A codeword-based indexing scheme for fingerprint identification

Le T.H., Bui T.D.
Human Machine Interaction Laboratory, College of Technology, Vietnam National University, Hanoi

Abstract: Fingerprint authentication system is now one of the most reliable personal identification methods. However, it is difficult to design a system such that it satisfies requirements in both accuracy and lookup speed due to large fingerprint database and complicated fingerprint measures. Therefore, fast and accurate fingerprint indexing plays very important role in fingerprint authentication system. In this paper, we present a new approach which is able to improve the performance of fingerprint indexing process. Moreover, this technique itself provides privacy property for fingerprint system which is not mentioned in previous indexing techniques. © 2008 IEEE.

Author Keywords: Biometric template protection; Error correcting code; Fingerprint authentication; Fingerprint indexing

Index Keywords: Biometric template protection; Code words; Error correcting code; Fingerprint authentication; Fingerprint authentication systems; Fingerprint database; Fingerprint identifications; Fingerprint indexing; Fingerprint systems; Indexing process; Indexing schemes; Indexing techniques; Lookup speed; New approaches; Personal identifications; Authentication; Biometrics; Computer vision; Identification (control systems); Robotics; Indexing (of information)

Year: 2008
Art. No.: 4795719
Page : 1352-1356
Link: Scopus Link

Correspondence Address: Le, T. H.; Human Machine Interaction Laboratory, College of Technology, Vietnam National University, Hanoi; email: hoilt@vnu.edu.vn

Conference date: 17 December 2008 through 20 December 2008
Conference location: Hanoi
Conference code: 75841
DOI: 10.1109/ICARCV.2008.4795719
Language of Original Document: English

Abbreviated Source Title: 2008 10th International Conference on Control, Automation, Robotics and Vision, ICARCV 2008
Document Type: Conference Paper
Source: Scopus
Authors with affiliations:

- Le, T.H., Human Machine Interaction Laboratory, College of Technology, Vietnam National University, Hanoi
- Bui, T.D., Human Machine Interaction Laboratory, College of Technology, Vietnam National University, Hanoi

References:

- Bazen, A.M., Gerez, S.H., Fingerprint matching by thin-plate spline modeling of elastic deformations Pattern Recognition, (36), pp. 1859-1867
- Boer, J., Bazen, A., Cerez, S., Indexing fingerprint database based on multiple features ProRISC 2001 Workshop on Circuits, Systems and Singal Processing
- Brown, L., A survey of image registration techniques ACM Computing Surveys
- Cappelli, R., Lumini, A., Maio, D., Maltoni, D., Fingerprint Classification by Directional Image Partitioning IEEE Trans. on PAMI, 21 (5), pp. 402-421
- Cappelli, R., Maio, D., Maltoni, D., Indexing fingerprint databases for efficient 1 : N matching Sixth Int.Conf. on Control, Automation, Robotics and Vision, , Singapore
- Fingerprint verification competition, , http://bias.csr.unibo.it/fvc2002
- Gonzalez, W., Eddins, Digital Image Processing, , Prentice Hall
- Jain, A., Prabhakar, S., Hong, L., Pankanti, S., Filterbank-based fingerprint matching Transactions on Image Processing, 9, pp. 846-859
- Tsai-Yang, J., Venu, G., A minutia-based partial fingerprint recognition system Pattern Recognition, 38 (10), pp. 1672-1684
- Karu, K., Jain, A.K., Fingerprint Classification Pattern Recognition, 18 (3), pp. 389-404
- Nandakumar, K., Jain, A.K., Local correlation-based fingerprint matching Indian Conference on Computer Vision, Graphics and Image Processing, pp. 503-508
- Ruud, B., Connell, J.H., Pankanti, S., Ratha, N.K., Senior, A.W., Guide to Biometrics, , Springer Verlag
- Liu, T., Zhu, G., Zhang, C., Hao, P., Fingerprint Indexing Based on Singular Point Correlation ICIPO5
Annual IEEE Symposium