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Integrated Approach of Prediction of Facial Expression During Online Examination

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Abstract:- To evaluate the candidates based on their knowledge level is highly important for success of any recruiter organization or selection committee. If this process is provided with additional help to judge the confidence level of the candidate based on certain parameters related to facial expression and mouse movements during examination will enhance the current system of online examination. Some students also use unfair means to score in the examination and this proposed system will also ensure fair examination practices.

This application will conduct the examination in a fair manner by recognising the facial expressions of the candidate during exam. The expression generated by candidate will give additional perspective for evaluations. Candidate will be monitored through web cam and the algorithm will be applied to it detecting the face of candidate. At the initial stage result will be produced based on few parameters.

This system will be helped by providing additional help in deciding through considering pointer movement which will tracked through mouse. This combined result will enhance the accuracy of result. Finally, a report will be generated after the exam which tells how much confident the candidate was in the exam with additional parameters like anger, surprise, happy, etc.

Keywords:- *Facial Emotion, Surveillance, Para-verbal communication.*

Title:- Integrated approach of prediction of facial expression during online examination.

I. INTRODUCTION

A. NEED

From survey there is only 7% verbal information submitted and rest are divided as:

55% - non-verbal communication i.e. body posture, gestures and facial expressions.

38% - para-verbal communication i.e. voice, volume and inflection.Many applications such as monitoring and surveillance, the traditional biometric techniques do not work for many reasons. So, we need a system which is similar to human eye to identify a person.

Emotion recognition in online examination will play a vital role for conducting exam which would cover the need of checking confidence of individual. There is a great need to prevent cheating that are being done in examination.

Online examination has advantage like prevent cheatings, saves time, no restriction to places and easily manageable resources. The existing system do not show how much active and confident the individual is during the exam. By providing such information to individual will help them in learning more effectively.

B. Applications

- *Identifying individual's identity*

Identifying individual in various documents such as Passports, Aadhar, license and id-cards. It will reduce work load as existing photo database and existing enrollment technologies can be used.

- *Online organizational exams*

Application would help in conducting online examination world wide which saves time as it allows students to give exams at a time and displays the result as the exam gets over. So, students do not have to wait for the result.

- *Attendance in exams*

Attendance monitoring is generally done though invigilators which requires time. A fraud case might occur in such scenario. This system would eliminate such cases as it would take a proper check on individuals identity and inmarking the attendance.

- *Surveillance*

This is nothing but monitoring, this system would monitor each activity of user and generate warning messages. There is no need to separately install CCTV camera's and other electronic equipment's. Which will save cost of buying the equipment's and man power for installing them on places.

II. SYSTEM ARCHITECTURE

The process will be divided into steps:

Step 1: While the candidate will start the test picture will be captures and all the other pre-requisites will be stored in the database.

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Step 2: Then the recording of candidate will start along with monitoring of mouse at each question will be done.

Step 3: After each question algorithm will be applied and result will be stored in database.

Step 4: After final question result will be displayed with the level of confidence at each question.

The automatic evaluation of result of expression along with result of the actual examination will be done.

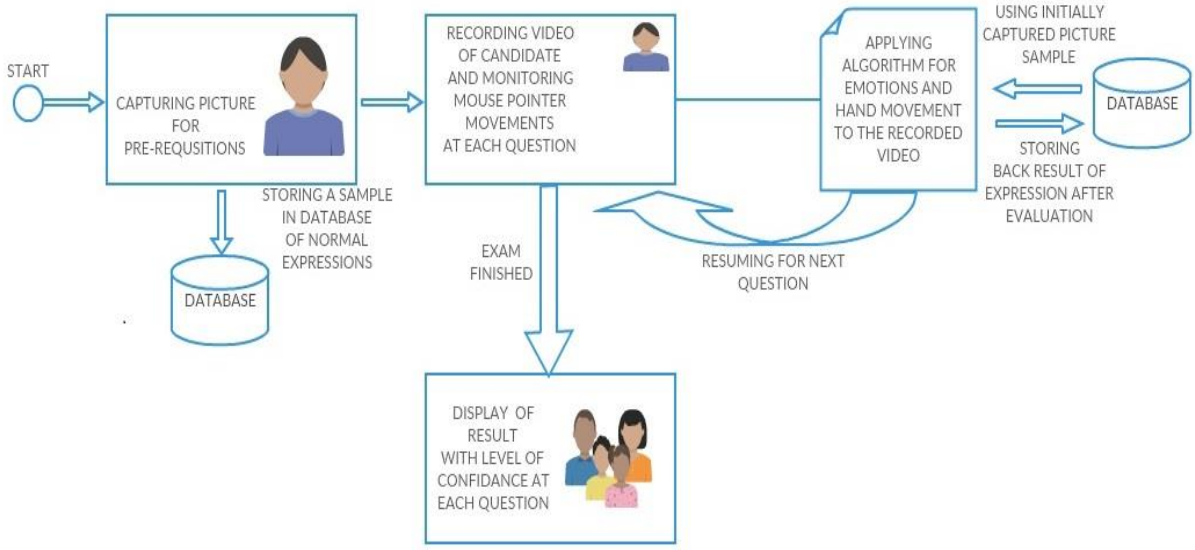

Fig 1:- System Architecture

III. IMPLEMENTATION

Our goal is to predict behaviour of candidate during online examination. For this we are analysing facial emotions and mouse movements of the candidate. For detecting candidate facial expression, we are using clmtrackr.js[5] it is a Javascript library, which fits different facial models to faces which are present in images or videos. Here we have considered only three emotion models Angry, Surprised, Happy. Along with facial recognitions maximum cases to preventing cheating is done which includes:

- Opening a new tab.
- Disabling of right click
- Reloading
- Minimizing window
- Copying content
- Disabling ctrl+p and other functions

In our project real-time emotions of candidate are analysed and updated in database with help of Ajax. Ajax is a technique which update a web page without reloading the page. So, as soon as some emotion is detected it is updated in corresponding table of database. This result is gathered by updating the previous value.

Simultaneously cursor movements are also analysed for predicting confidence level. It is predicted on basis of distance moved by the cursor. Here we are calculating Euclidean distance between the initial (X1, Y1) coordinates and final (X2 , Y2) coordinates of cursor.

if **p** = (x, y) and **q** = (*a, b*) then the distance is given by

$$dist((x, y), (a, b)) = \sqrt{(x - a)^2 + (y - b)^2}$$

Here if calculated distance is greater than some threshold T then candidate is considered as less confident in that question.

At last a report is generated determining the percentage of emotions w.r.t to other emotions.

IV. FUTURE SCOPE

- Recognizing more expression like sad, disgust etc. so that behavior of candidate can be judged more precisely.
- Getting more accurate results in case of low lightning present in the background of candidate.
- Detecting face out of frame during examination.

V. CONCLUSION

The integrated approach for prediction of facial expression during online examination can developed and employed for Detecting Impersonation of Candidates in the examination system. Candidate Identity based on emotion recognition is implemented and on successful detection and further examination can be conducted with evaluation of result and displaying the result of confidence at each question. Further if a face is detected is not recognized,

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when compared with the enrolment database, then a fraud is detected with respect to impersonation. This way the expression resulting the confidence of candidate can be evaluated and a more secure as well as dynamic system can be developed for online examinations.

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