

An Overview and Analysis Based on Biometric Framework Technique and Fingerprint Biometric Technology

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Abstract— Biometric technique area a strange and reliable structure and creation biometric, recognition has pulled in various researchers and achieved great success. This paper of overview of analysis work is to how is process, biometric are review and principal of the biometric techniques, taking both secure information and personal integrity into consideration. But my point of view every individual has unique characteristics. It is more secure and often more convenient. Biometrics are extra of high accuracy in today's can be used for identification biometric framework. The reason for our paper is to overview and analysis to know how to use biometric system and working for creation assessment whether the combination of structure and creation and unique mark biometric method used success execution that may not be believable utilizing a friendless technique innovation. The term biometrics encompasses together which means that Biometric information is more and more useful and can replace passwords identity verification of user's. This improves privacy for both user and administrator. Various method are used to discover and study and outcome result, biometric functions are advantage and for their strength and properly working in the completion of the biometric technology.

Keywords—Network Security, Biometric Technique, Fingerprinting Biometric, Numerous Biometric System, New and Emerging Biometric Techniques

I. INTRODUCTION

Biometrics technology is a generally used for unique identification and examine and after various method to apply validation. It provide verification technique are most important because all method to be used but verifying the method and technology and are also known as verification. Verification method to valid technique is required preliminary process, resources and interiority. Biometric tools are based on measuring the unchanging physical characteristics of an individual to uniquely identify that person. Fingerprint recognition is the oldest and the most deployed biometric recognition technique. It is one of the most economical biometric PC user techniques for user authentication which has a very high accuracy rate. The Technology of Biometrics Currently, it is the unique within the universal, an individual. this techniques physical identification fingerprint mapping to palm ridge pattern there are also identify method finger, hand line(geometry) iris (retina), mapping on structure(facial recognition) and also are used behavioral technique like voice and stroke pattern. The biometrics, on the other word, identify that an identity matches a unique personal feature.[1] be inside many authentication checking of scanning ridge, geometry on hand, iris wrist recognition.

II. RELATED WORK

Today identification and verification Is very serious problem the accessibility field of user authentication to imitation of identification mark. And required to undisclosed PINs this method is highly successful in immigration control against the law working, to secure of public place like banking, metro station. And very security based area like airports. To protect by public from identity scam to permit easier right to use to public services. A biometric validation is a pattern based recognition system.

III. METHODOLOGY

They are four stages to be entirely properly categorized enrolment, storage, acquisition and matching. in this process the first step the process of enrolment is when a sample of exist phenomena. In other word the raw biometric data, is sense and digitized. The second step concerns searching for unique identity that is pulling out of significant sign. In the process of third stage to be define the biometrics as a trait is converted into a reference template using framework. This template is stored with additional information of the individual such as unique id .Constructed of these landmarks and compacted into an electronic representation of this

biometric sample. in other word to representation binary number in combination of zero and one.[2] In a memory of a called a frame buffer. in biometric device or database, to represent the biometrics of that particular individual. Biometric pattern stored in transformed form data on frame work .all framework in stored Metadata dictionary. Framework can access data and retrieval for data base dictionary. This database can either be centralized or distributed as integrity. [3]The final step is the analysis authentication process is the original testing of an individual identity. Actual testing is complete matching process because to check authentication to be stored data base. Data base is created template. This is carried out when the stored template is matched and retrieval process is also used in a data base. The solution of problem of this final stage is YES when the First template to be stored either or Second templates are a match and a NO. Framework when they are to a large extent dissimilar. The biometric refer from derived (inherent biometric threat) fingering threat process mostly flexibility for demand due for its. The first one refers to the error rate of determine and digital quality of signal. Threat is connected and relatively in digital binary signal and affected on the client. And also affected for server. To be more serious mainly affected by error of the pattern recognition system. a real user of the server using Biometric basic feature all pattern and algorithm.[4] The server attack is considered to be checking recorded digital signal and after testing and calculating match. And also threat Server level that means to hack some identity personal unique marks the information and data can be access and removed. To be reduced for using debugging tools and control evaluate the biometric information and unwanted threat to be resumed for client and server level for purpose on hacking pattern recognition system.

IV. STUDY OF BIOMETRIC APPROACHES

Biometric technology validation process and tool and many fields are covered. Biometric method is the most secure technology and suitable Feature is determine for primary exclusive physically identity. very common some biometric technique involve finger print biometrics developed such as like a include hand line is also called geometry(palm and ridge) and iris method to scanning by eyes and after called retinal process and mapping to face structure to identify is called facial process and similar behavioral feature like human signature ,human voice, keystroke pattern. All of this biometric technology uses of security reason and also used modern era. [5]To be access identity for person .its validation of people and certification.

A. Fingerprint based identification

A finger tip is creating on at the patterns it's like fingerprint. It is most useful in multiplicity of ideas recognition identification to ridge patterns matching to fingerprint verification. Fingerprint multispecialty to established ridge

patterns and ultrasonic features. Finger print to allow restrict for patterns matching and binary signal or digital (zero and one) more unique. A finger print better device is access and uses to be easy any other biometric technology .it also used scanning method to be translate for processing s/w such as port scanning, half scanning, full scanning to be search framework of finger print images.[6][7] Finger print method to identified registration and after check on registration and used by verification method. Verification method also checks by registered user and authentication of unique identity. Ridge finger is also define as a crossover line, core of finger, bifurcation on a ridge finger, ending of ridge, island, delta sign and ridge pore to analysis .fingerprint scanner first take image of fingertips and change interested in logical code and verify first to identify or authenticate a fingerprint.[8]



Fig.1

Biometrics Different Technique

Overview and analysis classify of a biometric identification technique-

- Biometric data base value and algorithm.
- Biometric data assessment and evaluated [9] quality mining
- Assessment value after evaluated. Data to be stored and after analysis to be stored data base verses actual data base

B. Numerous Biometric Systems:

Facial based technique

The face recognition participates an analysis of facial characteristics. It is a face based structure analysis system is automatically verifying a single from a digital structure or a video framework for a face impression structure sources. Face expression to be evaluated by face value and preferred facial algorithm. a facial value to be x-axis and Y axis to put the value and after the solution is proof on facial algorithm. At the end point of algorithm given that point of expression to store in a data base is as well as the facial data base.

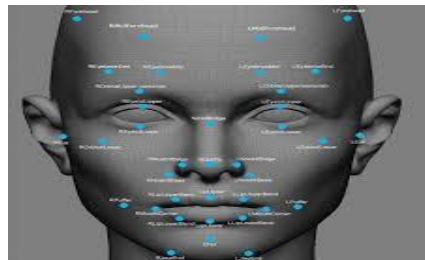


Fig.2

IRIS

Iris identification is secure Numerous Biometric Systems. Iris is click on image and evaluates some special sense to Identify digital image strategy of validation and identification.[8]The iris authentication process accepts correct technique .this technique rejection rate is very low. Because it's working for principal based technique.



Fig.3

Finger print

Human finger print is unique identity. Its mainly identification based numerous unique impression like as a ridges (delta sign). Its top of the layer is finger and lower skin layer is called valley.[11] Only its manner to each and every human. There are many human patterns and the minutiae points are analysis. and various method to be check authentication computerized method verifying a match and identification unique identity.



Fig.4

Finger Vein

Biometric technology are very most important role in finger vein .its vein patterns are finger of inside .vain are connected to heart (blood circulation).in other words finger vein which carry blood and properly supply blood vessels reached by heart using vein. Each vein is unique and some characteristics like as a behavioral and physical. It provides a as well security reason because that protects information and report to access to be control .this feature secure as compare other biometric method.[12] finger vein blood absorbs some dark out line seen in infrared light. It's finger vein pattern to be recognized by some special camera and picture in the infrared lights. This image capture then after malformed into pattern data all along with save as a pattern of any people biometric authentication data. To be stored image as compare to previous saved image and identify unique identity.

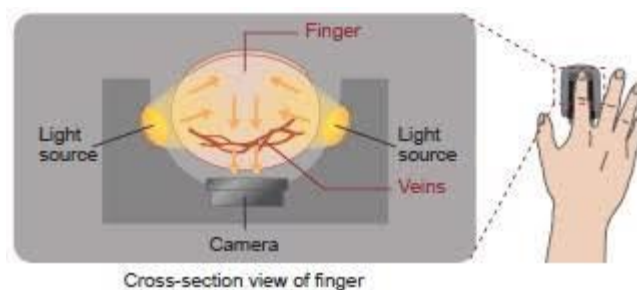


Fig.5

Voice recognition

Voice recognition is a Numerous Biometric Systems technology during voice spoken to analyzed for digital computer are verifying phrases and sound ,words to be check and identification spoken by person and determine being are untouched into wave form electrical signals. and create voice print then compare to previous voice sample these signals are capture voice and after to be stored voice print Database. voice are mainly used for better communication conversation for our life.

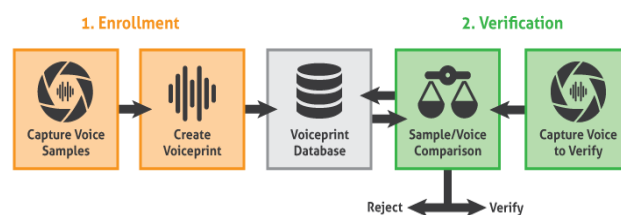


Fig.6

Lip identification

The biometric technology to established modern era technique. It's used for human identification forensic process. Forensic science helps us to human lips determine and many criminal problem to be solve identify to human lips. Very actual real fact biometric numerous method, [13]. Its fact are shining of lips, dry on lips, dark color on lips are measure on reflection according to situation .so identify human being identity. Lip biometric to also helps us to facial expression and voice identity method.



Fig.7

DNA

DNA method is also based on science laboratory. medical science is origin by principal. This technique better performance in laboratory analysis. as a form of identification. DNA is a chemical structure that forms chromosomes. for example two people are same identity to show then dna method to be used some testing and evaluate. people identity like as blood sample, piece of hair check In the laboratory. and after laboratory result to be according to specify different identity.

C .Innovative and rising biometric techniques are:

Human scent identification

This study of odors is a growing field but is complex and Difficult one of them the complexity of odors fallows from the sensor nature of smell. The perception of odors persistence is hard to investigate use expose to a permanent chemical elicit different response based on sensor and physiological signal and interpretation of this signal influences in experience , expectations' , personality or situational factor.

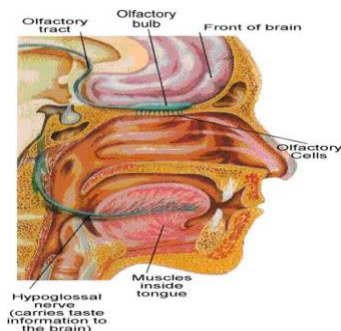


Fig.8

EEG biometrics

EEG biometric methods represented by EEG human brain sensitive behavior on EEG-based biometric security identity framework be used brain activity.[13] its also used brainwave signals. Which are generated by brain scalp and collect by electrode placed over scalp, be additional private, responsive. This method promise to provide better secure biometric move toward for human brain identification and brain wave authentication. In emerging biometric specifically are recent used in neural artificial intelligent.

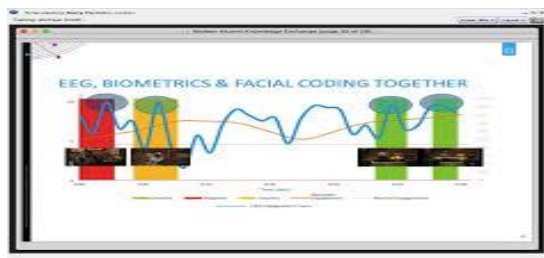


Fig.9

Skin spectroscopy

Skin spectroscopy method is advance system with high machine learning process its method to be used involuntary spectral signature and face images. Multispectral to used higher spectral camera is analyzed .its take image of face with higher resolution ratio based skin identification. and after image to be store in data base. data base stored area is called frame buffer. After image for feature purpose analysis and testing to identify illume by recovering of lighting power in storage image.

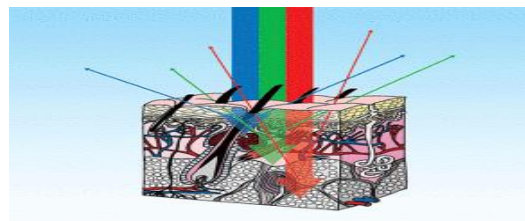


Fig.10

Knuckles texture

This biometric method based on verification system and verifying identity on the texture based on the hand knuckles. An knuckles approaches like as a image with scaling that means resize the image, rotation that means rotate by angle and also used by translation method. its denoted by tx and ty and transform to image one position to another position .its method to be isolated by hand recognized stored image. Its technique used by digital image processing technique. Knuckles image are define black and white [14-18] image in biometric characteristics. Many modal are used and support is proposed approaches like as hidden Markova. Knuckles methods also classified in proximal knuckles and distal knuckles verification by biometric technique.

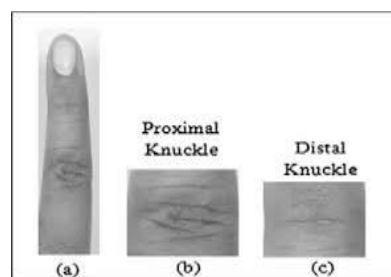


Fig.11

Finger nail recognition

Finger nails identification used by nail identity method. Biometrics applications various dissimilar techniques are research of a complex design acquisition based system lighting equipment to be used to click on acquire image of the nail. Nail plate are under the skin. Its image to identify and compare to other finger nail individual. then after authentication by unique to each nail finger.

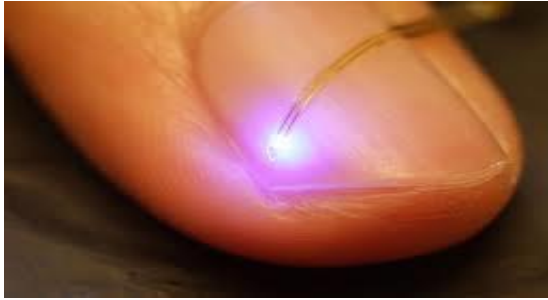


Fig.12

V. CONCLUSION AND FUTURE SCOPE

Biometric technique to over view and analyzed working based on finger print like as hand line(geometry)and palm identification by used fingerprint .biometric approaches to examine by various method to be check by identification and verification technique is analysis and testing fingerprint to specify top layer skin and under skin to different identity to represent an unique data sign. This sign also unique mark as a single person .it also analyzed for ridge patterns and compare to minutiae points. Biometric a real vein validation identity method to be process of finger vein to examine by human body blood circulation by heart. As known as numerous biometric system is refers sound, phrase, words to analyzed digital signal .its identify voice identification system. as human brain wave activity are to check by EEG method. EEG based method using neural network intelligence. a skin spectroscopy method is purpose using high level learning machine. in used higher capturing camera and stored by image in database. Concluding human scent identification of odors is a growing field but is complex and difficult one of them the complexity of odors follows from the sensor nature of smell. Lip biometric also helps us to facial expression and voice identity method. We are concluding that Biometric method to be provides better security application. It helps to avoid build application, security attacks. It is easy to use and more generous to user and very less complex in nature. Identity is very less as it is fingerprint based biometric identification method .Future scope of Biometric method is very successful in our everyday life. Strength of new emerging science. Biometric technique evolution the new developed application in research areas. And also the method have better analyzed capability of perform critically forensics investigation depend on fingerprint study. The identify method to be identity for security reason and allow security inspection and invention of group individuality. Dissimilar type of technique other future capabilities are prerequisite of data to be analyzed and result stores after processing retrieval process, integrity.

REFERENCES

- [1] S. Prabhakar, S. Pankanti, and A. K. Jain, "Biometric Recognition: Security and Privacy Concerns", IEEE Security and Privacy Magazine, Vol. 1, No. 2, pp. 33-42, 2003
- [2] Fingerprint Matching Using Two Methods Mrs. Hemlata Patel*, Pallavi Asrodia**International Journal of Engineering Research and Applications (IJERA) ISSN: 2248-9622 pp 857-pp560
- [3] D. Landgrebe, Hyper spectral Image data analysis. IEEE process vol. 19, pp. 17–pp 28, 2002.
- [4] Kalyani Mali Samayita Bhattacharya International Journal of Advanced Research in Computer and Communication Engineering Vol. 2, Issue 7, July 2013 pp162-pp172
- [5] A. K. Jain, L. Hong, S. Pankanti, and R. Bolle, An identity authentication system using fingerprints *Proc. IEEE*, vol. 85, no. 9, pp.1365–pp1388, Sep. 1997.
- [6]. T. Nakamoto, A. Fukunda, and T. Moriizumi. Perfume and FlavorIdentification by Odor-Sensing System Using Quartz-Resonator Sensor Array and Neural Network Pattern Recognition. Volume18/19, pp. 282-pp290, 1994
- [7] P.Inbavalli1, G.Nandhini2International Journal of Computer Science and Information Technologies, Vol. 5 , 2014, pp 6270-pp6274 Body Odor as a Biometric Authentication
- [8] Ramya M*; Dr. V. Krishnaveni**; Dr. K. S. Sridharan*** Effective Approches and Challenges Focused in IRIS Image Recognition – A Survey Asian Journal of Research in Social Sciences and Humanities Vol. 6, No. 11, November 2016, pp. 565-580.
- [9] S. Garg, A. Kumar, and M. Hanmandlu. Biometric authentication using finger nail surface. International conference on Intelligent Systems Design and Applications (ISDA), . IEEE pages 497–502, Nov. 2012.
- [10] Joseph Kalunga*, Simon Tembo American Journal of Bioinformatics Research Development of Fingerprint Biometrics Verification and Vetting Management System Joseph, 6(3): pp99-pp112 ,2016
- [11] Rupinder Saini , Narinder Rana "Comparison of Various Biometric Methods". International Journal of Advances in Science and Technology (IJAST) ISSN 2348-5426 pp24-pp30
- [12] Rabia Jarfi and Hamid R. Arabina, "A Survey of Face Recognition Techniques", Journal of Information Processing Systems, Vol.5, No.2, pp41-69 June 2009.
- [13] Michal Choras (2009) ," The lip as a biometric". February 2010, issue 1 Volume 13 pp 105–111
- [14] Dr.Haitham Kareem Ali1,Dr.Yasir Khalil Ibrahim2 Energy Conservation using Voice RecognitionJournal of Information Engineering and Applications www.iiste.org ISSN 2224-5782 (print) ISSN 2225-0506 (online) Vol.3, No.11 pp59-62, 2013
- [15] Montri Phothisonothai, "An investigation of using SSVEP for EEG-based user authentication system", Signal and Information Processing Association Annual Summit and Conference (APSIPA) 2015 Asia-Pacific, pp. 923-926, 2015.
- [16]S. Marcel and J. D. R. Millan. Person authentication using brainwaves (EEG) and maximum a posteriori model adaptation. IEEE Trans.Pattern Anal. MachIntell. 29(4) pp743-pp 752, April 2007.

- [17] Nitin Tiwari, Overview & Comparison of Inactive and Active Finger Stamping. International journal of scientific engineering Research IJSER March vol-3 issue 3 2012
- [18] Nitin Tiwari, an overview An Overview of Techniques for Framework of Finger Stamping international journal of electronics and computer science engineering June 2012. ISSN code 2229-5518

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