Multimodal Biometrics for User Security and Identification Management

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PROBLEM STATEMENT

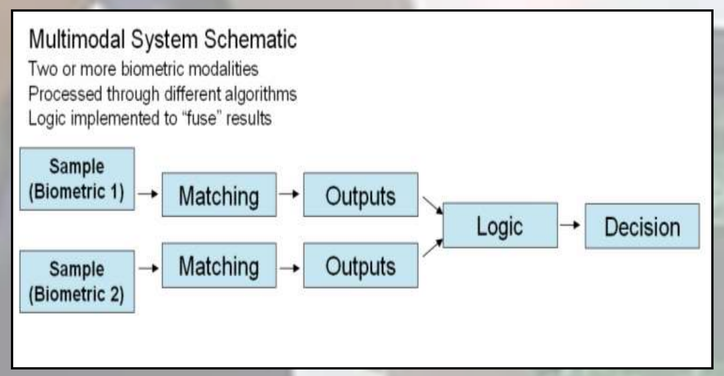
- The systems using passwords, pin codes, etc for authorization purposes have a disadvantage that other persons may know their secret numbers or even they can guess that easily.
- To avoid theft through hacking or other techniques, biometrics which involves measuring and analysing a person's unique characteristics can be implemented.
- To make the system ultra secure, we have proposed multimodal biometric system.

OBJECTIVES

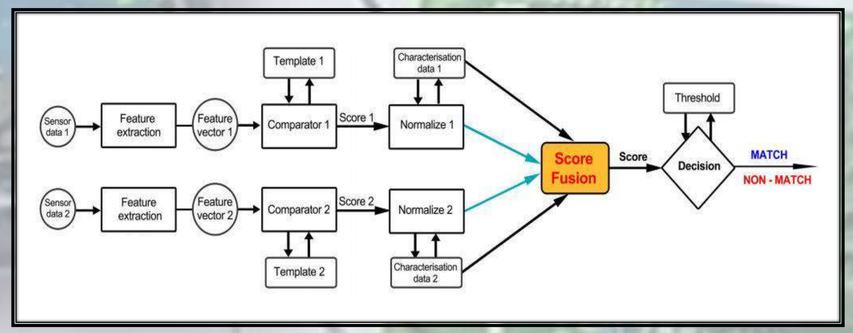
- To obtain the authentication accuracy of 90% using more than one biometric trait.
- To improve the quality of feature extraction of fingerprint and iris so as to increase the performance of the system and make it reliable.

PROPOSED SYSTEM

AMOLD FRAMEWORK

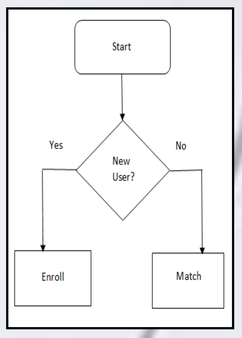


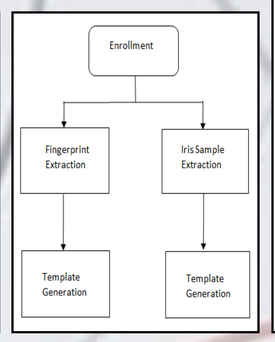
METHODOLOGIES

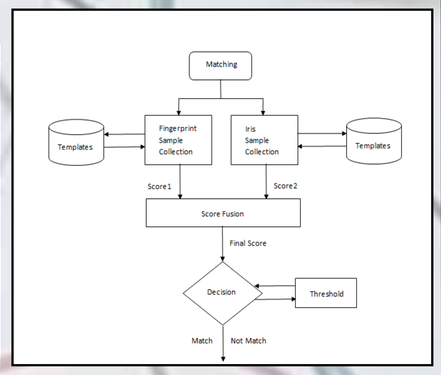


SYSTEM DESIGN

Fig 1: Flow Diagram







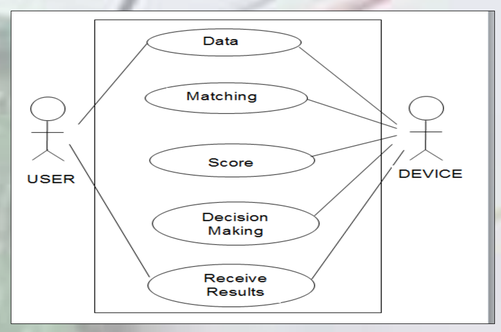


Fig 2: Use Case

RESULT ANALYSIS

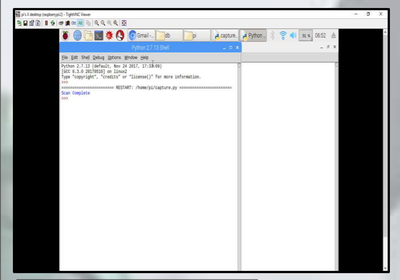


Fig 3 : Input to Database

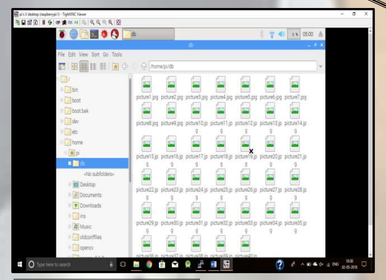


Fig 4 : Database

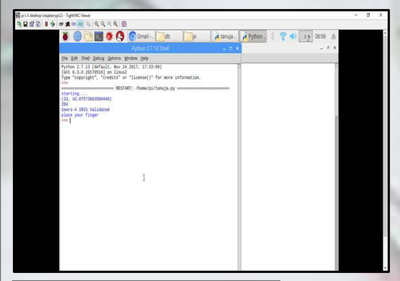


Fig 5 : Output for Valid User

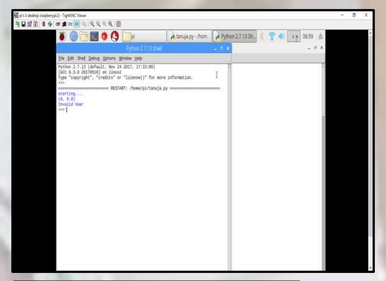


Fig 6 : Output for Invalid User

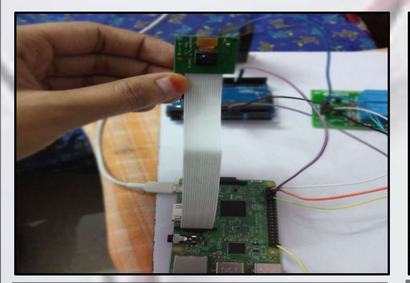


Fig 7 : Pi Camera connected to Raspberry Pi

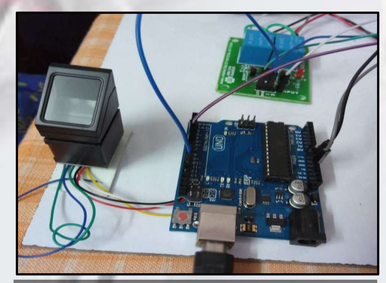


Fig 8 : Fingerprint sensor connected to Arduino

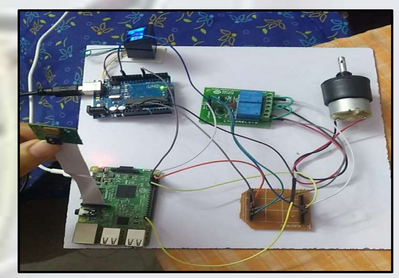


Fig 9 : System with all Components integrated

CONCLUSION

This project has put the focus on biometric security as it is the only effective way to prove an individual's identity. Here, we have used two Biometric traits i.e., Fingerprint and Iris. By our experimentation this biometric security system can verify an individual's identity with utmost total accuracy of 75% (Iris-60% and Fingerprint-90%). Compared to the performance of Unimodal biometric systems, our system's False Acceptance Rate (FAR) is less (As two biometric traits are used), False Recognition Rate(FRR) is high, Equal Error Rate(ERR) is high by giving more accuracy to the system and Failure to Enrol (FTE) is almost negligible, thus giving a highly secured Biometric system.