Abstract

Cancelable biometrics is a good approach to address the security and privacy concerns on biometric authentication. The security of cancelable biometrics lies on non invertibility of the transformed templates. So the transforms should be noninvertible and the original biometric template cannot be recovered. Our proposed method initially involves segmentation process to identify blood vessel bifurcation points in the retina, and then the generation of template consisting of the bifurcation points in the blood vessels and the template is transformed using Noninvertible construction (NIC) algorithm and finally matching of the bifurcation points in different patterns. Our work mainly focused to provide the efficient person authentication and the secured biometric template, which has the unique patterns of blood vessels. The effectiveness of our proposed system is then verified with experimental results using a total of 603 retinal images from three different publicly available databases, namely DRIVE, VARIA and STARE. Also we have made a performance analysis, and found that the proposed retinal recognition method gives 100%, 98% and 93% recognition rates, 0%, 0.16%, 0.62% error rates for the above databases and analyzed the Genuine Acceptance Rate (GAR), False Acceptance Rate (FAR) and False Rejection Rate (FAR), Elapsed time respectively. The experimental results obtained using various databases shows that the application of Retinal feature extraction algorithm (RFEA) and NCI results in higher recognition rates and lower error
Efficient Approach for Retinal Biometric Template Security and Person Authentication using Noninvertible

rates.

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Efficient Approach for Retinal Biometric Template Security and Person Authentication using Noninvertible Constructions

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**Index Terms**

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**Keywords**

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