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Deterministic Approach to finding the best algorithm for predicting Mood.

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***Abstract*-- Determination of the perceived emotion automatically is known as Mood Recognition which is a highly challenging topic in gaining of information, with applications in the organization. It has its wide applications in tasks like classification and detection due to the recent development done in learning deep representations.**

We demonstrate that our feebly directed deep learning system not just accomplishes persuading execution in vision undertakings including order and picture explanation, yet in addition removes sensible area watchword sets with little supervision, on both generally utilized benchmarks by leading broad tests.

Keywords: **Kinect box, KNN, LSTM.**

I. INTRODUCTION

Temporary state of mind or feeling is referred to as Mood. Strong feeling derived from one's situation or bonding with others is known as Emotion. Mood is not expressed by a person, but emotions may be expressed. Moods may last longer than emotions. Moods are less extreme when compared to emotions. Emotion is derived from the French word "emouvoir" whereas mood is derived from the Old English word of "Mod", which represents military courage. We try to calculate the mood by considering three emotions i.e. facial, postural and gestural.

Gesture refers to the movement of body which can be both unintentional and intentional such as "hello", "hi"," Goodbye". It is the movement of hands or other parts of the body parts to convey a message.

Posture is a way to refer to a person in the way he behaves, be it standing or sitting. It says whether a person is tensed or relaxed. The way in which a person positions his body explains a lot about his attitude Postures are intentional and one can say a lot about the social standing of a person just by looking at his posture.

Facial expressions explains a lot about a person on what he is thinking or feeling. It also helps us to determine whether a person is trustworthy or not. We can also make judgement about a person intelligence based on his/her facial expressions. Facial expressions include surprise, happiness, angry, sad, upset, smile etc.

II. LITERATURE SURVEY

In a research, we came across the usage of Kinect Xbox sensor which is a new product from Microsoft with depth sensing technology, a built-in colour camera, an infrared emitter and a microphone array which enables it to sense the location and movements of people. It is better than old sensor to sense objects more clearly. First, they tracked the Facial points as to which region on the face they belong. Main features like Eyebrows, Mouth, and Eyes were identified using this log. The number of trials required and the result calculated is not accurate are the problems faced. [1]

In The paper, "A Proposed Framework for Effective Emotion Recognition from Real Time Data" there is a technological advancement in the field of interaction between computer and humans with the aid of Human emotions and facial recognition by continuous Observation, to be implemented in a real time ecosystem. It also proposes an idea on how to recognize an emotion effectively from real time data. The Current Problem of proposed systems is that they do recognize expressions by classifying images on a basis of comparing images. This approach makes the task tedious and slower when it comes to real time emotion recognition. To Innovate and facilitate a new engine for the detection of expression from real time data. It uses modern ideas and is open source. It also addresses the needs of emerging research areas within a specified context [2]

In another work, the procedure was to collect the elicited facial expressions from the mood disorder patients and healthy controls for constructing a CHI-MEI mood database. Classification result calculated for unipolar patient was not accurate. Unipolar patients show less nodding due to low self-esteem they face when talking to others. [3]

In another paper, Bipolar disorder (BP) is defined by mood swings between mania, or heightened mood, and depression, or lowered mood. There is a requirement of weekly interview calls including how to control for the confounding factors of variations in episode patterns and conversational styles. [4]

In a paper, they have used Thayer's two-dimensional model of mood. They described the state of mood in valence and arousal dimensions with the help of this model. Based on daily activities and biometrics, it is possible to predict sleep quality, and use it in predicting mood. The disadvantage of this system was sleep measurements will not be available for intervention. [5]

In a paper by Maryam Mohammed Aldarwish, they use traditional techniques to predict the mood of a patient and try to cure depression. But it is seen that the psychiatrist cannot get the complete information from the depressed patient using the traditional techniques. Self-reporting problems cannot be solved here. [6]

In this paper, while deep learning indicates prevalent execution on completely managed learning assignments, research on adapting deep portrayals with frail supervision is still in its beginning time; i.e., human names still assume a key job in these mainstream systems. They proposed to develop a deep learning structure inside a pitifully administered getting the hang of setting. We demonstrated that our perception of the widespread presence of the various occurrence suspicion contributes much in fathoming PC vision errands, and the deep numerous occasion learning framework we created performs well in both picture classification and picture auto-explanation. [7]

In this paper, they have presented a powerful methodology for music state of mind relapse, joining acoustic element savage driving and RNN-based setting delicate element decrease and relapse. On the Media Eval challenge task, they accomplished significant gains regarding SVR demonstrating. The proposed technique can be utilized in low-inactivity settings and is as of now ongoing proficient on a standard PC. However, future work will focus on viable mix with highlight determination to additionally diminish intricacy. They will likewise explore unsupervised pre-preparing utilizing a lot of unlabelled music information [8]

III. PROPOSED SYSTEM

In this project we obtain the data through life logging by taking the input values of 3 different people. We upload the dataset consisting of time intervals, gestural and postural expressions. All the values in the dataset will be encoded.

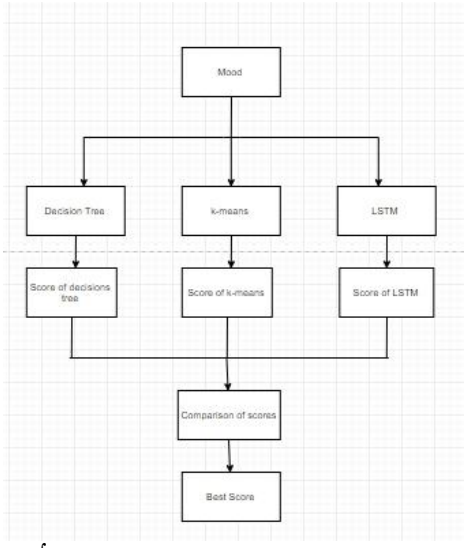
We mainly use 3 algorithms for the prediction of mood;

1) Decision tree

2) KNN

3) LSTM

We can represent the overall mood prediction with the help of this expression:



Mood = f(x) ∫ (Postural +gestural+ facial)

Fig 3.1 shows the flow of data from the input till obtaining the best score

The above flowchart shows the flow of command from the input stage till obtaining the best score. The mood is given as an input. The processing in done in 3 algorithms; Decision tree, KNN and LSTM. The score is calculated in each of the following cases. After obtaining the accuracy the best score is calculated.

	Person 1(in %)	Person 2 (in %)	Person 3(in %)
Accuracy of LSTM	97.257	96.07	96.41
Accuracy of decision tree	55.7	55.9	65
Accuracy of KNN	86.79	77.5	77.5

Fig3.2 table representing accuracy from different algorithms of 3 people

IV. RESULTS AND DISCUSSIONS

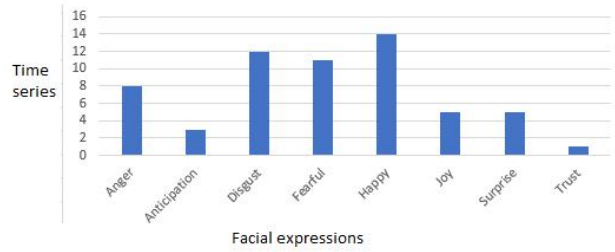


Fig4.1: Graph of facial expressions.

From the graph we see that the person shows a 'happy' face majority of the time. Also there are signs of 'disgust' and 'fearful'.

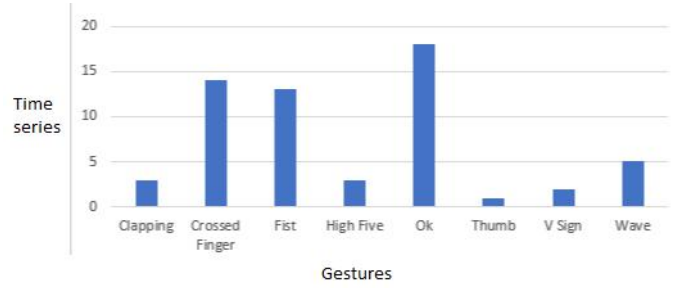


Fig4.2: Graph of gestural inputs

From this graph we see that the gesture 'OK' is exhibited highest number of times. The person also seems to show the gesture of a 'crossed finger' and the 'fist'.

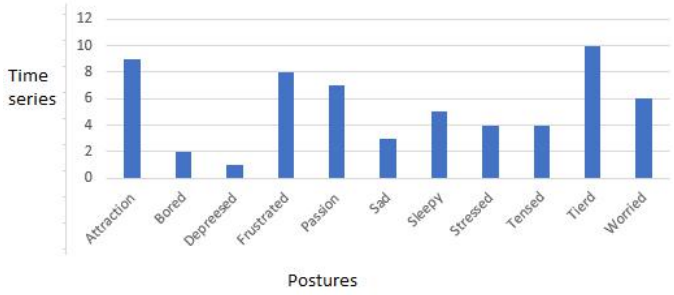


Fig 4.3: Graph of postural inputs

From this graph we can conclude that the person is tired majority of the time.

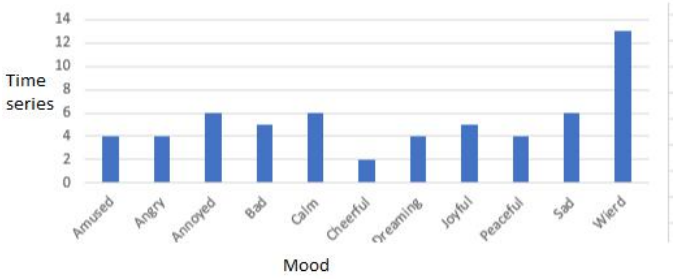


Fig4.4: Histogram representing overall mood

Combining the results obtained by the previous 3 graphs, we can conclude that the overall mood of the person is 'weird'.

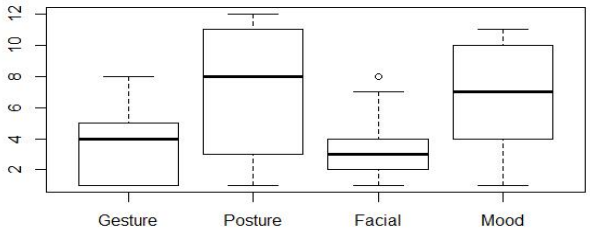


Fig4.5: Box plot for Posture, gesture, facial and overall mood.

The box plot shows the different expressions of the person and the overall mood exhibited based on the emotions that have the highest accuracy.

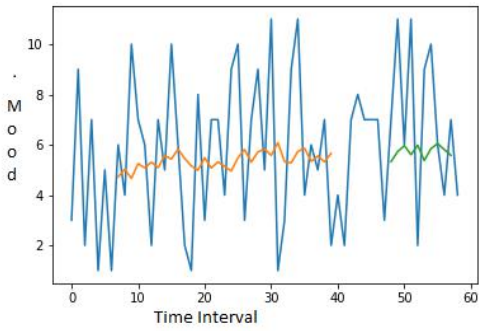


Fig4.6: LSTM graph representing the trained data.

The trained set of 60 input data sets are given ,42 trained set and 18 test data.

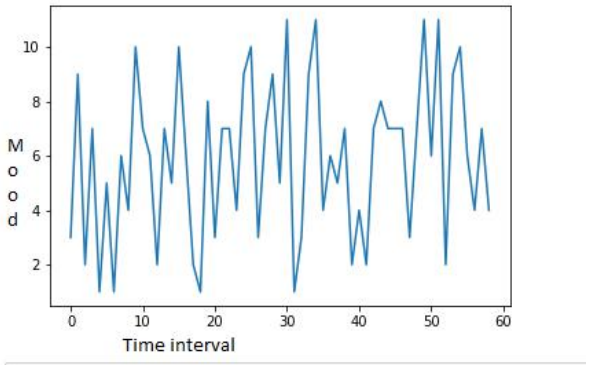


Fig4.7:LSTM graph representing overall mood

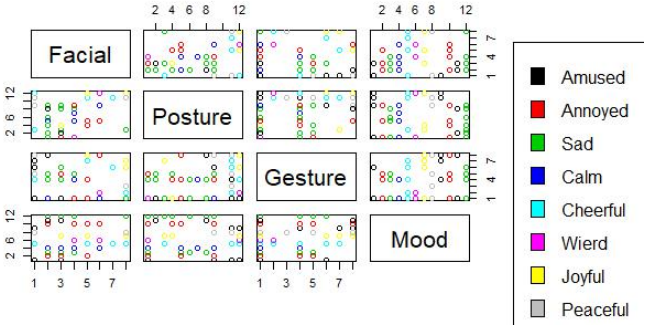


Fig4.8: Scattered plot with mood as output

KNN clustering is done to the inputs. The facial data is compared with postural data, the postural with the gestural and then finally the overall mood is obtained. The different colours represent the different outputs obtained. The different coloured dots represent the different mood obtained as a result of the input values. The mood can be 'Amused', 'Annoyed', 'Sad', 'Calm', 'Cheerful', 'Weird', 'Joyful', 'Peaceful'.

The following table shows the correlation between the features.

	Facial	Postural	Gestural
Facial	1.0000000	0.1396973	-0.07294931
Postural	0.1396972	1.0000000	0.29131701
Gestural	-0.7294931	0.2913170	1.00000000

Fig 4.9: Table representing correlations of features.

V. CONCLUSION

From the above graphs we prove that LSTM is the best way of predicting the emotions of a person. LSTM has the highest accuracy in all the 3 cases. Therefore, LSTM is the best method for predicting mood among these 3 algorithms.

Using Facial, Gestural and Postural emotions, mood is predicted. This study on mood shows the effect of emotions on a person.

The study conducted and the graphs prove that we have been successful in achieving the objectives of the project.

Future work

There are 6 other algorithms available which can be used to check the accuracy and predict the mood.

REFERENCES

[1]" Effective Emotion Recognition of Expressions from Facial

Features" by Jason Elroy Martis and Balasubramani.R .

[2] "A Proposed Framework For Effective Emotion Recognition From Real time data" by Jason Elroy Martis and Balasubramani.R.

[3] "Exploring Macroscopic Fluctuation of Facial Expression for Mood Disorder Classification" by Qian-Bei Hong.

[4] "Mood State Prediction from Speech Of Varying Acoustic Quality For Individuals With Bipolar Disorder" by John Gideon, Emily Mower Provost,Melvin McInnis.

[5] "Mood Detection and Prediction Based on User Daily Activities" by Berardina De Carolis, Stefano Ferilli

[6] "Predicting Depression Levels Using Social Media post", by Maryam Mohammed Aldarwish**.**

[7] "Deep Multiple Instance Learning for Image Classification and Auto-Annotation" by Jiajun Wu1, Yinan Yu Chang Huang, Kai Yu.

[8] "On-Line Continuous-Time Music Mood Regression With Deep Recurrent Neural Networks" by Felix Weninger, Florian Eyben, Bj¨orn Schuller.