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Physical Security: A Biometric Approach

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Abstract:

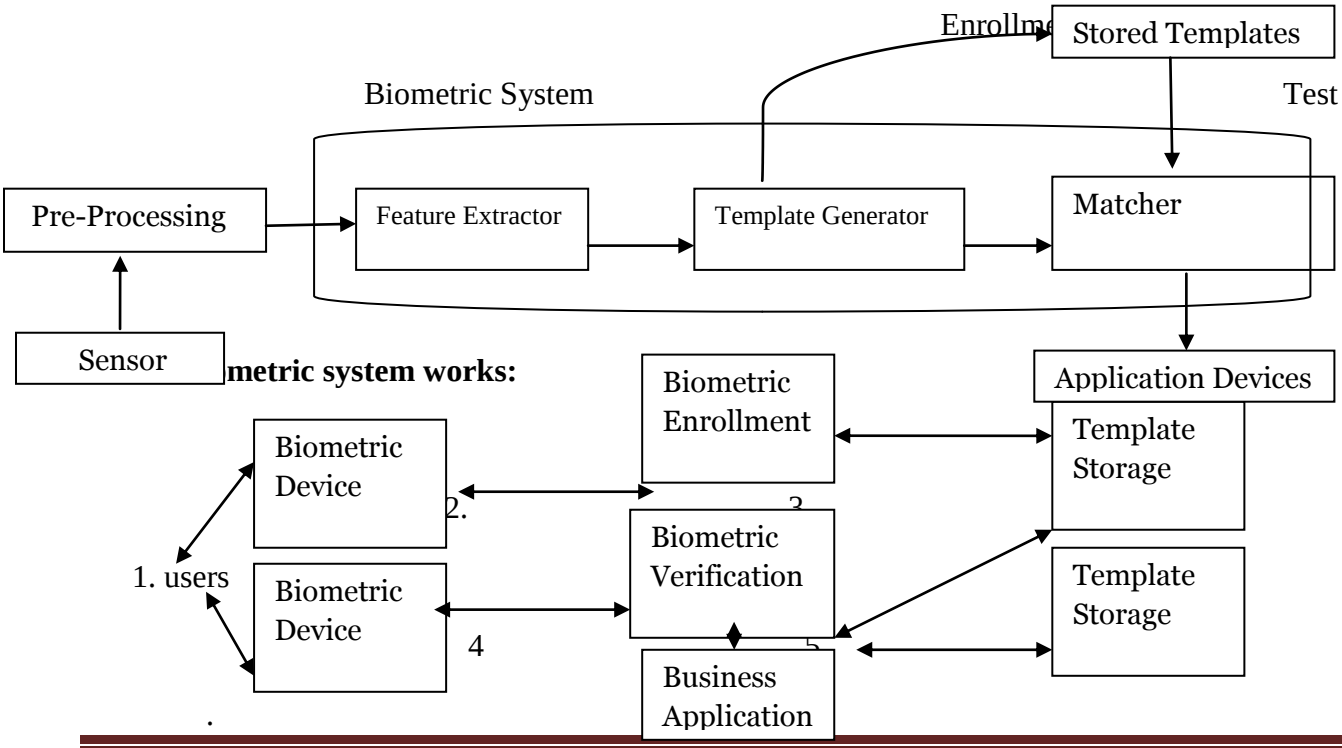
In this paper we have discuss the Biometrics security .The biometrics term is becoming highly important in computer security world. The human physical Characteristics like fingerprints, face, hand geometry, voice and iris are known as biometrics. Biometrics is the today's high security application help for the minimized the error system rate and unauthorized access. In this term paper discuss about the future and present use of Biometrics security and various type of the Biometrics.

Introduction:

Biometrics is the physical security approach in this used the physical characteristics of the human body like face, hand geometry, voice, fingerprints and iris for the security purpose. The main goal of the Biometrics is providing the security for prevents unauthorized access to the third party. Biometrics used for the Specific to physiological and behavioral characteristics.

Mainly Biometrics have is two type of categories Physiological and Behavioral.

Physiological – also known as static biometrics: Biometrics based on data derived from the measurement of a part of a person's anatomy. For example, fingerprints and iris patterns, as well as facial features, hand geometry. **Behavioral** – biometrics based on data derived from measurement of an action performed by a person and, distinctively, incorporating time as a metric, that is, the measured action. For example, voice (speaker verification).



metric system works:

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(1)Firstly capture the chosen biometric (2)after choosing the biometric then process the biometric and extract and enroll the biometric template; (3) after enroll the biometrics template store the template in a local repository, a central repository, or a portable token such as a smart card; (4) live-scan the chosen biometric;(5) process the biometric and extract the biometric template; (6) match the scanned biometric template against stored tem-plates; (7) provide a matching score to business applications; (8)record a secure audit trail with respect to system use.

Biometrics Application:

(i)Forensic

The use of biometric in the law enforcement and forensic is more known and from long date, it is used mainly for identification of criminals.

Identification of criminals- The biometrics is also used for identify the criminal through the fingerprints of the criminal which is left by the criminal at the crime scene. Collecting the evidence in the scene of crime (e.g., fingerprints) it is possible to compare with data of suspects or make a search in the database of criminals. Through this process the police caught the criminal easily.

Surveillance --using cameras one can monitor the very busy places such as stadiums, airports, meetings

Probation and home arrest - biometric can also be used for post-release programs (conditional released) to ensure the fulfillment of the probation, parole and home detention terms.

(ii)Government

There are many application of the biometry in the government sector. An AFIS is the primary system used for locating duplicates enrolls in benefits systems, electronic voting for local or national elections, driver's license emission, etc.

National Identification Cards - the idea is to include digital biometric information in the national identification card.

Voter ID and Elections - During the registration of voter, the biometric data is captured and stored in the card and in the database for the later use during the voting. The purpose is to prevent the duplicate registration and voting.

Driver's licenses - In many countries the driver license is also used as identification document, therefore it is important to prevent the duplicate emission of the driver license under different name. With the use of biometric this problem can be eliminated.

Benefits Distribution (social service) - the use of biometry in benefits distribution prevents fraud and abuse of the government benefits programs.

Employee authentication - The government use of biometric for PC, network, and data access is also important for security of building and protection of information.

Military programs - the military has long been interested in biometrics and the technology has enjoyed extensive support from the national security community.

(iii)Commercial

Banking and financial services represent enormous growth areas for biometric technology, with many deployments currently functioning and pilot project announced frequently. Some applications in this sector are:

Account access - The use of biometric for the access to the account in the bank allow to keeping definitive and auditable records of account access by employees and customers.

ATMs - the use of biometric in the ATM transaction allows more security,

Online banking - Internet based account access is already widely used in many places, the inclusion of biometric will make more secure this type of transactions from home.

Telephony transaction - Voice-scan biometric can be used to make more secure the telephone-based transactions. In this type of application, when the costumer calls to make a transaction, a biometric system will authenticate the customer's identity based on his or her voice with no need of any additional device.

PC/Network access - The use of biometric log-in to local PCs or remotely through network increase the security of the overall system keeping more protected the valuable information.

Physical access - the biometric is widely used for controlling the access to building or restricted areas.

E-commerce - biometric e-commerce is the use of biometrics to verify of identity of the individual conduction remote transaction for goods or services

Advantage and Disadvantage of the Biometrics:

The advantage of the Biometrics system is the Increase the security level of the system. But the devices and implementation of the biometrics system is the very expensive. The Biometrics reduces the password administration costs. Biometric identification is accurate. Biometrics systems are user friendly. There's the option of employee tracking. Biometrics approach is the Faster it means the Speed of Biometrics– operation in seconds. Another advantage of the Biometrics is that the Decentralization…relatively inexpensive and requires no trained or skilled operating personnel, Ultra validity …not susceptible to forgery or theft and Convenience...no need to carry identity cards or similar items . The some main disadvantages of the Different-Different Biometrics System is: In voice recognition, an illness such as a cold can change a person's voice, making absolute identification difficult and impossible. In fingerprint, it can make mistakes with the dryness or dirty of the finger's skin, as well as with the age. A disadvantage related to face recognition is that people's faces change over time.

Future of the Physical Security: A Biometric Approach:

(i) Future Trends in Biometrics:

Body Odor –In the future the body odor can be digitally recorded for

identification. A British company,Mastiff Electronic System Ltd. Is working on such a system.

DNA Matching – In the future the DNA is used for the security which is the ultimate biometric technology that can produce proof positive identification of an individual.

Keystroke Dynamics – Keystroke dynamics, also referred to as typing rhythms, is an innovative biometric technology.

(ii)Facing the future of the biometrics:

The future of the biometrics is so much bright. For more than a century, use biometrics for the investigation of the criminal using the fingerprint to identify the suspects which left at the crime scene.

(iii)Why the biometrics –possible future market

After reading the currently published paper and information about the biometrics, one of the main reasons for Appling the biometrics is – security. Biometrics is not fundamentally wrong. Indeed, if automatic devices for identity recognition were more prevalent in locations such as airports, police stations and other areas that are sensitive or involve high concentrations of public activity, they would surely make the life of criminals and terrorists much more difficult.

(iv)The Future of Biometrics (2020):
Widespread adoption is 5 years away. The biometrics industry is on the verge of Profitability. Biometrics will bring a new era of security, Convenience and user friendliness. Biometric systems will become faster, cheaper and more accurate as the technology evolves. Biometrics will end privacy as we know it. Biometrics will not fulfill their promise for Years to come.

Comparison of the Biometrics:

The comparison of the biometrics features like fingerprint, face, hand geometry, voice and iris have the characteristics like universality, Uniqueness, permanence, and performance and Measurability are based on the various Factors. Characteristics are different for each biometric type. They can be measured in high, low and medium. Table 1 compares the biometric features based on different factors. Universality: Everyone should have it Uniqueness: No two individuals should have the same value of characteristics Permanence: It should be invariant over a given period of time Performance: It should give accuracy and speed. Measurability: It must be easy to measure.

TABLE1
The comparison of Biometric characteristics

Biometric characteristics	Univer-sality	Uniqueness	Permanence	Performance	measurability
Finger Print	M	H	H	H	M
Hand Geometry	M	M	M	M	H
Face	H	H	M	L	H
Iris	H	H	H	H	M
Voice	M	L	L	L	M

Conclusions:

The main conclusion of this term paper is the biometrics system is mainly used for the security. The biometrics system is the self recognition system which uses the physical characteristics of the human body like face, hand geometry, voice, fingerprints and iris. Biometrics system is very suitable for the security but it has some limitations. In this term paper discuss the various application of the biometrics system used in the different department like: forensic, government, commercial department. The biometrics term is becoming highly important in computer security world.

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