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Arabic character recognition using 1-D slices of the character spectrum

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Abstract

An Arabic character recognition algorithm using 1-D slices of the character spectrum is presented. The Fourier spectrum of the character's projections on the X - and Y -axes is estimated. The features are extracted from this 2-D spectrum. The features of 10 sets of characters were used as model features. The features of an input character are compared with the models' features using a distance measure. The model with the minimum distance is taken as the class representing the input character. Experimental results have shown that the presented algorithm is capable of recognizing Arabic characters with a recognition rate of 99.06%, using 10 features of the X -projection. This rate rises to 99.94% when 10 features of the Y -projection are added. The proposed system was compared with another, based on the Fourier descriptors, which was capable of recognizing 97.5% of test characters using 10 Fourier descriptors. The presented technique is superior to that of the Fourier descriptors in terms of recognition rates and speed, as fast Fourier transform is used in the calculation of the spectrum while standard equations are used to compute the Fourier descriptors. Both techniques are invariant to shift. However, the Fourier descriptor is invariant also to rotation and scale. © 1997 Elsevier Science B.V.