ANALYSIS THE MUSICAL EMOTION BASED ON DATA MINING

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ABSTRACT

Musical emotion is of import for the listener's cognition. Fast natural activity of digital music data in the Internet during the recent years has led to increase of user demands for search based on different types of meta data. One kind of Meta data that this system focused in this project is the emotion or mood of music. Music emotion acknowledgement is a prevalent research topic today. This instrumentation collected a database including 280 pieces of popular music with four basic emotions of Thar's two Magnitude model. This system used a two level classifier the process of which could be briefly summarized in three steps: 1) Extracting most suitable features from composition of music in the database to exposit each music song; 2) Applying feature selection coming to decrease correlations between features; 3) Using SVM classifier in two level to train these features. Ultimately this system magnified accuracy rate from 72.14% with simple SVM to 87.27% with our hierarchical classifier.

KEYWORD: SVM CLASSIFIER, MUSIC, EMOTION DATASET

1. INTRODUCTION

Data mining (the analysis step of the "Knowledge Discovery in Databases" process, or KDD), a field at the relation of **computer science** and **statistics**, *i*s the method that attempts to determine patterns in big **data sets**. It exploits methods at the connection of **artificial intelligence**, **machine learning**, **statistics**, and systems. The complete goal of the data withdrawal process is to excerpt information from a data set and convert it into an comprehensible structure for more use Away from the raw analysis step, it contains database and **data management** parts, **data pre-processing**, **model** and **inference** thoughts, interestingness metrics, **complexity** reflections, post- processing of exposed structures, **visualization**, and **online updating**.

A volatile growth of data from terabytes to peat bytes. Main problematic was the convenience of data. Companies devoted in building data warehouses that contain lots of records and characteristics but they are not getting the ROI (return on investment).

Data mining is the process of programmed classification of cases based on data patterns obtained from a dataset. A number of algorithms have been developed and applied to excerpt information and determine knowledge designs that may be useful fordecision support.

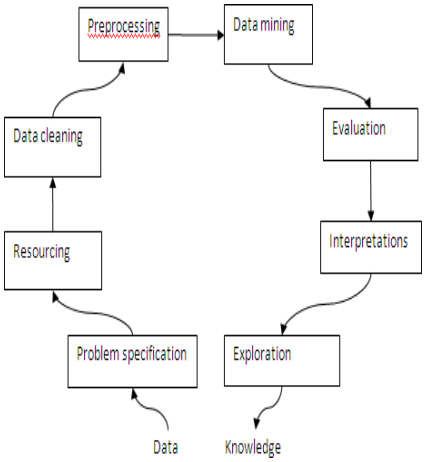


Fig 1: Data mining Process

2. MUSIC RECOGNIZATION

Human beings tend to link the music they listen to, to the emotion they are feeling. The song playlists though are, at times too large to sort out mechanically. It would be helpful if the music player was "smart enough" to sort out the music based on the current state of emotion the soul is feeling. This is a novel approach that helps the user to mechanically play songs based on the emotions of the user. The human face is a crucial organ of an individual's body and it particularly plays an important role in natural process of an individual's behaviors and emotional state.

3. SCOPE AND OBJECTIVES

In this programmer there is a real time camera app that's is capturing an image and then put this for image testing, and then playing music after that, the music of the app is built in music so the user can not add their music in the app at the time being.

The Verifiable of this are: 1. Build a Face Detection System.

2. Develop Emotion Recognition System.
3. Bodily property an easy to use app using cross-platform open source

4. Deep learning:

Deep learning is machine learning technique that makes computing machine do things like a human being, in other words is to learn by example. Opening by knowing the data and its features and also to start indicate results step by step in the process. If it learns more it could more effective, so more learn-in means more efficiency. Here are some examples regarding how it can be working in our world, like

Self- Driving Cars, smart devices like (Siri, Alexa, Google Assistant) and many more. How deep learning working: Deep Learning basically have a hypothesis and this model is learning to classify huge amount of data to differentiate between them, which is very important. It can do classification for images, videos, sounds, and texts. These are some of the most famous real life things that deep learning can do experiments on them, the model is always learning and the more data to be trained the more the model to be efficient and more accurate, when it comes to accuracy one of the main roles regarding the Deep Learning is to compute and produce ac-curacy rate in every learning round.

Future Work There are two limitations facing this project the first one is nonindustrial mobile app and the second one is to encrypt and make user's data safe from being stolen. Developing mobile app will be the smartest way in solving this problem because it is easy use and can be in any user's pocket all time. Then nonindustrial a secure app is also important as a future work be-cause there is a risk when it comes to user's data, this can be done by encrypting the image itself after receiving it as input from the user.

5. LITERATURE REVIEW

A systematic review of artificial intelligence-based music generation: Scope, applications, and future trends Miguel Civet a, Javier Civet- Mascot b,∗, Francisco Cuadrado a, Maria J. Escalon 2022 Currently available reviews in the area of artificial intelligence-based music generation do not provide a wide range of publications and are usually centered around comparing very specific topics between a very limited range of solutions. only events like the recreation of Beethoven's symphony or the use of AI to help generate the ''Tokyo 2020 beat'', the official anthem of the Tokyo Olympic games, have received attention in the media In this work, we analyze the scope and trends of the research on artificial intelligence-based music generation by performing a systematic review of the available publications in the fieldusing the Prism methodology.

CVAE-GAN Emotional AI Music System for Chi-Fang Huang1, * and Cheng-Yuan Huang2 2021 Musical emotion is important for the listener's cognition. A smooth emotional expression generated through listening to music makes driving a car safer. Music has become more diverse and prolific with rapid technological developments.

AI-Based Affective Music Generation Systems: A Review of Methods, and Challenges ADYASHA DASH∗, 2021 Music is a powerful medium for altering the emotional state of the listener.

"**Challenges in Representation Learning: A report on three machine learning contests.**" I Good fellow, D Ethan, PL Carrier, A Carville, M Mirza, B Hammer, W Cukierski, Y Tang, DH Lee, Y Zhou, C Ramaiah, F Feng, R Li,

X Wang, D Athanasakis, J Shawe-Taylor, M Milakov, J Park, R Ionescu, M Popescu, C Grozea, J Bergstra, J Xie, L Romaszko, B Xu, Z Chuang, and Y. Bengio. arXiv 2013. **Region-based layout analysis**

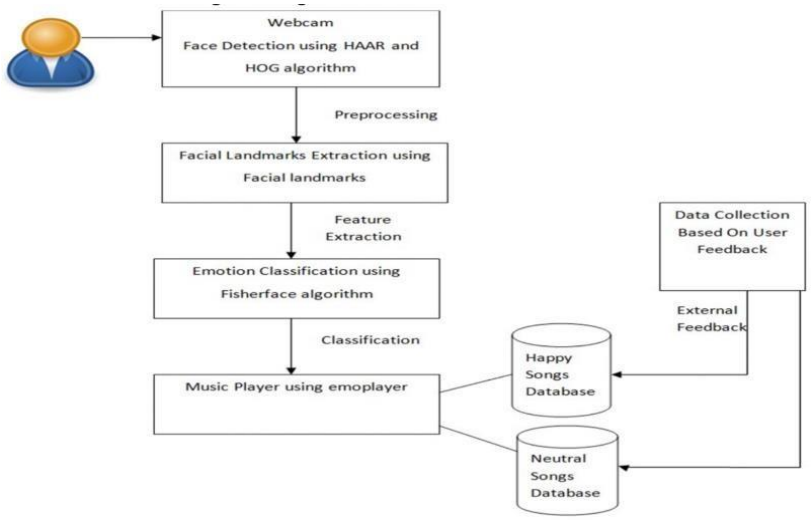
of music score images Francisco J. Castellanos -2022 The Layout Analysis (LA) stage is of vital importance to the correct perfor-

mance of an Optical Music Recognition (OMR) system. It identifies the regions

of interest, such as staves or lyrics, which must then be processed in order to transcribetheir content.

OMR challenge far from straightforward This work focuses on filling this gap inliterature by means of an experimental study of different neural architectures, music document types andevaluation scenarios.

6. ARCHITECTURE



7. IMPLEMENTATION

This programme stimulate feeling based on your facial expression, it appraisal for 7 expressions, anger, disgust, happy, sad, surprise, neutral and fear. Supported on the decided expression it will play music from the selected folder. The dataset used here is Kaggle dataset. The data match of 48x48 pixel grayscale images of visual aspect. The faces have been mechanically documented so that the face is more or less centralized and live about the same amount of space in each appearance. The work is to reason each face settled on the emotion shown in the facial expression in to one of 7 categories (0=Angry, 1=Disgust, 2=Fear, 3=Happy, 4=Sad, 5=Surprise, 6=Neutral).

train.csv contains two columns, "emotion" and "pixels". The "emotion" Single file contains a definite quantity code ranging from 0 to 6, comprehensive, for the emotion that is present in the image. The "pixels" column contains a string enclosed in quotes for each image. The training set consists of 28,709 representative. The public test set used for the leader board match of 3,589 examples. The last test set,

which was used to regulate the winner of the competition, consists of another 3,589representative.
They have ungracefully provided the workplace office with a origination interpretation of their dataset to use for this contest.

Algorithm

Introductory, we state haar cascade to detect faces in each frame of the webcamnutrient.

The location of image containing the face is resized to 48x48 and is passed asstimulation to the ConvNet.

The meshing outputs a list of softmax scores for the seven classes.The emotion with maximal score is maneuver on the screen.

8. METHODOLOGY:

Emotion-Based-Music-player

Intentional and highly-developed an application model that acknowledge the liveemotional state of the user.

Compared accuracy of contrasting algorithms like Fisher face, Eigenface, LinearSVM and Polynomial SVM for emotion recognition.

Tools: Python, NumPy , OpenCV, Pandas, Support Vector Machine.
In this programme I have utilised libraries like OpenCV, EEL, numpy etc.

OpenCV : For capturing images from webcam as recovered as for processing purpose, made implementation of fisherface methodology of opencv for classification.

FisherFace : To train the framework and store it in a model-file(.xml). While exploitation player it uses for prediction for emotion.

I have used haarcascade housebroken model provided by OpenCV for face segmentation from the captured image.

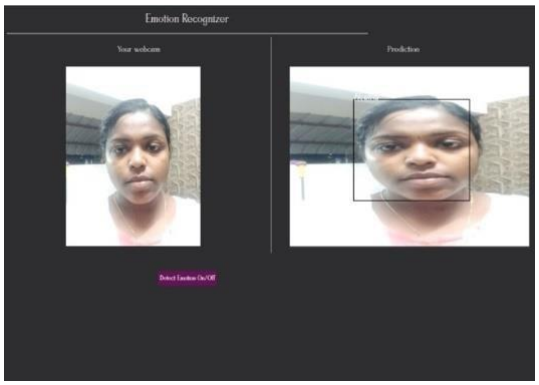
Because the written communication of the genere of songs to the emotion we had definite to put only FOUR emotions into thought procedure for model. 1-angry 2- happy 3-sad 4-neutral

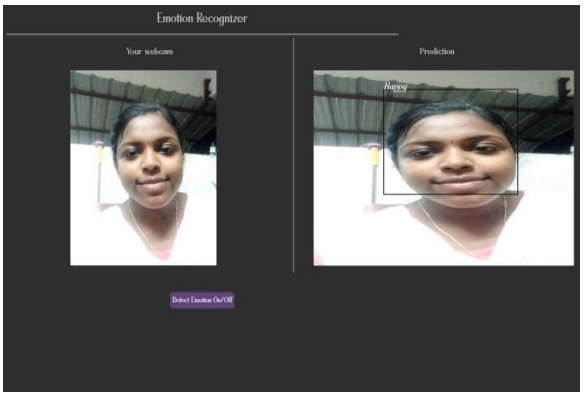
EEl library: It supply property of javascript with python. Similar we can say as html-JS as frontend and python as backend. The reason for make up one's mind this was the frontend of html with css give us too many facilities for our projection. in the HTML-CSS based Music player There are for the most part all preferable

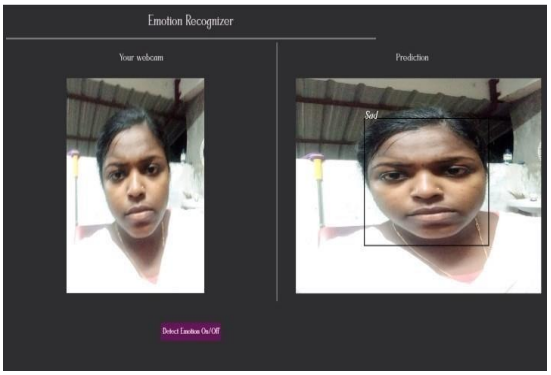
decision making are given with a decision making founded on feeling which willignite python script to work.;

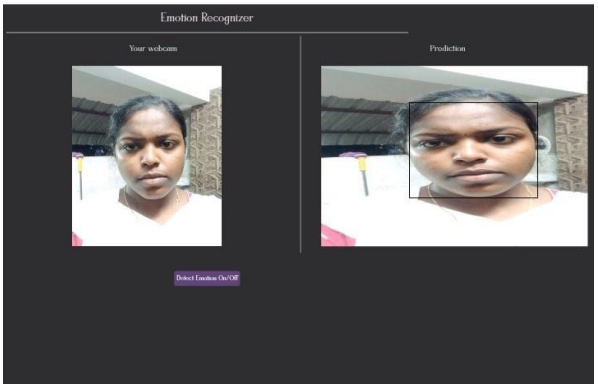
Realtime Facial Expression Based Music Player which domination the facialexpression in real-time and plays music consequentl

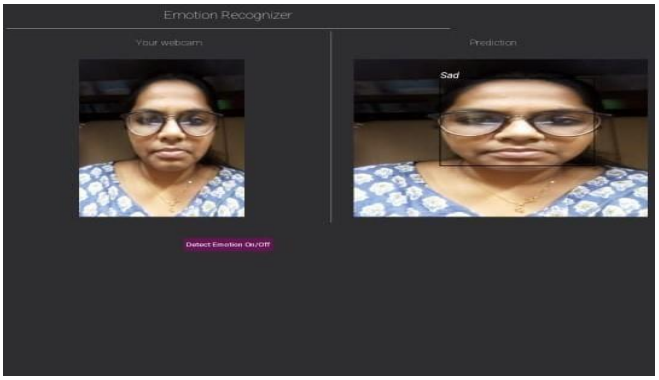
9. RESULTS



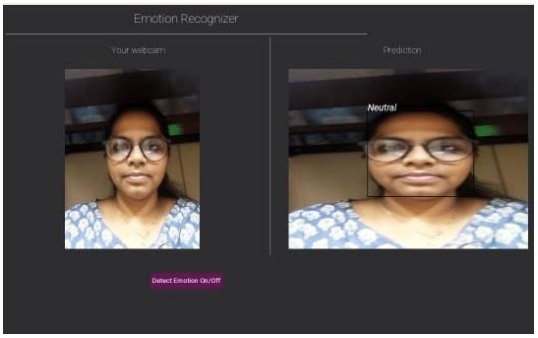


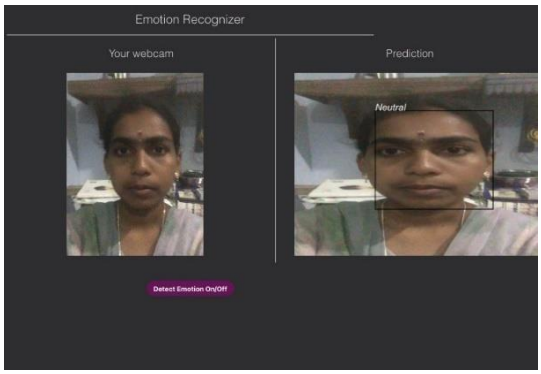




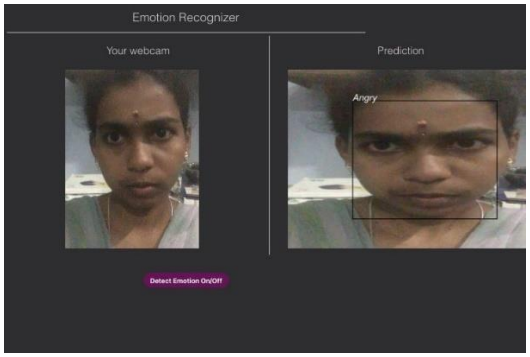


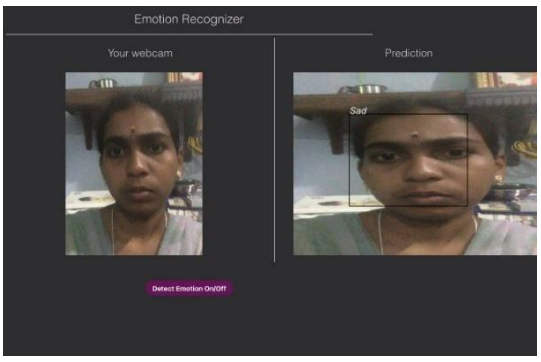

Emotion Recognizer
Your webcam
Prediction
Happy
Detect Emotion On/Off


Emotion Recognizer
Your webcam
Prediction
Neutral
Detect Emotion On/Off


Emotion Recognizer
Your webcam
Prediction
Neutral
Detect Emotion On/Off

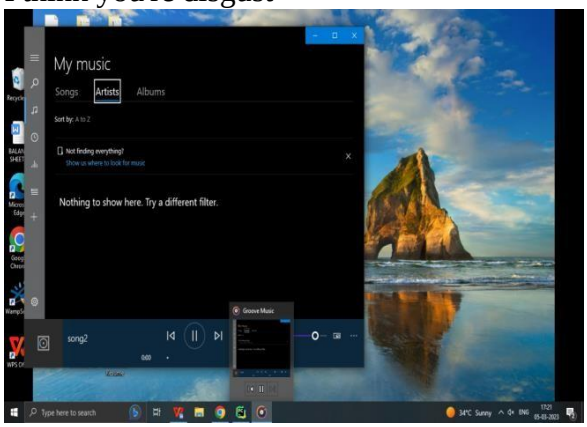

Emotion Recognizer
Your webcam
Prediction
Happy
Detect Emotion On/Off


Emotion Recognizer
Your webcam
Prediction
Angry
Detect Emotion On/Off

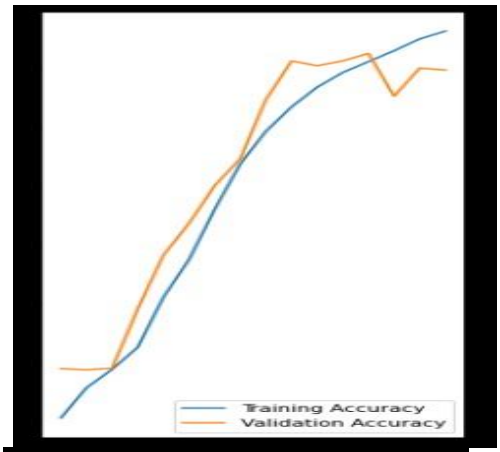

Emotion Recognizer
Your webcam
Prediction
Sad
Detect Emotion On/Off

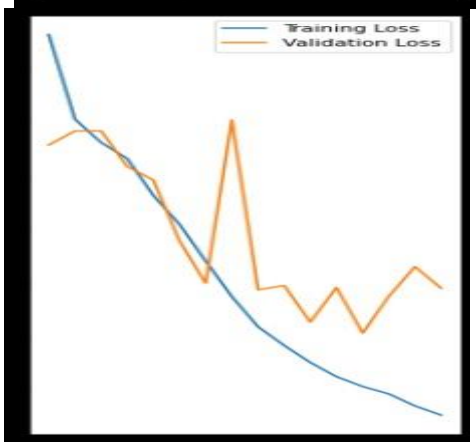
EMOTION BASED MUSIC

face2
[[136 136 135 ... 155 152 149]
[137 138 137 ... 153 150 147]
[138 141 139 ... 152 148 147]
...
[196 198 200 ... 151 148 141]
[197 199 201 ... 140 136 131]
[197 199 200 ... 129 126 124]]
2
I think you're disgust



ANALYZE AND ACCURACY





CONCLUSION

This is a labor using machine learning for detection emotions based on the expression of the users. The program is made up of HTML, CSS and JS, and the main code is of Python. This instrumentation unenforced the face capturing weka Expressions Dataset are used for the emotions. Research results have shown that the time needful for audio feature extraction is negligible (around 0.0006 sec), the various distinction of emotion previous existing systems. The computational time taken is 1.000sec which is very less thus helping in achieving better real-time performance and efficiency. The system of rules thus aims at providing the Windows operating cheaper, additional hardware-free and accurate emotion occlusions and significant head rotations, the head shifts are allowed. In future activity, we would like to focus on improving the recognition rate of our system.

Future Work

There are two terminus ad quem facing this project the first one is development mobile app and the second one is to encrypt and make user's data safe from being stolen. Development mobile app will be the smartest way in solving this problem because it is easy use and can be in any user's pocket all time. Then developing a secure app is also important as a future work be-cause there is a risk when it comes to user's data, this can be done by encrypting the image itself after receiving it as input from the user.

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