

Hand based Multi-biometric Fusion System for Authentication of Identity

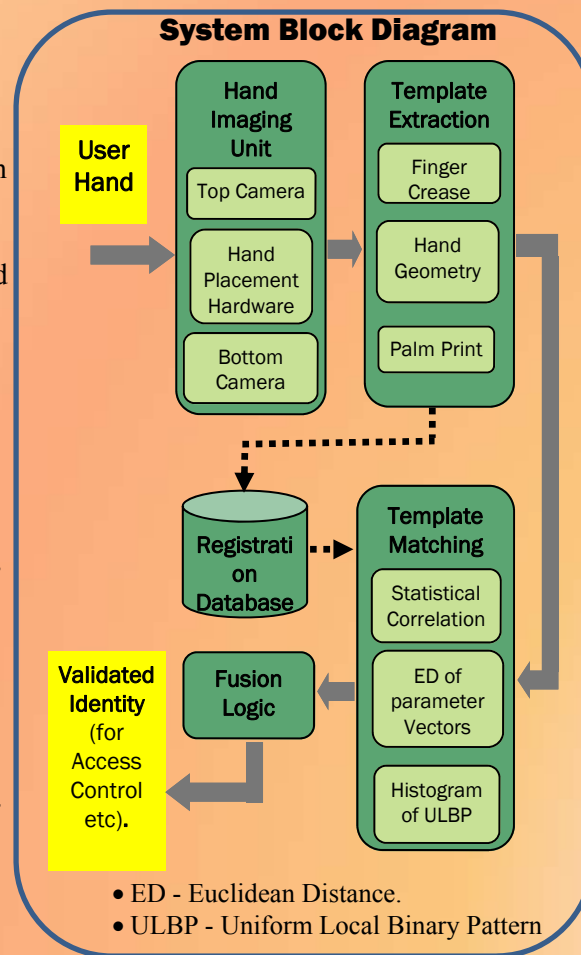
Background Information

Biometrics uses physiological characteristics or behavioral traits of human to establish personal identity and to detect impostors. A biometric system was developed earlier in SESSD based on 2-D crease image patterns on fingers from nail side of the hand. The matching technique has been awarded Indian Patent No. 255627.

Multi-biometric System Development

Multimodal biometrics uses combination of two or more biometric modes in a single system. SESSD has recently developed a Hand based Multi-biometric Fusion System (HMFS), carrying out recognition based on combination of Finger Crease, Palm Print and Hand Geometry. Multi-biometric fusion could be effected in sensor, feature, score or decision level. HMFS in present version performs fusion in decision level. Advantages of HMFS include:

- Convenient collection of crease, palm and geometric signature by single hand placement
- Universality of the hand biometric
- Easy client acceptance
- Improved recognition accuracy & fault tolerance



System Features

- Functions in verification mode
- Decision level multi-biometric fusion strategy
- Software execution on Single Board Computer
- Biometric matching time is ≈ 2 sec
- Template size is typically 75KB
- Biometric s/w. libraries are developed in house
- Physical size (w×h×d): 240 × 415 × 280 mm

HMFS Development Status

Laboratory trials of the HMFS revealed performance figures of :

- True Acceptance Rate of 99.5%
- False Rejection Rate of 0.5%
- False Acceptance Rate 0%

when tested on 900 samples from 136 individuals. Further testing and system tuning are being done to reduce False Rejection Rate.

Applications

The HMFS is targeted for applications like access control of various laboratories in BARC.