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A REVIEW ON SCOPE OF BIOMETRICS AND ITS APPLICATION

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ABSTRACT: Biometrics is technology of identifying uniquely human subjects by means of measuring & analyzing one or more inherent behavioral or physical traits. These human body characteristics include fingerprints, voice patterns, eye retinas & irises, facial patterns & hand dimension. Biometric systems are used to authenticate identity by measuring physiological and/or behavioral characteristics. So, two main categories of biometrics are 'physiological' and/or 'behavioral'. The physiological category includes physical human traits such as palm print, hand shape, eyes, veins, etc. The behavioral category includes movement of human, such as hand gesture, speaking style, signature etc. The measurement of these traits helps within authentication using biometric systems. In this paper the study has been made about existing biometric system along with their working and application in modern era.

Keywords: Biometric, behavioral traits, physical traits, fingerprints, palm print, facial patterns.

[1] INTRODUCTION

"Biometric systems include applications making use of biometric technologies & which allow identification automatically, verification or authentication of a natural person. In principle, processing of personal data involving use of a biometric system is considered by privacy experts to be only justified within places requiring a high level of security & absolute identification procedures. The implementation of similar systems should take place within a transparent way & therefore appropriate information should always be provided to employees. Where introduction of biometric systems is necessary, employers should opt for that system which provides a high level of comfort within terms of privacy requirements. It is possible within view of technological progress achieved within this field.

[2] PALM PRINT RECOGNITION

Palm print recognition is one of biometrics available at present. One of most successful biometric systems is palm print recognition system. This system recognizes on basis of palm print of a person. It is reliable due to fact that print patterns are always unique. Palm print is made up of principal lines, wrinkles, & ridges. Three kind of features are within palm print: geometry features (width, length, & area of palm), line features (principal lines, coarse wrinkles, & fine wrinkles), & point features (minutiae & delta points). Palm print verification uses these features to verify identity of a person. However, geometrical features, such as width of palm could be faked easily by making a model of a hand.

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Delta points & minutiae only could be extracted from fine resolution images. Principal lines & wrinkles are very important to discriminate between different palm prints & they could be extracted from low resolution images. Palm lines are very irregular & even within same palm they have quite different directions, shapes, & contrast, thus this is very difficult task to extract these lines.

Thus palm print recognition is a very interesting research area. Much work has already been done within this area, but there is still a lot of scope to make systems more efficient. Here, we have tried to analyze already existing systems & there by propose a new approach.

A biometric system might be used for personal recognition instead of token-based methods such as a passport, a physical key & an ID card or Knowledge base method such as a password. In token-based, “token” could be stolen or lost easily while knowledge could be forgotten.

[3]EXISTING RESEARCHES

There have been several researches in field of biometrics.Some of them are research related to support vector machines in finger print, comparison of 3d Biometric modalities, Multi-Biometric Personal Authentication with 3d Face and Iris Images ,Face Recognition by purposive control of observer motion. There have been several technical as well as review paper related to Biometric. This section discusses the objectives and results of existing research papers that are related to proposed research work.

In 2001 wrote by C. Chang and C. Lin. LIBSVM: a library for support vector machines in finger print

A fingerprint in its narrow sense is an impression left by friction ridges of a human finger. Recovery of fingerprints from a crime scene is an important method of forensic science. Fingerprints are easily deposited on suitable surfaces (such as glass or metal or polished stone) by natural secretions of sweat from eccrine glands that are present in epidermal ridges. These are sometimes referred to as "Chanced Impressions". In a wider use of term, fingerprints are traces of an impression from friction ridges of any part of a human or other primate hand.

In 2015 wrote by Damon L. Woodard, Timothy C. Faltemier, Ping Yan, Patrick J. Flynn, Kevin W. Bowyer in 2015 A Comparison of 3D Biometric Modalities

This paper presents structure of a 3D facial authentication system. Focus is on acquisition & processing of 3D facial data, different 3D facial representations i.e. models & various 3D facial features. Advantages & disadvantages of different representations & features are discussed.

In 2014 wrote by Dr. T. Karthikeyan Multi-Biometric Personal Authentication with 3d

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Face and Iris Images Using Sum Rule Based Fusion of Matching Score

Image pre-processing techniques for eigenface based face recognition. "They have presented a range of image processing techniques as potential pre-processing steps,which attempt to improve performance of eigen face method of face recognition.

In (1994) wrote by Dyar. C.R "Face Recognition by purposive control of observer motion", Computer Vision and Pattern Recognition

A face recognition system is a group of programs for automatically recognize a person from a digital image or a video frame from a source.Ways to do this is by comparing selected characteristics from image and face database.

In 2003 wrote by Gerhard X. Ritter; Joseph N. Wilson, " Handbook of Computer Vision Algorithms in Image Algebra

Since the field of image algebra is a recent development it will be instructive to provide some background information .In the broad sense, image algebra is a mathematical theory concerned with the transformation and analysis of images. Although much emphasis is focused on the analysis and transformation of digital images, the main goal is the establishment of a comprehensive and unifying theory of image transformations, image analysis, and image understanding in the discrete as well as the continuous domain.

In 2003 wrote by L. Ma, and T. Tisse, "Personal Recognition Based on Iris Texture Analysis

With an increasing emphasis on security, automated personal identification based on biometrics has been receiving extensive attention over the past decade.Iris recognition, as an emerging biometric recognition approach, is becoming a very active topic in both research and practical applications.In general,a typical iris recognition system includes iris imaging, iris liveness detection, and recognition.This paper focuses on the last issue and describes a new scheme for iris recognition from an image sequence.

[6] Area of Application

Biometric systems are basically used for security and accountability purposes.

1. **For Security:** Protect Sensitive Data, High degree of individuality certainty within transactions & Create databases with singular identities.
2. **For Accountability:** Improve auditing/reporting/record keeping & time keeping & for efficiency. Reduce password-related problems. It is also used within following areas: enterprise-wide network security infrastructures, secure

electronic banking, investing & other financial transactions, retail sales, law enforcement, health & social services".

REFERENCE

1. Abhilash Kumar Sharma, Ashish Raghuwanshi,Vijay Kumar Sharma,"Biometric System- A Review ",International Journal of Computer Science and Information Technologies, Vol. 6 (5) , 2015, 4616-4619.
2. Ahmad Tasnim Siddiqui " Biometric Authentications to Control ATM Theft"Asian Journal of Technology & Management Research [ISSN: 2249 – 0892] Vol. 05 –Issue: 01 (Jan -Jun 2015)
3. Azeema Sultana, Dr. M. Meenakshi, "Design and Development of FPGA based Adaptive Thresholder for Image Processing Applications" ,on line access(2006)
4. Bartoli, A (2006)"Groupwise Geometric and Photometric Direct Image Registration," Proc. 17th British Machine Vision Conf., Sept. 2006.
5. C. Chang and C. Lin. LIBSVM: a library for support vector machines finger print 2001. Software available at http://www. csie. ntu.edu. tw/cjlin/libsvm, 2001.
6. C. Fancourt, L. Bogoni, K. Hanna, Y. Guo, and R. Wildes, and N. Takahashi, and U. Jain, "Iris Recognition at a Distance", in Proceedings of the International Conference on Audio and Video-Based Biometric Person Authentication, 2005, pp. 1-13.
7. Damon L. Woodard, Timothy C. Faltemier, Ping Yan, Patrick J. Flynn, Kevin W. Bowyer in 2015 A Comparison of 3D Biometric Modalities
8. Dr. T. Karthikeyan in November 2014 Multi-Biometric Personal Authentication with 3d Face and Iris Images Using Sum Rule Based Fusion of Matching Score
9. Dyar. C.R (1994) "Face reconiging by purposive control of observer motion", Computer Vision and Pattern Recognition, 2015. Proceedings CVPR '94., 1994 IEEE Computer Society Conference
10. D. Zhang and Y. Wang. (2009)Gender Recognition Based on Fusion of Face and Multi-view Gait.(2009) In LNCS, volume 5558, pages 1010-1018. Springer, 2009.
11. Elham Ashari , Richard Hornsey, " FPGA Implementation of Real-Time Adaptive Image Thresholding" ,online access .(2015) ISSN: 0975-0290 2397 Analysis and Machine Intelligence, IEEE Transactions on, Volume:31 , Issue: 7
12. E. Yahya, and M. J. Nordin, "A New Technique for Iris Localization in Iris

Recognition System", Information Technology Journal, Vol. 7, No. 6, 2008, pp. 924-928.

13. Gao , B. Cao , S. Shan , X. Chen , D. Zhou , X. Zhang and D. Zhao (2008) "The CAS-PEAL large-scale Chinese face database and baseline evaluations", IEEE Trans. Syst., Man., Cybern. A, Syst. Humans, vol. 38, no. 1, pp.149 -161 2008.
14. Gerhard X. Ritter; Joseph N. Wilson, " Handbook of Computer Vision Algorithms in Image Algebra" CRC Press, CRC Press LLC ISBN:0849326362 Pub Date: 05/01/2003
15. Girish Tialk, Shivamurthy M, "Applications of Biometric In Automobiles"International Research Journal of Engineering and echnology(IRJET), Volume: 05 Issue: 02 | Feb-2018
16. Harsha H, Sumalatha K.A,"Biometric Palmprint Recognition System: A Review"International Journal of Advanced Research in Computer Science and Software Engineering,Volume 4, Issue 1,January2014 ISSN: 2277 128X.
17. Hu L and Wei Z,(2009) "An Algorithm of Glass-Image Recognition Based on Wavelet Packet Decomposition, "International Conference on Computational Intelligence and Natural Computing, vol.1, 2009, pp.206-209.
18. J. Daugman, "New Methods in Iris Recognition", IEEE Trans. on Systems, Man, and Cybernetics, Vol. 37, No. 5, 2007, pp. 1167-1175.