{tag}

{/tag} IJCA Proceedings on Machine Le<u>arni</u>ng:

Challenges and Opportunities Ahead © 2014 by IJCA Journal

MLCONF

Year of Publication: 2014

Authors:

K. Sindhu

L. Latha

{bibtex}mlconf1014.bib{/bibtex}

Abstract

In biometric security system still fingerprint authentication is a challenging task for the altered and compressed images. Apart from the Automatic Fingerprint Identification System(AFIS), the altered, blurred and compressed images are still having quality issues. This paper presents an efficient multi-model biometric system based on multiple fingerprint images which includes altered fingerprint images also. The system utilizes fingerprint scanner to simultaneously collect fingerprints of multiple fingers on a hand in one image. The collected multi-finger images are first segmented to get individual fingers. Quality of each individual finger is analysed and its minutiae points are extracted. The minutiae points of each finger is extracted from multiple fingerprint images and compared with the corresponding individual finger of the input fingerprint image to get matching score of that finger. Matching score between two or more fingerprint images is obtained by fusing matching scores of various fingers along with their respective image quality and relative accuracies. Prediction of genuine user or impostor user is based on the fused matching score.

Refer

ences

- A. Antonelli, R. Cappelli, D. Maio, and D. Maltoni, "Fake Finger detection by skin distortion," in IEEE Transactions on Information Forensic and Security, Vol. 1,No. 3,Sep 2006.

- Anil K. Jain, "Latent Fingerprint Matching:Fusion of Rolled and Plain Fingerprints," Department of Computer Science and Engineering, Michigan State University.

- A. M. Bazen and S. H. Gerez," Elastic Minutiae Matching by Means of Thin-Plate Spline Models," Proc. 16th Int'I Conf. Pattern Recognition, pp. 985-988, 2002.

- Almansa, A., Lindeberg, T.: "Fingerprint enhancement by shape adaption of scale-space operators with automatic scale selection". IEEE Transactions on Image Processing, Vol 9, No. 12 pp. 2027–2042 (2000).

- Chaohong Wu, Sergey Tulyakov and VenuGovindaraju,"Image Quality Measures for Fingerprint Image Enhancement,"Center for Unified Biometrics and Sensors (CUBS) SUNY at Buffalo, USA.

- D. Maltoni, D. Maio, A. K. Jain, and S. Prabhakar, Handbook offingerprint recognition, New York: Springer, 2003.

- E. Lim, X. Jiang, W. Yau, "Fingerprint quality and validity analysis", IEEE International Conference on Image Processing (ICIP 2002), 1 2002 pp. 22–25.

- H. Chen, J. Tian, and X. Yan, " Fingerprint matching with registration pattern inspection, " in Proc. AVBPA, 2003, pp. 327–334.

- JianjiangFeng, Anil K. Jain, Arun Ross, "Detecting Altered Fingerprints," in 2010 International Conference on Pattern Recognition.

- K. Jain, "Biometric recognition: Q&A", Nature, Vol. 449, pp. 38-40,Sept. 6, 2007.

- M. Tico and P. Kuosmanen," Fingerprint Matching Using an Orientation-Based Minutia Descriptor," IEEE Trans. Pattern Analysis and Machine Intelligence, vol. 25, no. 8, pp. 1009-1014, Aug 2003.

- RoliBansal, Pritisehgal and punambedi, "Minutiae Extraction from FingerprintImages," in IJCSI International Journal of Computer Science Issues, Vol. 8, Issue 5, No 3, Sep 2011.

- Tong, X., Tang, X., Shi, D. " Adjacent orientation vector based fingerprint minutiae matching system", In: IEEE Proceedings of the 17th International Conference on Pattern Recognition (ICPR '04), vol. 1, pp. 528–531 (2008).

- Tai Pang Chen, Xudong Jiang and Wei Yun Yau,"Fingerprint Image Quality Analysis," Institute for Infocomm Research.

- Xinjian Chen, JieTian and Xin Yang, " A New Algorithm for Distorted Fingerprints Matching Based on Normalized Fuzzy Similarity Measure, " in IEEE Transactions on Image Processing, Vol. 15, No. 3, March 2006.

Computer Science

Index Terms Image Processing

Keywords

Fingerprint Altered Images Fusion Image Quality.