





DEPARTMENT OF COMPUTER SCIENCE

II Project Presentation (KCS 753)

EMO-MELODY MAPPER

GUIDE: MRS. ARTI SHARMA

PRESENTED BY

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PROBLEM STATEMENT

- In the current music landscape, individuals often find it challenging to curate playlists or discover music that perfectly aligns with their emotional states.
- The absence of an efficient and personalized system for mapping emotions to music hinders the immersive and emotionally resonant music experience.
- Traditional music recommendation systems focus on genres or artist preferences, neglecting the vital aspect of emotional connection.
- This creates a gap in user satisfaction and limits the potential for music to serve as a therapeutic or mood-enhancing medium.

SOLUTION

The EmoMelody Mapper will be designed to address these challenges. It will identify and visualize the emotions of the user in real time and play the music according to the emotions. The following key features will be integrated into the model:

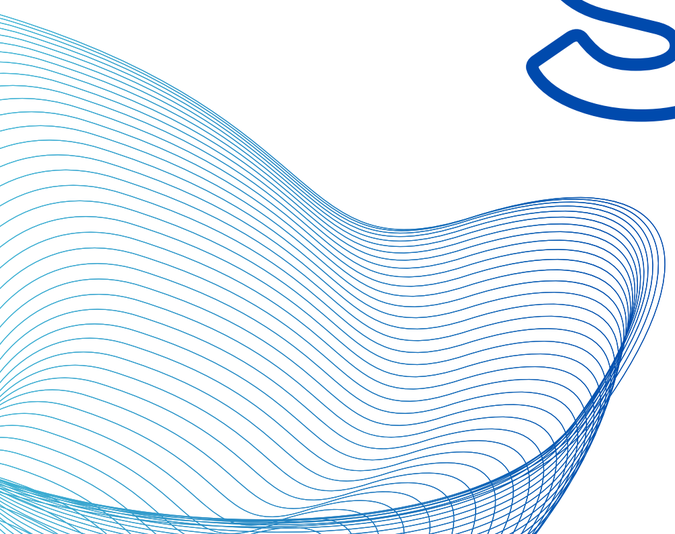
- Emotion Analysis: The app will use CNN algorithms to determine the underlying emotions.
- Real-time Music Player: Emotions will be detected and music will be played accordingly. This will help users better understand the emotion and get hassle-free music listening.
- EmoMelody Mapper may contribute to better mental health outcomes by playing music synchronized to emotions.

TECH STACK USED

For Machine Learning Model

For Website

LITERATURE SURVEY



[1] FACE DETECTION METHOD

The techniques for face detection can be distinguished into two groups: holistic, where face is treated as a whole unit and analytic, where co-occurrence of characteristic facial elements is studied. Pantic and Rothkrantz proposed system which process images of frontal and profile face view. Vertical and horizontal histogram analysis is used to find face boundaries. Then, face contour is obtained by thresholding the image with HSV color space values. Kobayashi and Hara used image captured in monochrome mode to find face brightness distribution. Position of face is estimated by iris localization. For the purpose of feature recognition, facial features have been categorized into two major categories such as Appearance-based feature extraction and Geometric based feature extraction. Geometric based feature extraction technique considered only the shape or major prominent points of some important facial features such as mouth and eyes in the system proposed by Changbo. Around a total of 58 major landmark points was considered in crafting an ASM. The appearance based extraction feature like texture, have also been considered in different areas of work and development. An efficient method for codlag and implementing extracted facial features together with multi-orientation and multi-resolution set of Gabor filters was proposed by Michael Lyons.

[2] FACE EXTRACTION METHOD

Pantic and Rothkrantz selected a set of facial points from frontal and profile face images. The expression is measured by a distance between position of those points in the initial image (neutral face) and peak image (affected face). Cohn developed geometric feature based system in which the optical flow algorithm is performed only in 13x13 pixel regions surrounding facial landmarks, Shan investigated the Local Binary Pattern method for texture encoding in facial expression description. Two methods of feature extraction were proposed. In the first one, features are extracted from fixed set of patches and in the second method from most probable patches found by boosting. The music mood tags and A-V values from a total 20 subjects were tested and analyzed in Jung Hyun Kim's work, and based on the results obtained from the analysis, the A-V plane was classified into 8 regions(clusters), depicting mood by data mining efficient k-means clustering algorithm. Thayer proposed a very useful 2-dimensional (Stress v/s energy) model plotted on two axes with emotions depicted by a 2- dimensional co-ordinate system, lying on either 2 axes or the 4 quadrants formed by the 2-dimensional plot.

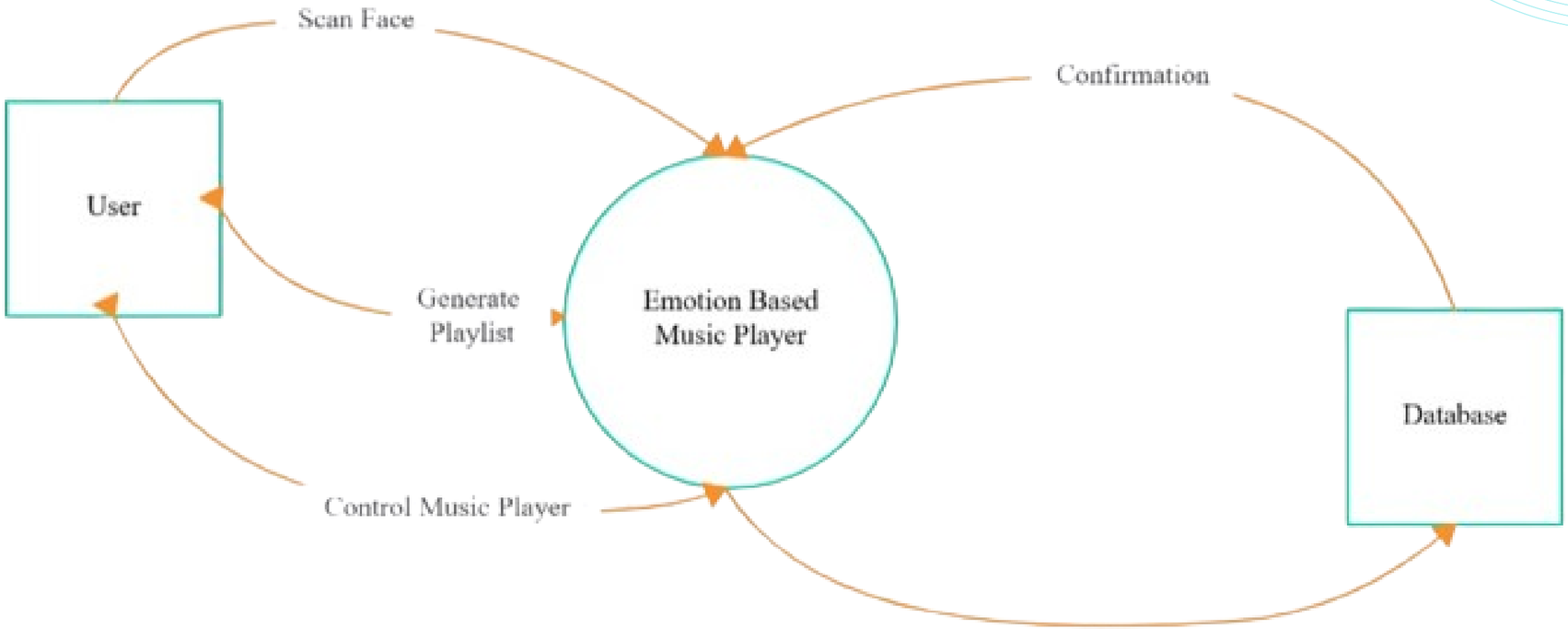
[3] EXPRESSION RECOGNITION

The last part of the FER system is based on machine learning theory; precisely it is the classification task. The input to the classifier is a set of features which were retrieved from face region in the previous stage. Classification requires supervised training, so the training set should consist of labeled data. There are a lot of different machine learning techniques for classification task, namely: K-Nearest Neighbors, Artificial Neural Networks, Support Vector Machines, Hidden Markov Models, and Expert Systems with rule based classifier, Bayesian Networks or Boosting Techniques (Adaboost, Gentleboost). The field of Facial Expression recognition (FER) synthesized algorithm that excelled in furnishing such demands. FER enabled the computer systems to monitor an individual's emotional state effectively and react appropriately. While various systems have been designed to recognize facial expressions, their time and memory complexity is relatively high and hence fail in achieving a real time performance. Their feature extraction techniques are also less reliable and are responsible for reducing the overall accuracy of the system. An accurate statistical based approach for was proposed by Renuka R. Londhe. The paper was majorly focused on the study of the changes in curvatures on the face and intensities of corresponding pixels of images

[4] MUSIC RECOMMENDATION ON THE BASIS OF EXPRESSION

Several approaches have been proposed and have been adopted to classify human emotions successfully. This paper primarily aims and focuses on resolving the drawbacks involved in the existing system by designing an automated emotion music player for the generation of customized playlist based on user extracted facial features and thus avoiding the employment of any additional hardware. It also includes a mood randomized and appetizer function that shifts the mood generated playlist to another same level of randomized mood-generated playlist after some duration. In order to reduce the human effort and time needed for manual segregation of songs from a playlist, in correlation with different classes of emotions and moods, various approaches have been proposed. Numerous approaches have been designed to extract facial features and audio features from an audio signal and very few of the systems designed have the capability to generate an emotion based music playlist using human emotions and the existing designs of the systems are capable to generate an automated playlist using an additional hardware like Sensors or EEG systems thereby increasing the cost of the design proposed.

DIAGRAMS

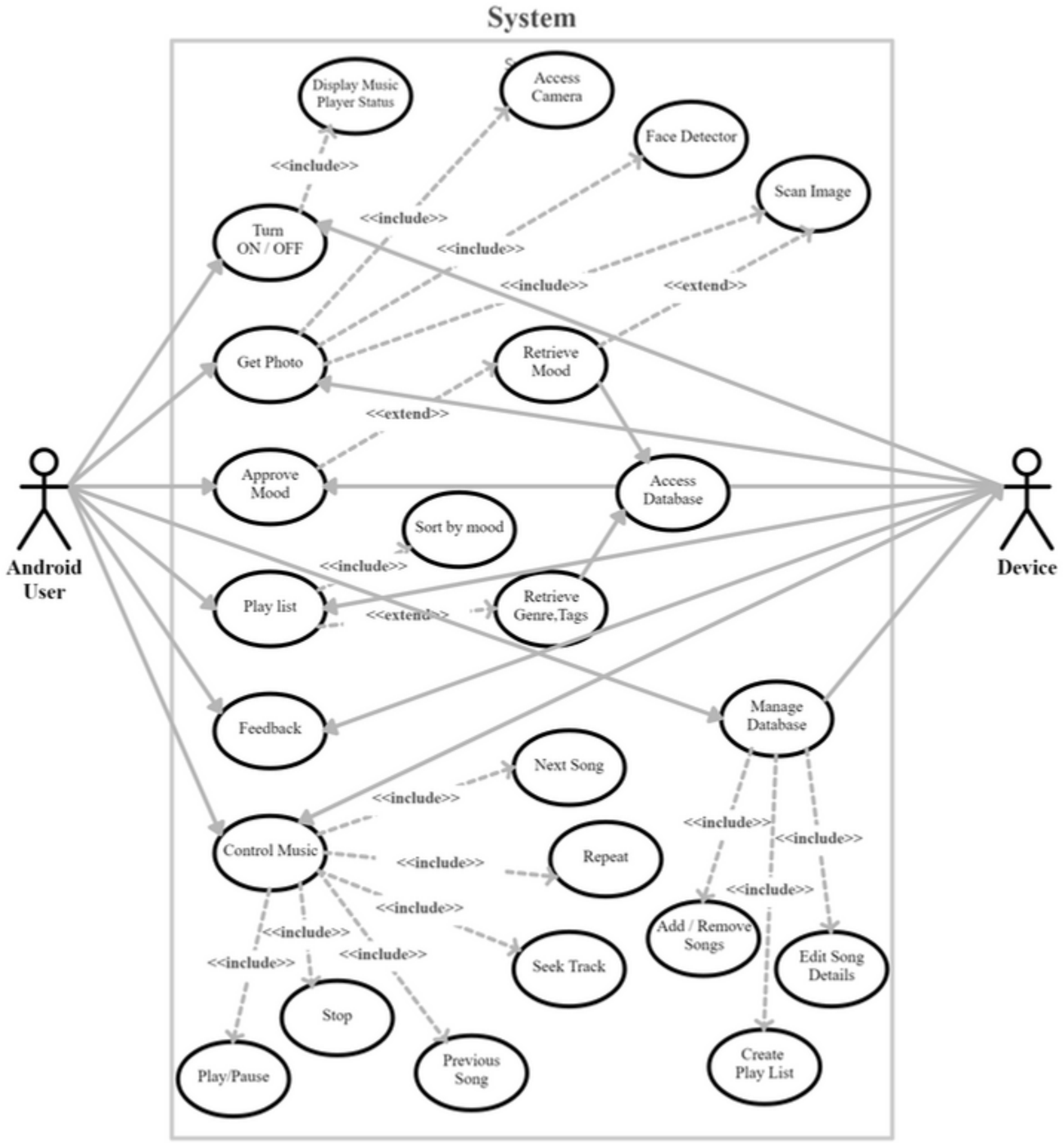


0-LEVEL DFD

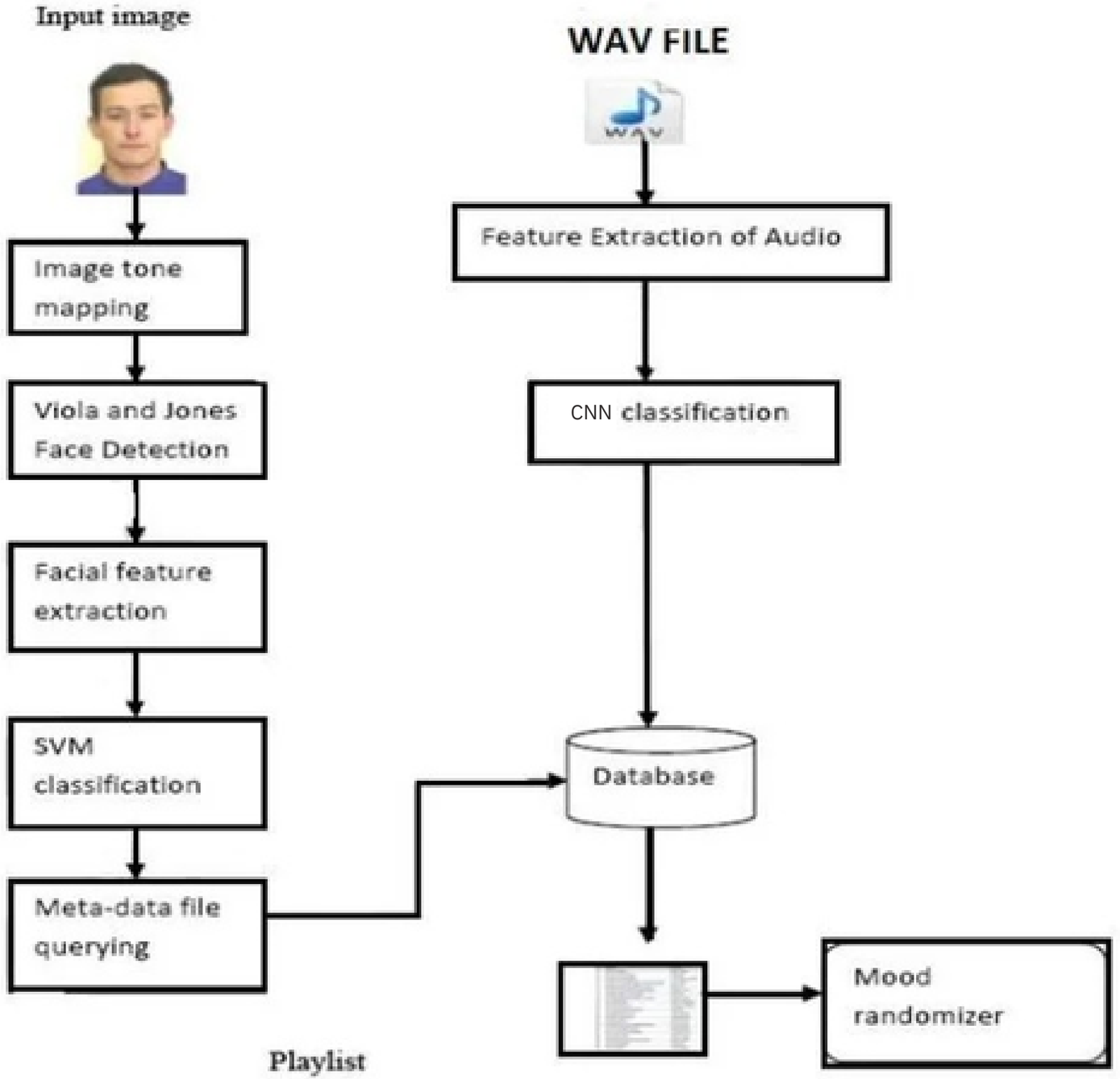
1-LEVEL DFD


Scan
Face
Confirm
Expressions
1.0
Verify
Emotion
Moods
Confirmation
Dialog Box
User
Send
Mood
Request
Playlist
2.0
Generate
Playlist
Read Specific
Tag
Tracks
Controls
3.0
Music
Player
Load
Playlist

USE CASE DIAGRAM



BLOCK DIAGRAM



Patent Status

Approved by Head of Department & Research and Development

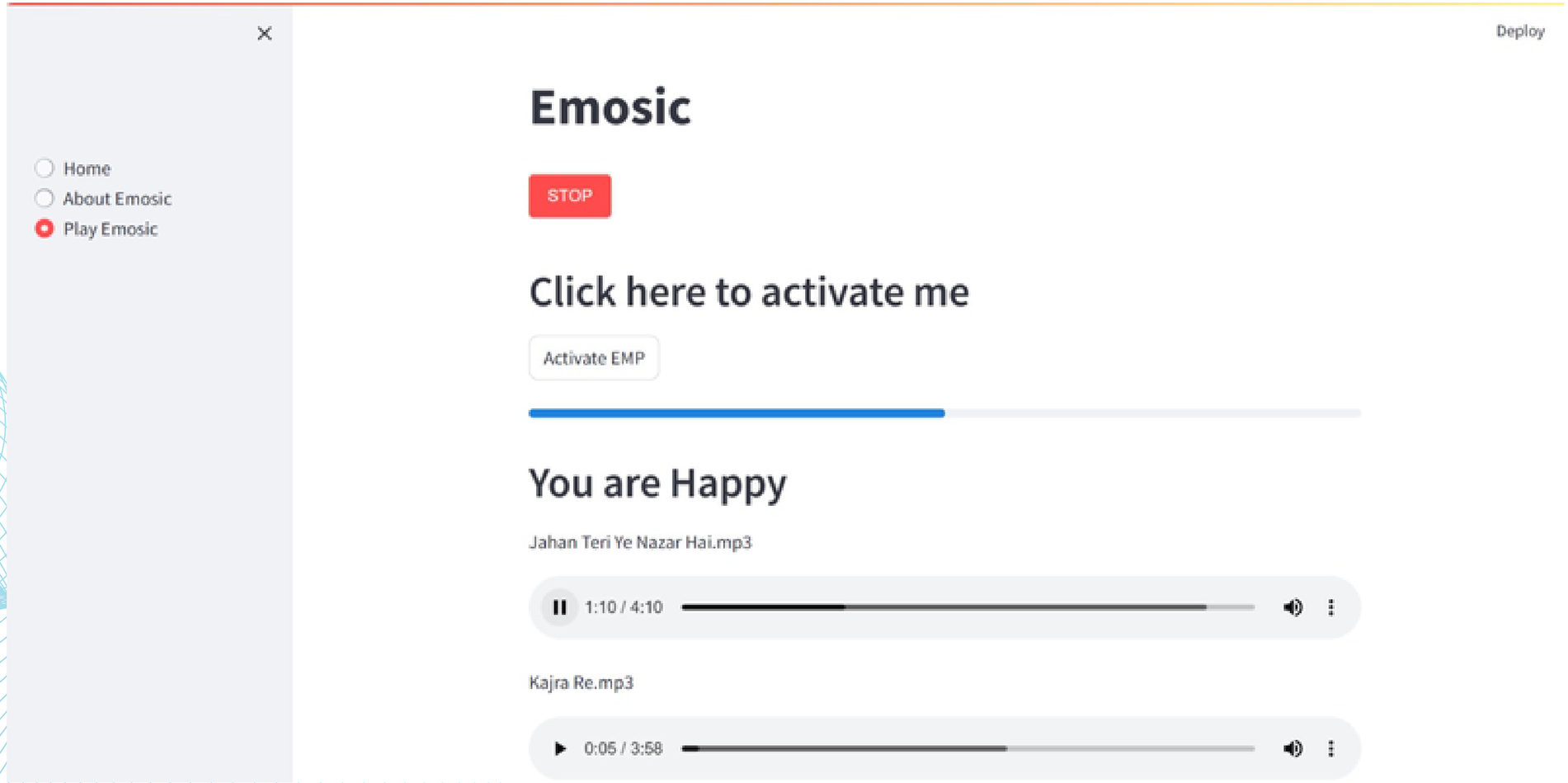
21004	ARTI SHARMA	CS	arti.sharma@kiet.edu	Efficient Machine Learning Model for Depression Detection	VIEW	—	VIEW	

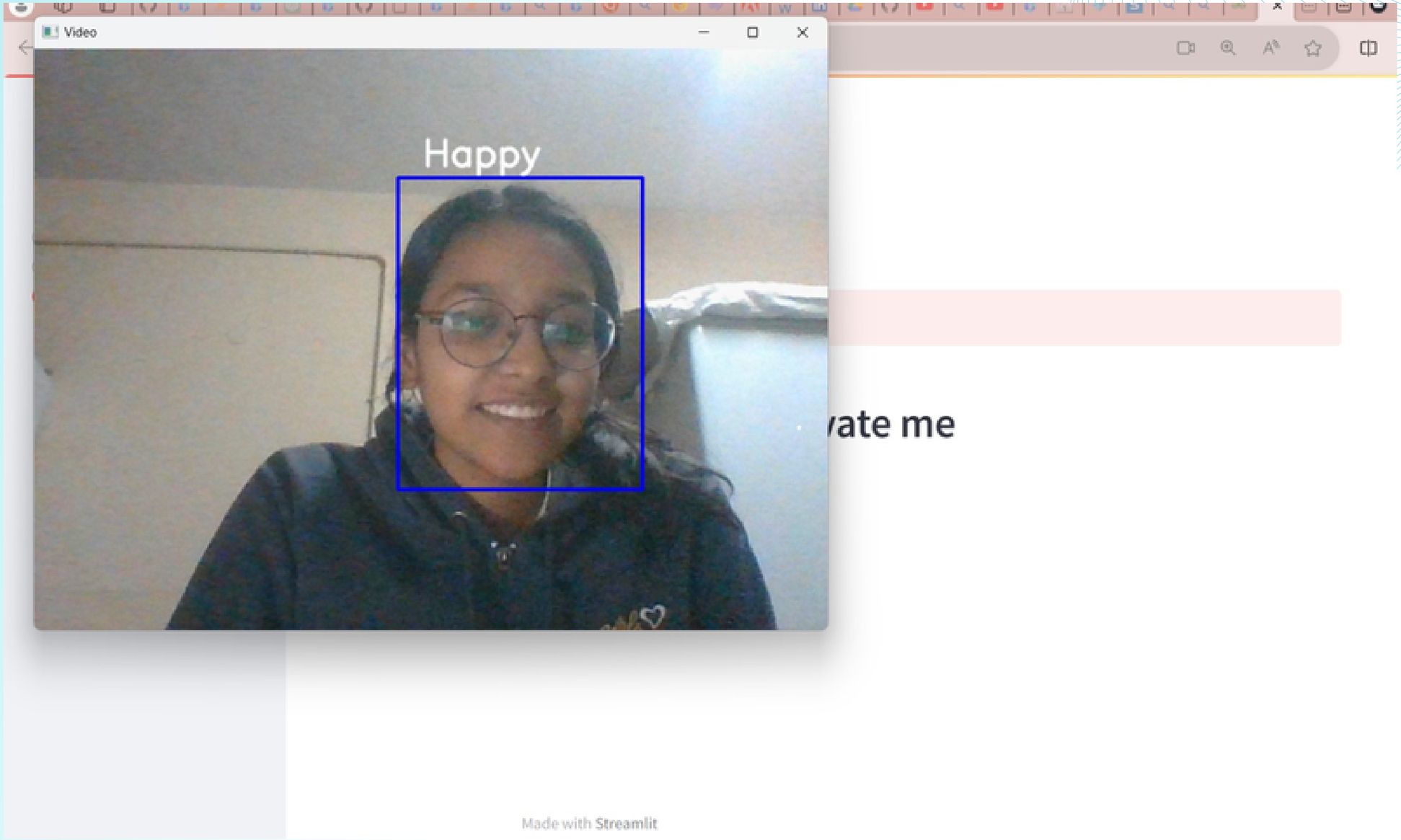
LEVEL	Status	Remark
HOD	APPROVED	OK
RND	APPROVED	Recommended for further higher authority approval under option 1 category
DIRECTOR	PENDING	–

RESEARCH PAPER STATUS

- Abstarct
- Introduction
- Literature Survey
- Completed
- Sumitted

PROJECT STATUS (WORKING MODEL)




Video
Happy
vate me
Made with Streamlit

TESTING REPORT

Link to the testing report:

https://drive.google.com/file/d/1k8Tq-uFhO4THVBybRMMZJUKgfw044qy1/view?usp=sharing

REFRENCES

[1]. Chang, C. Hu, R. Feris, and M. Turk, -Manifold based analysis of facial expression,l Image Vision Comput,IEEE Trans. Pattern Anal. Mach. Intell. vol. 24, pp. 05-614, June 2006.

[2]. A. habibzad, ninavin, Mir kamalMirnia,I A new algorithm to classify face emotions through eye and lip feature by using particle swarm optimization.l

[3]. Byeong-jun Han, Seungmin Rho, Roger B. Dannenberg and Eenjun Hwang, -SMERS: music emotion recognition using support vector regressionl, 10thISMIR, 2009.

[4]. Alvin I. Goldmana, B.Chandra and SekharSripadab, -Simulationist models of face- based emotion recognition.