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Identification of human face profiles using Fourier, Cosine, and Hartley Descriptors

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Abstract

Human face recognition has many uses in commercial, law enforcement, and surveillance applications. In cases where images of people can be obtained under controlled conditions— e.g. mug shot databases of law enforcement agencies—, using profile images can be very beneficial. In this paper, we investigate the recognition of human face profiles using descriptors. Images are obtained in different sizes and under different lighting conditions. Special conditions such as the existence of beard, mustache, eyeglasses, or hair on the forehead are examined. Using the profile curve acquired from these images, Fourier, Cosine, and Hartley descriptors are utilized for the recognition of face profiles by a Bayes classifier. The best recognition rates obtained are 100% for steady conditions, 69.56% when lighting conditions alter, 76.81% when the head's size in image changes, 27.54% in presence of eyeglasses, and 70% in presence of beard

Keywords: Face recognition, profile, Fourier descriptors, cosine descriptors, Hartley descriptors, segmentation, thresholding.