

HUMAN IDENTIFICATION USING RETINA DATA

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Biometric authentication plays a major role in personal information security since it provides a strong link between an individual and a data record. Nowadays, several biometric features are used to identify a person such as fingerprint, iris, facial features, hand geometry, ear shape, gait patterns, and, retina features. This study aims to identify a human by using his/her retina data since it is unique for each human even between identical twins. We have used the blood vessel pattern in the retina of the eye as the biometric to identify an individual. This retina-based identification study is conducted through three stages: Preprocessing, Feature Extraction, and Feature matching. Image processing based techniques are used in these all three stages and the MATLAB tool is used for the implementation. In the preprocessing, a Gaussian filter is used to remove the noise. Then the green channel of the preprocessed image is used to obtain the blood vessels. Thereafter, a global thresholding technique is used to segment the blood vessels. The final segmented image is obtained by removing the unnecessary vessels. In the feature matching stage, the number of retina and background pixels are compared with the ground truth images and the best matching one is selected based on a threshold value. This study is evaluated on a publicly available DRIVE dataset. Based on the experimental results, our approach shows excellent performance to detect an individual using retina data.

Keywords: Feature Extraction, Feature matching, retina detection