

{tag}

{/tag}

International Journal of Computer Applications

© 2011 by IJCA Journal

Volume 33 - Number 7

Year of Publication: 2011

Authors:

Romaissaa Mazouni

Abdellatif Rahmoun

10.5120/4033-5774

{bibtex}pxc3875774.bib{/bibtex}

Abstract

Fusion of matching scores of multiple biometric traits is becoming more and more popular and is a very promising approach to enhance the system's accuracy. This paper presents a comparative study of several advanced artificial intelligence techniques (e.g. Particle Swarm Optimization, Genetic Algorithm, Adaptive Neuro Fuzzy Systems, etc...) as to fuse matching

scores in a multimodal biometric system. The fusion was performed under three data conditions: clean, varied and degraded. Some normalization techniques are also performed prior fusion so to enhance verification performance. Moreover; it is shown that regardless the type of biometric modality , when fusing scores genetic algorithms and Particle Swarm Optimization techniques outperform other well-known techniques in a multimodal biometric system verification/identification.

Reference

- Arun Ross, Anil K.jain, 2004. Multimodal Biometrics: An overview ,in Proc of 12th European Signal Processing Conference, Sep 2004 , pp.1221-1224.
- Fawaz Alsaade, ,2008 . Score-Level Biometric Fusion,Phd thesis at Hertfordshire University.
- F. Alsaade ,A. Rahmoun ,2009. A Method to enhance multimodal biometrics using neural networks and genetic algorithms ,In Signal and Image Processing(SIP 2009).
- F. Alsaade, A. Rahmoun , M. Zahrani, 2010 . On Improving Multimodal Biometrics Verification Using Genetic Algorithms,In E-MEDISYS 10 Conference Program .
- Sabra Dinerstein , Jonathan Dinerstein , Dan Ventura, 2010 . Robust Multi-Modal Biometric Fusion via Multiple SVMs, In ICB '09 Proceedings of the Third International Conference on Advances in Biometrics ,pp.743-752.
- Nina Taheri Makhsoos,Reza Ebrahimpour,Alireza Hajiany, 2009 . Face Recognition Based on Neuro-Fuzzy System. In IJCSNSInternational Journal of Computer Science and network Security,Vol.9 No.4 , pp.319-326.
- Pejman Tahmasebi, Ardeshir Hezarkhani, 2010. Application of Adaptive Neuro-Fuzzy Inference System for Grade Estimation: Case Study,Sarcheshmeh Porphyry Copper Deposit, In Australian Journal of Basic and Applied Sciences, vol 4,pp.408-420.
- Castillo, V. C., El Debs, M. K. E., Nicoletti,M.C, 2007. Using a modified genetic algorithm to minimize the production costs for slabs of precast prestressed concrete joists. Engineering Applications of Artificial Intelligence, vol 20 , Issue 4, pp.519-530
- Kaylan. Veeramachani, Lisa.Ann Osadciw, Pramod K Varshney, 2003. Adaptive Multimodal Biometric Fusion Algorithm Using Particle Swarm. In Syracuse,NY , pp.13244-1240.
- F. Alsaade,A. M. Ariyaeenia,A. S. Malegaonkar,M. Pawlewski ,S. G. Pillay, 2008. Enhancement of multimodal biometric segregation using unconstrained cohort normalization, In Pattern Recognition , Vol 41 Issue 3 , pp.814-820.

Index Terms

Computer Science

Artificial Intelligence

Key words

Adaptive Neuro Fuzzy Systems (ANFIS)

Genetic Algorithm (GA)

Support

Vector Machine (SVM)

Unconstrained Cohort Normalization (UCN)