

(54) Title of the invention : A DECENTRALIZED PRIVACY-PRESERVING MULTI-INSTANCE IRIS AUTHENTICATION DEVICE (DPMIAD)

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(57) Abstract :

With the vast increase in the usage of biometric recognition, template protection for biometrics captured attention in the recent years. Since biometrics are irrevocable, it is very important to protect its privacy. Biometric template protection schemes such as cancelable biometrics, biometric cryptosystem and homomorphic encryption (HE) are introduced to provide privacy-preserving (PP) biometric authentication. PP biometric authentication enables a user to verify him or herself without sending the original biometric information to a server. HE is the most widely explored research area to construct PP biometric authentication system due to the advantages over cancelable biometrics and biometric cryptosystem. Most of the existing PP biometric authentication systems using HE assumed that the server performs computations honestly. In a malicious server setting, the server may return an arbitrary result to save the computational resources results in false accept/false reject. The present innovation, a decentralized privacy-preserving multi-instance iris authentication device (DPMIAD). DPMIAD uses Blockchain technology (BC) and Paillier HE. Paillier HE provides confidentiality for the iris templates. The BC provides the integrity of the encrypted reference iris templates as well as the trust of the comparator result. The model and approach are described in detail with the help of the figure. Figure 2 represents the overall structure of DPMIAD (A Decentralized Privacy-preserving Multi-instance Iris Authentication Device).

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