Improving Learners Understanding System (ILUS)

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Abstract :- " Improving Learners Understanding System " is designed to give us a useful feedback on the teaching process . The classroom evaluations gives significant sources of data for instructors , helping them to recognize what they taught well and what students feel difficult to understand . We proposed a deep learning method for expression analysis we will implement it using Python libraries. This focuses on students of a classroom and understand their facial expressions. Methodology includes the pre-processing phase in which face detection is performed from captured images using Local Binary Pattern (LBP) encoding and mapping LBP are done using deep convolutional neural networks and finally emotion prediction is performed .

I. INTRODUCTION

Students interest and involvement during class lectures is necessary to track to know the grasping concepts and significantly improves academic performance of the students. Direct supervision of teachers and professors is the main reason behind student attentiveness in class. Still, there is sufficient percentage of students who are even under direct supervision tend to lose concentration. By using the e-learning environment, this problem is solved due to absence of any human supervision. This calls for an approach to measure and identify appends of attention by a student in the learning session. This study is carried out to improve student's involvement in learning platforms by using their facial feature to extract mood patterns. Analyzing the moods based on emotional states of a student during an online lecture can provide interesting results which can be used to improve the efficiency of concept understanding in lectures .

ll. SOFTWARE REQUIREMENT SPECIFICATION

A software requirement specification (SRS) is comprehensive description of the intended purpose and environment for software under development. The SRS fully describes what the software will do and how it will be expected to perform. The SRS provides an overview of the entire SRS with purpose, scope, , acronyms, abbreviations, and references . The aim of the document is to gather and analyze and give in depth insight of the complete description.

A. INTRODUCTION

We explore the possibilities of capturing emotions by various techniques. We compare some of the existing works and identify how emotions can be modeled in order to enhance its services and response and able to suggest meaningful information to users. We also define and discuss the appropriate capacity of meaningful information to generate analysis and recommendations according to theory of teaching and learning. We do our experiments in INTI International University, Nilai Malaysia observing approximately 200 students from various faculties.

B. Project Scope

A neural network approach is used to train the system using facial feature sets to predict specific facial expressions. Moreover, a data association based algorithm specifically for extracting information on emotional states by correlating multiple sets of facial features is also proposed. This framework showed promising results in inciting student's interest by varying the content being delivered. Different combinations of interrelated facial expressions for specific time frames were used to estimate mood patterns and subsequently level of involvement of a student in an e-learning environment.

III. MODULE DESCRIPTION

One of biggest differences comes in terms of differences between their design, or simply how they look. Take a look at the QR code and barcode of the URL our page . While a barcode only holds information in the horizontal direction, a QR code does hold information in both horizontal and verticaldirections. Due to which, a QRcode holds hundreds of times more information than a barcode.

This part is the heart of the project where the librarian can upload a file. Part of this book is QR enabled. File upload takes place in the form of a wizard control, where the Liberian does the upload in a step by step manner. When the librarian uploads a file, he/she will be shown a progress bar in browser to show what the status of the upload is. Metadata about the file upload file can also be entered in the first step. Second step gives us the option to enter the activation and expiration date of the uploaded files. Third step allows user to organize the files by creating folders and the last step given the option of sharing. i.e. whether the file is public, private, or can be shared by groups.In the last step of the upload process, users can choose to share the file by creating groups. A group will consist of one or more registered users of website. When a user is in a group, then only he/she will be able to see the file while searching or downloading. A user can have any number of groups.

IV. LITERATURE SURVEY

This application will help a lot of teachers to know the level of understanding of students in schools, colleges or universities. Given the importance of the application in this information age, a lot of researches has been carried out to improve and help the needy students. This section will present past, present and prospective studies undertaken for the purpose of improving the learning approaches. Teaching and learning methodologies have transcended to new levels after the boom of information technology. As a result, the quality of education and number of learners has increased substantially. Still, the modernized way of learning creates problem that affects a students learning due to unavailability of any direct supervision.

An teachers can provide some interest into students understanding during lectures, therefore students involvement in class has direct correlation with the professional aptitude of the teachers. Direct supervision not only facilitates learning but also keeps the student synchronized with the course objectives due to instant communication with the teacher at any time during the lecture. Lack of communication has shown that affected students may experience high levels of frustration. As supervised teaching is very critical to the learning of the

students, it presents a different set of challenges to teachers and students. Students visits a physical campus location and may have difficulty in establishing relationships with faculty and fellow students. Researchers who study distance learners must understand and account for these differences when investigating student understanding ,mentioned three important types of interaction in learning courses:

(a) Syllabus Content,
(b) Teachers / Prof. teaching approach, and
(c) Students Mood .

Teachers should provide all types of interactions prompting attentiveness in their courses as much as possible. Learning requires use of video, audio, text to simulate the traditional class and learning environment as closely as possible. Learning environments may be used for a numerous educational purposes.

Modern trends indicate that education will come as part with traditional education methods in the near future. In an learning environment, teacher and student are in direct interaction and content is provided by the teachers thorough lectures. As there is no means of instant communication, machine can only understand what it records using standard man machine interfaces. As there is no verbal communication between the students and the application, facial expressions are the only means that can provide concrete information about a students mood and involvement during the class.

For example, when students show confused expressions, one of the common mood patterns may be one or a combination of the following facial features i.e. eyebrows lowered or drawn together, vertical or horizontal wrinkles on the forehead, and inconsistent eye contact etc. In order to understand whether the student is grasping what is being delivered, a lecturer must sense the nonverbal indicators exhibited by the expressions of the students Facial features and there relevance to emotions has been rigorously investigated by Ekman et. in various publications and their work is regarded as one of the most significant contribution to facial attributes based emotion analysis. Facial act coding system can provide information about instantaneous facial emotional reactions, but still the need to ascertain a complete mood based on various

action units as they vary from person to person and situation to situation. Facial features (Forehead, eyes, nose, mouth, etc.) are the fundamental attributes that are extensively used in face recognition systems as their movements help determine the construction of expression on a human face.

Facial recognition can be efficiently used to identify and categorize facial expressions in real-time. Machine learning algorithms have also been employed for facial recognition to enhance accuracy and detection time. Facial expressions are basically emotional impulses translated into physical muscle movements such as, wrinkling the forehead, raising eyebrows or curling of lips. Authors in presented the beneficial prospects of using intelligent methods to extract facial expressions to improve the processing speed of image analysis. Database of facial expressions have been populated in various studies to develop interesting algorithms for various applications. Emotion recognition study can be broadly categorized into three steps:

Face detection,
Facial feature extraction and ,
Emotion classification.

Detailed research has been carried out in each of these.

In an image, detecting the presence of a human face is a complex task due to the possible differences attributed to different faces. The varying physical attributes of a face are the major cause for this variation. The emotions which are the combination of facial action units in a human face also affect facial appearances. Neural networks can be actively used to classify a learners orientation in pre-determined categories, which can be associated using “Apriori algorithm” to allow for real-time HMI (Human Machine Interaction) intervention for improved involvement. The aim was to assess in real-time whether the learning systems can be improvised to recognize the facial expressions and attention state of a learner using classification and data association algorithms. These systems can then be used to improve content delivery of learning platforms through real-time mood extraction. Appropriate learning materials and activities for a learner can be incorporated to alter his mood state during learning activity. Face detection can be broadly classified into four categories:

1.Knowledge-based approach,
2.Feature invariant approach,
3.Template-based approach and
4.Appearance-based approach

Appearance-based approach maps the human face in terms of a pixel intensities. Since only face patterns are used in its training process, the efficiency is not good. Even the time taken is lengthy, as the number of patterns which needs to be tested is large. A neural network was found to be quite effective in capturing complex facial patterns from facial images. Both supervised and unsupervised learning approaches are used to train the neural network. Since finding a sufficient training data set is questionable, unsupervised neural networks are more preferable.

Apart from neural networks, Support Vector Machines (SVM), Distribution based approaches, Nave Bayes classifiers, Hidden Markov Models (HMM) and Information theoretical approaches can also be used for face detection in the appearance-based approach. Rather than minimizing the training error as in neural networks, SVM operate by minimizing the upper bound on the generalization error limit instead of minimizing training error as in neural networks. Nave Bayes classifier is more efficient in estimating the conditional density functions in facial subregions. The HMM differs from template-based and appearance-based approaches as it does not require exact alignment used in these approached rather HMM constitutes a face pattern as a series of observation vectors. A student involvement in learning is directly based on how he can be engaged to focus and listen to the content being delivered. Facial expressions over short instants can be misleading and a time frame based analysis to ascertain emotional states can provide interesting results. For example, confusion and frustration was studied using temporal and order based patterns using continuous affect data .

V. SYSTEM ARCHITECTURE

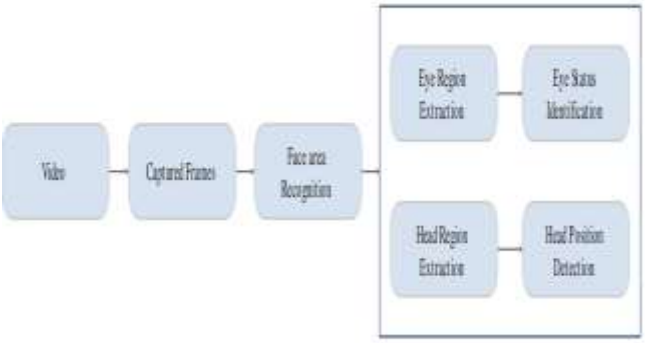

Fig : System Architecture

Video/Camera : Used to take images to be processed on ,
Captured Frames : The number of images captured ,
Face area Recognition : The recognized faces ,
Eye Region Extraction : Number of eyes detected in image ,
Head Region Extraction : Number of heads detected in image

VI. VIOLA JONAS ALGORITHM :

This is the first face or object detection algorithm framed by Viola Jones for solving the issue of face detection.It is projected in three significant ways namely through :

(a) An integral image (a new image) for the computation speed,
(b) An efficient classifier called Ada Boost for choosing a small number of visual features from a very large set of potential features ,
(c) A process of cascade classifier for locating the required facial regions .

- It has high recognition accuracy and less false positive rate than earlier .

VII. CONCLUSION AND FUTURE WORKS

CONCLUSION -

The system thus aims at providing the teachers with a cheaper, additional hardware free and accurate emotion based feedback system. This project will be of great advantage to teachers to redefine the teaching plan or can repeat any lecture if emotion are dull. This will help students to achieve good marks.

FUTUREWORK -

- Android App which will reduce the cost of camera
- More advance algo can be used .

VIII. REFERENCES

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