem

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Abstract

This paper introduces a novel approach for biometric score fusion problem that can be viewed as a fuzzy pattern recognition one. In this approach, the matching score space is considered as consisting of two fuzzy sets ("genuine" and "impostor"). First, each individual matcher is modeled as a fuzzy set, using an automatic membership function generation method, in order to handle uncertainty and imperfection in matching scores. Then, the new fuzzy matching scores are fused with a fuzzy aggregation operator, and the final decision is given. Experimental results on well-known benchmark databases show that our method significantly improves single best biometric matcher performance, and reaches comparable results to several relevant methods. Moreover, the proposed method exhibits high robustness to small size of client training data.

Keywords: Multi-biometric, verification, score level fusion, fuzzy set theory, fuzzy pattern recognition

1. Introduction

A biometric system is essentially a pattern recognition system that recognizes a person based on his feature vector [1]. This latter is derived from a specific physiological or behavioral characteristic that the person possesses.

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