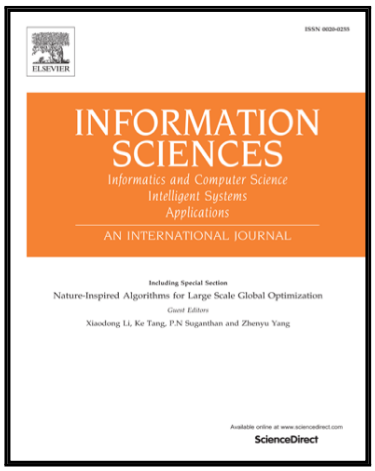

An Efficient Slap Image Matching System based on Dynamic Classifier Selection and Aggregation

Puneet Gupta, Phalguni Gupta

PII: S0020-0255(17)30814-9
DOI: 10.1016/j.ins.2017.06.043
Reference: INS 12965

To appear in: *Information Sciences*

Received date: 22 January 2016
Revised date: 26 June 2017
Accepted date: 29 June 2017

Please cite this article as: Puneet Gupta, Phalguni Gupta, An Efficient Slap Image Matching System based on Dynamic Classifier Selection and Aggregation, *Information Sciences* (2017), doi: 10.1016/j.ins.2017.06.043

An Efficient Slap Image Matching System based on Dynamic Classifier Selection and Aggregation

Puneet Gupta[a], Phalguni Gupta[b]

[a]*Department of Computer Science and Engineering, Indian Institute of Technology Kanpur, Kanpur-208016, India*
[b]*National Institute of Technical Teachers' Training and Research, Kolkata, Kolkata-700106, INDIA*

Abstract

The performance of any existing slap fingerprint image based matching systems is limited because it uses a fixed classifier, a fixed fusion rule and considers all fingerprints in the slap image without giving any importance on the quality of the images. In this paper, fingerprints present in slap images are matched by selecting and aggregating several classifiers based on the quality of fingerprints. The proposed system avoids the matching of poor quality fingerprints and fuses matching scores of only moderate quality fingerprints using average or quality based fusion. However, for verification, poor quality fingerprints are also considered if there does not exist enough number of moderate quality fingerprints. For poor quality fingerprint matching, density score based fusion technique which fuses the matching scores obtained from a global feature matcher and a local feature matcher has been used. The proposed system has been tested on a database of size 10,800 slap images collected from 1,800 different hands.

Keywords: Quality based fusion, Adaptive Fusion, Multiple fingerprints, Dynamic classifier selection, Classifier aggregation

Email addresses: puneet@cse.iitk.ac.in (Puneet Gupta), director@nitttrkol.ac.in (Phalguni Gupta)