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Facial Image Processing in Facial Analysis for Real-Time Profiling

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ICCST 2010 Abstract Submission

Title: Facial Image Processing in Facial Analysis for Real-Time Profiling

Keywords: face detection, color segmentation, Haar Classifiers, facial analysis, image processing.

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Abstract:
The aim of our project is to provide a real-time dynamic passive profiling technique which will assist as a decision aid to Border Control Agencies, which has the potential to improve the hit rates. This paper discusses a methodology for improved image processing for human facial analysis and bridging the visible images to thermal images. First, we describe an enhanced face detection algorithm in color images. The performance of Haar Classifiers is known as a fast real-time face detection algorithm. However, it generates false detection. The suggested solution in previous research is to add in larger training set. However, we suggest to pre-process the color images by implementing color segmentation in Chrominance component and Hue component prior to face detection algorithm on the datasets from different resources. We have produced some experimental results suggesting that this approach increases the detection rate and reduces the false detection rate in some datasets, but not all the cases. We compare the performance from these datasets and suggest the possible future implementation in facial analysis. Then, we extend the detection to eyes, nose, and mouth detection. The second contribution of this paper established a link between the visible images and thermal image, by illustrating the way of visible image locate the face features in thermal image. Finally, we suggest the possible future implementation in facial analysis applicable to security technology.

Topic number
Biometric identification systems utilizing facial expression
Airport Security