

Emotion Recognition From Images Under Varying Illumination Conditions

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Abstract: Facial expressions are one of the most powerful and immediate means for human beings to communicate their emotions. Recognizing human emotion has varied range of applications in humanoid robots, animation industry, psychology, forensic analysis, medical aid, automotive industry etc. This work focuses on emotion recognition under various illumination conditions using images from CMU-MultiPIE database. The database is provided with five basic expressions like neutral, happiness, anger, disgust and surprise with varying pose and illuminations. The experiment has been conducted on images with varying illuminations initially without pre-processing and also by applying a proposed ratio based pre-processing method followed by feature extraction and classification. Dual – Tree Complex Wavelet Transform (DT-CWT) was applied for the formation of feature vectors along with K-Nearest Neighbor (KNN) as the classifier. The result shows that pre-processed images give better results than original images. It is thus concluded that varying illumination has effect on emotion recognition and the pre-processing algorithm demonstrates improvement in accuracy in accuracy of recognition. Future work may include a broader perspective of using body language and speech data for emotion recognition.
