

IMPORTANCE OF STANDARDISATION IN BIOMETRIC DATA FOR DIGITAL FORENSICS

The paper referred to -

<https://scihub.se/https://ieeexplore.ieee.org/document/8093529>

Biometrics are what distinguish different people. The usage of such biometrics to tell people apart is known as a biometric system.

- Physiological Systems – The usage of fingerprints, retina, iris, DNA, hand, face, voice etc.
- Behavioral Systems – Unique behaviour of people like keystrokes and speech.

Fingerprint Systems

Fingerprints are used because they are easy to extract and are low cost. After taking a person's fingerprint, a series of processes are followed –

- Noise Reduction
- Demonstration
- Feature Extraction

All extracted properties need to be stored in a database for the registered person to access the system.

FACE RECOGNITION

Face recognition though started in the military is now used by almost all agencies to track criminals using street cameras. Face recognition systems first identify the location of facial features such as hair, eyes, nose, lips etc. Then a recognition process is used to extract numerical data from the face elements. The face has to be as natural as possible during the recognition process, without cosmetics or hair covering the face.

IRIS RECOGNITION

The iris is the coloured and pigmented part of the eye. It is used in biometrics as it does not deteriorate fast. A picture of the eye is

taken by using an illuminated high-resolution infrared reflector. Then feature selection is done using image processing techniques.

RETINA RECOGNITION

The retina system is very difficult to obtain and hence it is not used alone but is instead used along with the iris system for increased security.

BEHAVIOURAL RECOGNITION SYSTEMS

The most widely used behavioural recognition system is signature analysis. Several characteristics such as the number of strokes, speed, time and other characteristics are used in analysing a signature. The main disadvantage of this system is that with a good amount of study, several of these features can be mimicked.

BIOMETRIC STANDARDS

Biometric systems must pass a lot of checks before becoming a standard. Some of these checks are mentioned below.

- Universality
- Usefulness
- Interoperability
- Affordable Costs

And several other factors are considered before making them universal standards. Several organisations have been formed to ensure national and international security.

Examples are –

National organizations:

- American National Standards Institute (ANSI)
- British Standard Institute (BSI)
- Japanese Industrial Standards Committee (JISC) International Standard Institute
- Standards developing organizations (SDO)
- International Organization for Standardization (ISO)

- International Electrotechnical Commission (IEC)
- International Telecommunication Union (ITU)

IMPORTANCE OF STANDARDISATION

Biometric data is now being used in daily mobile phones and laptops for security purposes. Precautions have to be taken so that people can't access these and commit crimes. Digital Forensics needs to establish standards for these biometric systems in order for them to be used in legal processes and for evaluation.