CSE 3044 SOFTWARE ENGINEERING

Term Project Homework#2

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2. People's moods are usually described according to their facial expressions. Thanks to today's technology, we can also make their lives easier by writing various programs according to people's moods. The main purpose of our project is to develop an application that recommends music in accordance with people's facial expressions. There are many studies that show similarities with our project.

2.1. Mood Based Music Player Using Real Time Facial Expression Extraction

System is a music player which is designed to run on a desktop computer. It offers playlists according to users personal mood via face detection and image processing. At the first step an image is being captured using a webcam and saved. Secondly interest points are being extracted on mouth and eye using **HAAR Cascade method** of face detection. After this point; Bezier curve equation is applied on the mouth and eyes. Finally system recognizes emotions and plays music accordingly. Emotional recognition is being made by measuring distance between feature points on the neutral face and emotional face. Unlike this project we will use Convolutional Neural Networks algorithm which is a famous machine learning approach in image detection to recognize emotions. CNN algorithm is a classification algorithm like logistic regression. It is frequently used in image classification, object identification, image and captioning problems. Besides implementing vanilla Artificial Neural Networks, we will use convolution and pooling layers and then We will implement max pooling as pooling algorithm on specified image dataset. We will use Rectifier Linear Units (Relu) and softmax functions for normalization. Secondly we will develop a mobile application rather than a desktop computer program. We think this will provide us more users since mobility is taking bigger part in our lives day by day.

2.2. Facial Expression Based Music Recommendation System

The general purpose of the Facial Expression Based Music Recommendation System sample study is summarized below; "This system based on facial expression extracted will generate a playlist automatically. Facial expressions are captured using an inbuilt camera. Based on the obtained emotion, a playlist is created." In the MoodBlend project, music suggestion application will be made with a real-time detection system.The application will be presented to the user as an Android Application. In the academic study described above, facial expressions are captured using a built-in camera and there is no interface on mobile. In the MoodBlend project, it is planned to use Convolutional Neural Network, one of the machine learning algorithms, to define the emotional state of the person according to the face. In the sample study, the Support Vector Machine algorithm was used for modeling. Python programming language and Opencv library were used in the sample study. The MoodBlend project will be realized with Python and it is planned to use the tensorflow library.

3.

Our project consists of 3 main and independent parts

- Convolutional neural networks with machine learning
- Integration of this modeling into the mobile application
- API integration according to the result obtained from the model in the mobile application.

We chose the incremental method because we're going to cover these 3 main parts in different ways and each will be minor improvements.

As a result of these minor improvements, our system will emerge, and machine learning the highest priority is our top priority.

References

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2.2 V., Prabhu T, R., Kumar Y, B., P, J. and TECH, M., 2021. Facial Expression Based Music Recommendation System. [online] Ijarcce.com. Available at: <https://ijarcce.com/wp-content/uploads/2021/07/IJARCCE.2021.10682.pdf> [Accessed 23 March 2022].