A Real-Time System for Facial Expression Recognition using Support Vector Machines and k-Nearest Neighbors

Abstract

Faces are a unique feature of human beings that can detect a great deal of information about age, health, personalities, and feelings. Facial expressions are the main sources in determining the internal impressions of the individual. Real-Time system for facial expression recognition is able to detect and locate human faces in image sequences obtained in real environments then extracts expression features from these images finally recognize facial expressions. In this paper, the proposed system presents a real-time system for facial expression recognition that aims to recognize 8 basic facial expressions of students: anger, disgust, fear, happy, nervous, sad, surprise, and natural inside E-learning environment. The primary objective is to use k-NN and SVM classifiers to test the efficiency of the proposed system and compared the results of them. There are some techniques that have been used in this study for facial expression recognition such as Viola-Jones approaches to detect a face from images, Gabor Feature approach to extract features, and Principal Component Analysis (PCA) to select features and k-NN, SVM classifiers to recognize expressions from facial image. The result showed that the SVM classifier has the best recognition rate in general than k-NN classifier. From these results, it can
say that SVM classifier is more suitable for recognition of facial expression in a real-time system.

References


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