An Accurate Algorithm for Generating a Music Playlist based on Facial Expressions

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Abstract

Manual segregation of a playlist and annotation of songs, in accordance with the current emotional state of a user, is labor intensive and time consuming. Numerous algorithms have been proposed to automate this process. However the existing algorithms are slow, increase the overall cost of the system by using additional hardware (e.g. EEG systems and sensors) and have less accuracy. This paper presents an algorithm that automates the process of generating an audio playlist, based on the facial expressions of a user, for rendering salvage of time and labor, invested in performing the process manually. The algorithm proposed in this paper aspires to reduce the overall computational time and the cost of the designed system. It also aims at increasing the accuracy of the designed system. The facial expression recognition module of the proposed algorithm is validated by testing the system against user dependent and user independent dataset. Experimental results indicate that the user dependent results give 100% accuracy, while user independent results for joy and surprise are 100 %, but for sad, anger and fear are 84.3 %, 80 % and is 66% respectively. The overall accuracy of the emotion recognition algorithm, for user independent dataset is 86%. In audio, 100 % recognition rates are obtained for sad, sad-anger and joy-anger but for joy and anger, recognition rates obtained are 95.4 % and 90 % respectively. The overall accuracy of the audio emotion recognition algorithm is 98%. Implementation and testing of the proposed algorithm is carried out using an inbuilt camera. Hence, the proposed algorithm reduces the overall cost of the system successfully. Also, on average, the proposed algorithm takes 1.10 sec to generate a playlist
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based on facial expression. Thus, it yields better performance, in terms of computational time, as compared to the algorithms in the existing literature.

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Index Terms

Computer Science

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Keywords

Audio Emotion Recognition	Music Information Retrieval	Facial Expression	Music
Recognition	Recommender systems

Audio Feature Extraction.