

AN INFUSED CRYPTO-BIOMETRIC AUTHENTICATION SCHEME FOR ATM BANKING SYSTEMS

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Abstract

An embedded Crypto-Biometric authentication scheme for ATM banking systems is proposed in our paper. In this scheme, cryptography and biometric techniques are fused together for person authentication to ameliorate the security level. The fingerprint template including singular points, frequency of ridges and minutiae are stored at the central banking server when enrollment. At the time of transaction fingerprint image is acquired at the ATM terminal using high resolution fingerprint scanner. The fingerprint image is enhanced and then encrypted using 128 bit private key algorithm. The encrypted image is transmitted to the central server via secured channel. At the banking terminal the image is decrypted using the same key. Based on the decrypted image, minutiae extraction and matching are performed to verify the presented fingerprint image belongs to the claimed user. The authentication is signed if the minutiae matching are successful. The proposed scheme is fast and more secure. Computer simulations and statistical analysis are presented.

Keywords: Biometrics, Fingerprint, Verification, Cryptography, Encryption, Decryption and Symmetric key algorithms.