عنوان مقاله:

Finger Vein Recognition in Radon Space Using Local Entropy Thresholding andCommon Spatial Pattern

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خلاصه مقاله:

One of the most suitable biometric methods for identifying individuals is finger veins. In this paper wehave proposed a new algorithm for finger vein recognition with a high accuracy level. First weextracted veins from finger vein images using entropy based thresholding. The method extracted veinswell, but the images were very noisy. It means that the extracted veins may appear as broken lines. Sowe applied Radon transformation to segmented images. The Radon transform is not sensitive to noisedue to its integral nature. So in comparison with other methods, it is more resistant to noise. Thistransformation does not require the extraction of vein lines accurately. Also with using this method, therecognition accuracy and speed increased. For extracting dominant features from finger vein images,the common spatial pattern (CSP) algorithm was applied to the blocks of Radon transformation. Toimprove the classification accuracy, redundant features were eliminated using genetic algorithm.Finally we used 1-NN classifier to identify people using their finger veins. The study was performedon the Peking University finger vein data set. Experimental results showed that the proposed methodhad good performance in recognizing individuals and obtained the recognition rate of 100%.

کلمات کلیدی:

IdentificationBiometricFinger Vein RecognitionLocal Entropy ThresholdingRadon TransformCommon Spatial Patterns(CSP)Genetic Algorithm(GA)1-Nearest Neighbour(1-NN) Classifier

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