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Real Time Emotion Based Music Player for Android

D.M.M.T.Dissanayaka¹, S.R.Liyanage²

Listening to music has been found to affect the human brain activities. Emotion based music players with automated playlists can help users to maintain a selected emotional state. This research proposes an emotion based music player that create playlists based on real time photos of the user.

Two emotional statuses, happy and not-happy were considered in this study. User's images were captured in real-time using an android device camera. Grey scaled images were used to compress the image files. Eye and lip areas were cropped and sent to the MATLAB backend via client server-socket connections. Gaussian filtering was applied to reduce noise. Canny Edge Detection algorithm was used for edge detection.

Eigen face-based pattern recognition was used for emotion recognition. PCA eigenvectors were learnt from the dataset via unsupervised training to learn the Eigen face models. The dissimilarity between pairs of face images projected to the Eigen space were measured using the Euclidean distance. The matched image was the one with the lowest dissimilarity. The identified label, happy/not-happy was transmitted back to the Android music player via a client server socket connection. Songs that are pre-categorised as happy/ not-happy are stored in the android application. When emotional label of the perceived face image is received, songs relevant to the received emotional label are loaded to the android music player.

120 face images were collected at the Department of Statistics & Computer Science, University of Kelaniya for validation. Another 100 happy and 100 not-happy images were collected for testing. Out of the 100 test cases with happy faces 75 were detected as happy and out of the 100 not-happy faces 66 were classified as not-happy. The overall accuracy of the developed system for the 200 test cases was 70.5%.

This concept can be extended from a single face to multiple faces and the system has to be made more robust to noises, different poses, and structural components. The system can be extended to include other emotions that are recognizable via facial expressions.

Key words: Gaussian Filter, Canny Edge Detector, Eigen Face, Principle Component Analysis.

¹ Department of Statistics & Computer Science, University of Kelaniya, Sri Lanka. manasitharaka@gmail.com

² Department of Statistics & Computer Science, University of Kelaniya, Sri Lanka. sidath@kln.ac.lk