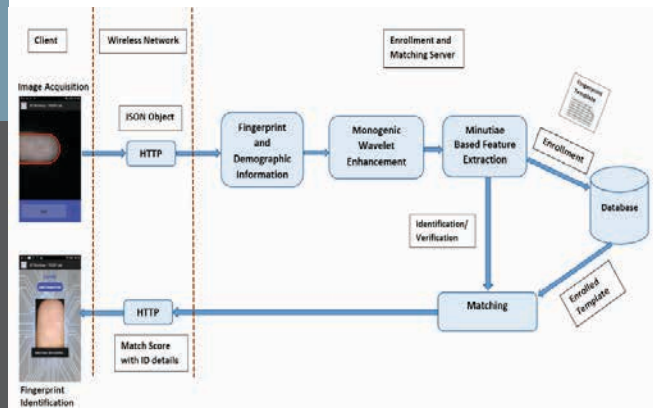


Multi-resolution Machine Learning for Touchless Biometric Applications

Problem Statement: Biometrics plays a significant role in the security, defence and banking industries. Touchless based biometric authentication at airports, border control, corporate offices and banks have gained more prominence, particularly after the onset of the pandemic. Touchless biometrics are meant to be user-friendly and hygienic. The rising use of smartphones, tablets, various hand-held devices and wearable devices opens a huge market for touchless mobile biometric solutions. Biometrics also has a good share in law enforcement and the healthcare industry. Thus, the researchers are developing touchless biometric identification and verification techniques based on multiresolution machine learning/deep learning techniques. The developed methods can be a possible national resource for use in UIDAI, police, defence establishments, security applications, and use in other corporate/government establishments.

Uniqueness of the Solution: The research combines the principles of multiresolution image processing and current machine learning/deep learning techniques. It has the potential to make biometric authentication more robust. Besides, the researchers have tested different kinds of biometric systems, including systems based on the ear, iris, and touchless fingerprints. The most important aspect of this work is that all biometric systems (including fingerprint recognition) are touchless or contactless, an objective that has gained even greater momentum during the days of the pandemic.

Current Status of Technology: A prototype mobile app for touchless fingerprint recognition and classification has been built, and it is in the proof of concept stage. In addition, the investigations of biometric systems based on the ear and iris have shown promising results; they are currently integrating them into a software package.



Societal Impact: Biometrics can be used to detect fraud. The use of biometrics in security applications will indirectly bring the value of safety and wellbeing to people by its positive consequences in security.

Patent(s): Nil

Relevant Industries: Security, Defence, Banking, Airports, Healthcare.

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