Student evaluation and stress detection system using Machine Learning

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ABSTRACT

In this project, we propose a stress recognition algorithm using face images and face landmarks. In the case of stress recognition using a biological signal or thermal image, which is being studied a lot, a device for acquiring the corresponding information is required. In order to remedy this shortcoming, we proposed an algorithm that can recognize stress from images of the students in the classroom acquired with a general camera. We also designed a deep neural network that receives facial landmarks as input to take advantage of the fact that eye, mouth, and head movements are different from normal situations when a person is stressed and also we can identify the emotion of the student, there will conclude that whether the students understanding the concepts or not. Experimental results show that the proposed algorithm recognizes stress more effectively.

Keywords: CNN, OCR, Student Performance, Technology Social Factors, Academic Reports, Machine Learning.

1. INTRODUCTION

Human emotion recognition is implemented in numerous areas needing extra safety or information about the individual. It can be perceived as a next step to face detection in which we might require to establish a second layer of safety, where the emotion is detected, with the face. Of late, as modern individuals agonize with perilous heights of stress, a structure is going to be established to identify whether a person is stressed in addition to advice in path of dropping stress. We also proposed an emotion recognition of the student and update to the concerned class teacher. Monitoring about the understanding of classes for the students and time table is being updated to the students. In the field of stress detection, numerous approaches by means of bio signals have been considered. Nevertheless, to measure bio signals, one might sense refusal as bio signal gaging apparatus requirement is to stay in-tact with the body. Hence, several studies on stress recognition by means of thermal images are done, which has drawbacks that it is hard to identify stress effortlessly since it won’t be known with lack of thermal imaging apparatus. In contrast, in the circumstance of stress detection study with general images, maximum studies have utilized comparatively simple features. We here propose a technique to identifying stress through the extraction of high- dimensional features from face images accomplished by an all-purpose photographic camera. Also to get to know more effectual features, the position of facial landmarks is used which confirms vast variation at the time of stress. Monitoring the progress of the student is helpful to a student’s triumph, also charge and aid them to achieve their goals. The growth of their outcomes must be communicated to parents or guardians in the system of an official report that gives what the child is learning and the advancement done. In UK, 1 of 5 pupils come on board and the families hardly communicate in English language. Yearly reports cannot accommodate to these BAME families, since teacher’s written information might not be entirely understood. So the schools are stimulated to inscribe the school reports in the pupil’s primary language, yet not always possible. At present there are no means of translating computer-based report information to qualitative output that deliberates not only pupil’s attendance and test scores, but their attitude also.

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2. LITERATURE SURVEY

[1] The essence of the paper is to develop a stress detection mechanism and a stress level indicator circuit for measuring the stress level of human brain using the Electro encephalogram (EEG) Signal. The designed mechanism can distinguish human stress in five levels i.e. Relaxed', ‗Less stressed', ‗Moderately Stressed', ‗High Stressed ‘and ‗Alarmingly Stressed'. The obtained efficiency of our developed stress detection mechanism is 91% not hundred percentage.

[2] Stress recognition algorithm using face images and face landmarks. As a result of the experiment, we confirmed that the stress recognition performance was further improved when using facial landmarks. Those used in smart environments for activity recognition, need improvements in order to become more reliable and more accurate for real life.

[3] In this study, we aim to find physiological or behavioural stress. In comparison to a baseline 87.5% accuracy using the surveys, our results showed over 75% accuracy in a binary classification using screen on, mobility. Our method is much more general and can be useful to understand which factors influence any identifiable affective changes. Although these results are preliminary with limited number of participants.

[4] Recently, there are many problems in software laboratory course management. It is, particularly, widespread that student play video games or do other things which are unrelated to the course. However, most of present monitoring software are all based on the operation of teachers, rather than a real-time system, which is very inconvenient.

[5] The purpose of this study is to understand how student behave in the online learning environment Moodle. By using Grey relational analysis to understand and to predict students' grades, researchers are interested in understanding if there is any association between students' interactivities and their final grades in Moodle system.

[6] Stress detection system is developed based on the physiological signals monitored by non-invasive and non-intrusive sensors. The development of this emotion recognition system involved three stages: experiment setup for physiological sensing, signal preprocessing for the extraction of affective features and affective recognition using a learning system.

3. SYSTEM DESIGN

The facial appearance identification system is skilled utilizing supervised learning method in dissimilar appearance. The system consists the training as well as testing stages following which appearance acquisition, face identification, appearance preprocessing, details extraction and classification. Facial appearance utilized by which facial expression identification are static appearance or appearance sequences. Appearance can be taken by camera. Appearance identification helps in identification of facial appearance. Appearance identification is done by training dataset utilizing Haar differentiator named Voila-Jones face sensor and executed by Opencv.

4. SYSTEM IMPLEMENTATION

System modules

- Face detection
- Facial landmark
- Convolution Neural Network
- Student’s Progress in SMS using OCR

Face Detection:
- Face recognition is a supercomputer tools being use in a mixture of appliance so as to recognize individual face in digital imagery. Face recognition as well refers to the emotional method in which individual place along with be present at to face in an illustration picture.
- Face recognition be able to be regard as a detailed casing of thing-group recognition. In thing-group recognition, the duty be to discover the location and size of every items in a picture so as to fit in to a certain group.
- It is equivalent to picture recognition in which the picture of an individual is corresponding spot with spot. Picture match among the picture supplies in folder. Every facial characteristic change in the folder resolve invalidates the corresponding procedure.
Facial Landmark:
- Facial marker recognition is a supercomputer visualization theme along with it deals among the trouble of recognition distinguishing features in individual faces robotically.
- The subsequent quotation introduce to facial landmarks recognition: "Like supercomputer visualization engineers and researchers they has been demanding to identify with the individual face ever since the extremely early on time.
- The mainly evident function of facial examination is Face identification. Except to be capable to recognize an individual in a picture we primary require to discover wherever in the picture a face is positioned.
- As a result, face recognition — positioning face in a picture and recurring a bounding four- sided figure / quadrangle so as to contain the face — was a burning examine spot.

Convolution Neural Network:
- The given name “convolutional neural network” indicate so as to the system employ an arithmetical process called convolution. Convolutional networks be an expert kind of neural network so as to use density in position of universal medium development within at slightest one of their layer.
- The dimension of the information got by the feature withdrawal technique is way too high hence, by means of classification it shall be decreased. Features must use various ranges according to the object which belongs to various class hence, classification shall be completed by the CNN algorithm.

Tesseract OCR:
- Python Tesseract is an optical character recognition (OCR) engine for various OS. Tesseract OCR is a system electronically extracting text from imagery and reusing it in a various ways such as document editing, free-text searches.
- OCR is a technique that can convert documents such as scanned papers, PDF files and captured image into editable data. Tesseract can be used for Max OS, Linux and Windows.
- Programmers by utilizing an API, OCR can extract text printed or typed on an image. Tesseract can utilize Graphical user interface GUI that are available from Third party resources. Linux distributors can provide Tesseract OCR directly.

5. RESULTS

![Student Performance Analysis System](image1)

**Fig: Result-1**

![Student Performance Analysis System](image2)

**Fig: Result-2**
6. CONCLUSION
This project proposes a move toward for recognizing the group of facial language. Face recognition and removal of terminology from facial imagery is helpful in a lot of applications, such as robotics visualization, videotape observation, digital-cameras, safety and individual- supercomputer communication. The project’s purpose was to expand a facial appearance identification method implement the supercomputer visions.

7. FUTURE ENHANCEMENTS
In this project, seven dissimilar facial terminology of students imagery from dissimilar datasets contain be analyze. This scheme involves facial appearance preprocessing of capture facial imagery followed by characteristic removal by means of characteristic removal by narrow Binary pattern and categorization of facial terminology based on preparation of datasets of facial imagery based on convolutional neural network.

8. REFERENCES