Abstract

Automatic analysis of facial expressions is rapidly becoming an area of intense interest in computer vision and artificial intelligence research communities. In this paper an approach is presented for facial expression recognition of the six basic prototype expressions (i.e., happy, surprise, anger, sadness, fear, and disgust) based on Facial Action Coding System (FACS). The approach utilizes the hybrid transform in which consists of two transforms; the Wavelet transform and the Discrete Cosine Transform (DCT). The approach suggested includes many steps such as preprocessing, feature extraction, clustering and recognition. In feature extraction phase the Wavelet transform and the Discrete Cosine Transform (DCT) were implemented, in the clustering phase the Self Organizing Feature Map produced by Kohonen was implanted. Topological ordering patterns produced by Kohonen Self Organizing Map, in which implemented on feature extracted for each prototype facial expression was used to classify the six basic expressions. The map will compute the topological relationship between the particular expressions featured. While in recognition phase Euclidean distance measure had been used. The method tested using FACS-Coded expressions database of basic emotions: "Cohn-Kanade Database". An average recognition rate of 92.2% was achieved for six basic expressions.
Facial Expression Recognition using Hybrid Transform

References

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Index Terms

Computer Science, Image Processing

Keywords

DCT, wavelet, facial expression recognition, SOM, Euclidean distance.