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AUTHORIZING ONLINE SECURITY SCHEME OVER OUTSOURCED DATA

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Abstract

With the widespread research of biometric identification schemes, the user data itself has an important security issue. This is because of the data is not replaceable and is not secret. Variety of security problems are available in Mono modal biometric system. In order to overcome these problems, an additional layer of security is needed. In this project we can implement privacy based Multimodal biometric system to improve the authentication system with higher security. The Multimodal biometric include the fingerprint and Sclera features. The features of fingerprint include minutia and ridge values and then detect the sclera parts from eye images. After that encrypt the features of the fingerprint and sclera, details are stored as a template. Finally, match the features using a Euclidean distance algorithm to improve the accuracy. Experimental results shows that proposed system, improve security than the unimodal system.

Index Terms- biometric, Sclera, multimodal biometric, eye images, minutia and ridges.

I. INTRODUCTION

A. Biometrics

Biometric identification system uses physical or behavioral characteristics. The physical characteristics are related to the shape of the body. For example (eye colour , eye shape, body hair, skin tone). Similarly the behavioral characteristics which involves fingerprint or iris- pattern. For example (voice ID, signature analysis).

B. Functionality

The biometric application involves several factors.

The essential six factors to be used as follows

- Universality refers that each person should possess the trait.
- Uniqueness means trait should be different for individual that is distinguished from one another.
- Permanence involves a trait with ‘good’ permanence which will be invariant with respective matching algorithm.
- It relates to measure the trait or extraction of relevant features.
- Performance refers to the quality, time and being strong f technology.
- Acceptability relates to how well individuals accept the technology.
- Proper biometric system will depend on above this application.

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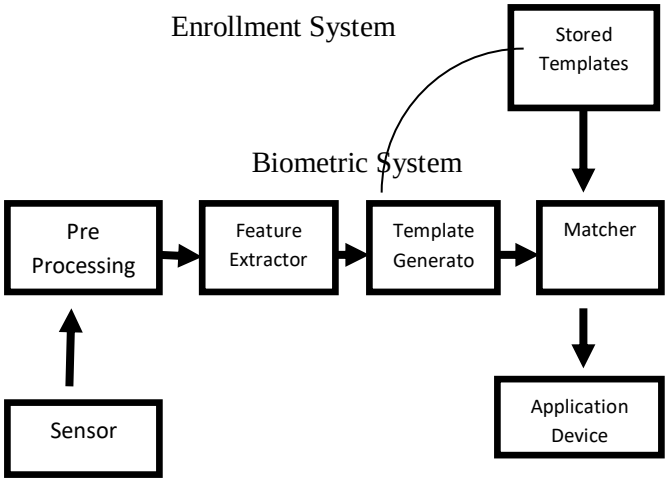


Fig 1. Modes of Biometric System

Fig1. illustrate the two basic modes of biometric system. It includes verification and identification codes. Individual uses enrollment as a first step in biometric system. In enrollment fingerprint and sclera features of an individual is captured and stored. First block (sensor)-it has to acquire all the necessary data. Second block (pre processing)-it has to remove artifacts from the sensor to enhance the input. Third block (feature extraction)-it has to extract the necessary features. This step is important as the correct features needed to be extracted. Fourth block (template)-it is the system of extracting the relevant characteristics from the source. Fifth block (match)-using matching algorithm the obtained template is compared with the existing templates. Sixth block (application device)-it depends upon the characteristics measurement and user requirements.

C. Multimodal biometric

In order to overcome the limitation of the uni modal, multimodal system is preferred. It uses multiple sensors or biometric for higher security. It can obtain set of information from the same marker (for example: multiple images of iris) or information from different biometrics (for example: fingerprint scan and also using voice recognition).

II. LITERATURE SURVEY

First I have referred the paper of Feng Liu author with the title of "Study on novel curvature features for 3D fingerprint recognition". The techniques used in the proposed system is curvature features matching which involves the merits of simple features extraction approach and also contain the demerits of less accuracy. Second I have referred the paper of Farhana Siddiqui author with the title of "Wireless attendance management system based on fingerprint recognition". The techniques used in the proposed system is microcontroller based fingerprint recognition which involves the merits of prevent the data loss and also contain the demerits of need hardware support. Third I have referred the paper of Suganthi Sharmila author with the title of " Security improvement for web based banking authentication by utilizing fingerprint". The techniques used in the proposed system is fingerprint encryption which involves the merits of provide security and also contain the demerits of confusion in features extraction. Fourth I have referred the paper Sarbijt Kaur author with the title of " Fingerprint matching algorithm

using advanced pre-processing technique". The technique are used in the proposed system is preprocessing technique which involves the merits of remove the noise and blur and also contain the demerits of not good in real time environment. Fifth I have referred the paper of Yingzi Du author with the title of "Scale invariant Gabor descriptor-based non-cooperative iris recognition". The techniques used in the proposed system is the Gabor wavelet is incorporated with scale-invariant feature transformation (SIFT) which involves the merits of relevant features extraction for enrollment and also contain the demerits of there is no multiple angle enrollment.

III. METHEDOLOGY

A. Existing system

Every organization has security as a main priority. This is because of vital information such as details of various projects, research and development activities can be leaked by hacking (for example: decryption of static passwords). An extra layer of security is needed to avoid such complex situations. The proposed project presents a solution to this problem by designing the two factor authentication system. It is the method of verification by combining a physical factor of user such as fingerprint, eye iris, voice etc. Multimodal Authentication provides an additional security and acts as a resistance for attackers for hacking the personal data and online accounts. The existing system includes extraction of minutiae location and angles. To identify the minutiae location, crossing number is used in the fingerprint image. It also includes key authentication for security and homomorphic algorithm is used for encrypt the data and stored in particular device.

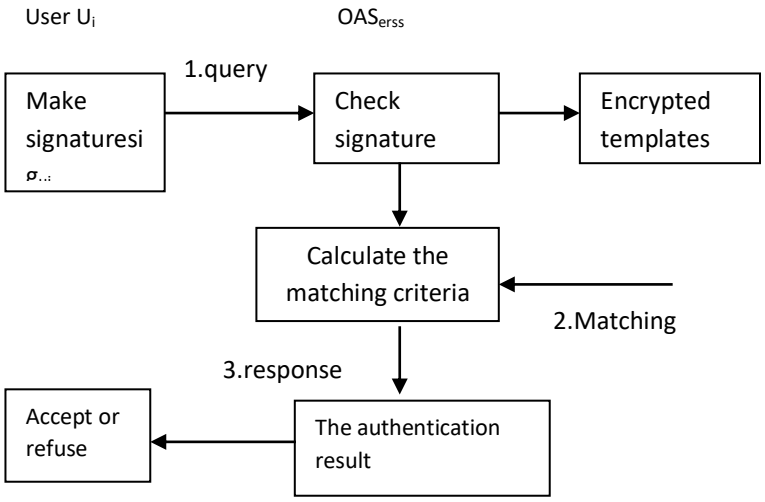


Fig 2. Existing Block Diagram

B. DISADVANTAGES

- It is possible to steal the hash key or the pseudo-random numbers of party.
- Accuracy is less to implement distance based authentication.

IV. PROPOSED SYSTEM

The data are registered with the minutia edge point. Then, the data can be encrypted and uploaded for the individual person to be registered in the system. The encrypted data will be in the symmetric form so that data can be registered accurately. If the unknown person wants to capture the registered data it may identify the wrong person and reject it. Here, the finger and sclera are considered biometrics parameters. In this system we can include multimodal biometric framework which includes the fingerprint and sclera features. These features are encrypted and stored in database. At the time of login, user can input both fingerprints and sclera features. These features are matched with the in encrypted data base and then successful verification, user allowed to access the system. Verification of input latent fingerprint and sclera images against stored reference images is done by finding the Euclidean distance between the two corresponding template codes in encrypted form. It is highly expected that the value of Euclidean distance should be zero or as minimum as possible. Smaller value of Euclidean distance should indicates closest match found and large value indicates very low probability of finding corresponding match.

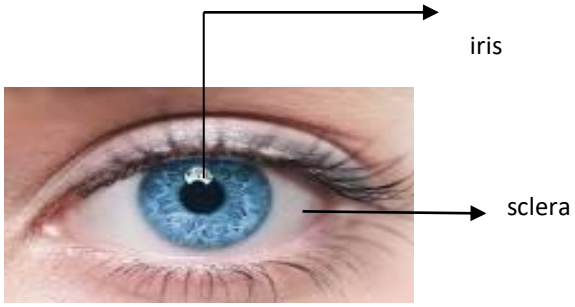


FIG 3. Image of Eye

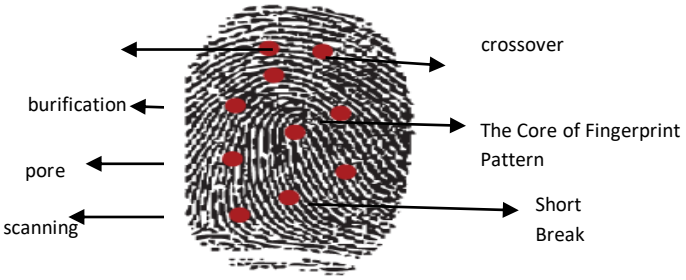


FIG 4.Fingerprint Scanned Image

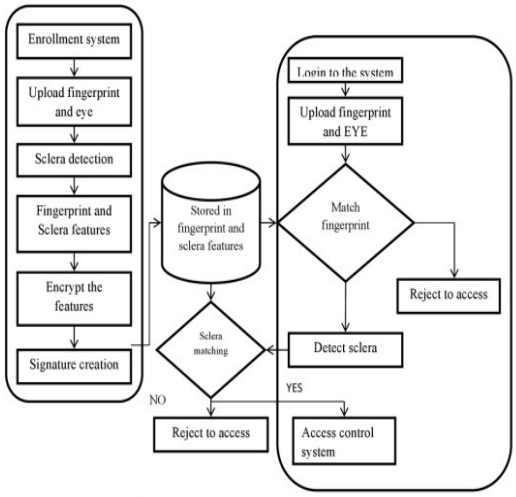
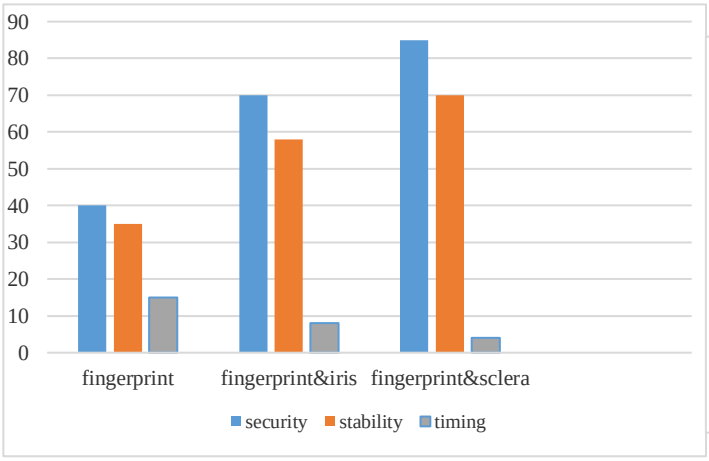


Fig 5.Proposed Block Diagram

A. ADVANTAGES

- Provide high level security
- Reduce the time complexity
- And computational complexity can be reduced
- Secure database is maintained

V. MODELGRAPH&COMPARISION TABLE



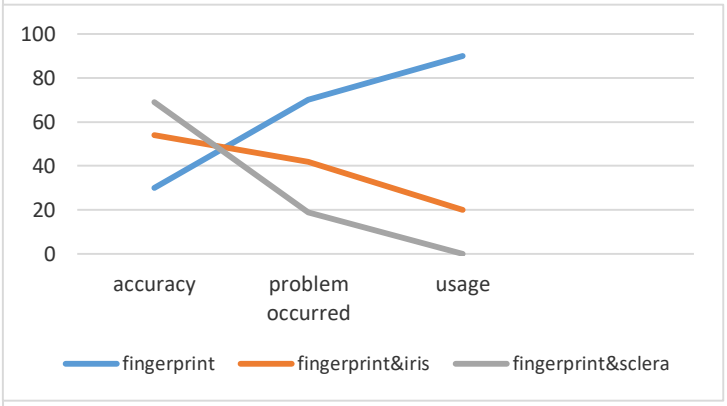


Fig 6 Comparison of Security

Table 1.Comparison of Single mode & Multimode

S.no	Methods	Fingerprint	Fingerprint & Iris	Fingerprint & sclera
1	Application	Universal	Finance & Banking	More accuracy &privacy
2	Security	Medium	High	Very high
3	Accuracy & efficiency	Less	Medium	High
4	Problem occurred	Security less	Non-healthy eye image	-
5	Coded pattern	Fingerprint pattern	Fingerprint & iris pattern	Fingerprint &sclera pattern
6	Long term stability	Low	Medium	High
7	Timing	40sec	23sec	14sec

VI. RESULT AND CONCLUSION

Biometrics system is an important scheme as it Protects our personal data and accounts **.** However, In order to overcome the security problems, multimodal biometric System is used. It is possible to hack the data and accounts. In uni modal system, but two traits of the same person cannot be hacked. Therefore, multimodal is more secured compare to other systems. In future, we can extend the framework to implement In various real time applications and using sensors to capture the biometric features real time. The extended framework also includes the various distance measurements to improve the accuracy in verification system.

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