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Implementation on to Generate Exam System According to Authorized Face Student

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ABSTRACT: At the moment, examining the exam papers and presenting the end-of-term results is a daunting task for educational institutions, colleges, institutions, departments and universities. The preparation of handwritten test papers is therefore very difficult and many counterfeit activities have taken place today. To simplify and more accurately the proposed goal of building automated paper testing software and grading system. In the field of education despite the teaching, research and performance of many organizations that started with the use of advanced technology. The method of testing test papers has changed although computer use wherever computer use is mandatory in all various analytical methods. The use of m-learning or other remote education continues to increase due to its ability to reach people who do not have access to campus. Tests are an important part of the education system and online learning program. In testing, a way to find and reduce the chances of cheating is very important to ensure that students have learned what is given. Various methods have been suggested to provide effective, comfortable testing for online testing.

KEYWORDS: Preprocessing, Segmentation, Feature extraction.

I. INTRODUCTION

Nowadays many people use images to represent and illustrate information by converting a digital image into a variety of activities in which the release of information through image processing techniques. Important details extracted from the photos are very popular. Image recognition is an important part of comprehensive application analysis. Examination is one of the most important aspects of a learning program, as well as an online learning program, it is no different. During the online test, the possibility of cheating will always be present. Therefore, prevention and detection of its occurrence are much needed. In a standardized test held in a designated environment, the test participant is operated by a classroom supervisor during the test, while in an online test, a reliable and inexpensive skill is required to convince the education provider of the student's learning outcome.

There are many software programs that help the trainer to do the exercises online. The general requirements they request for taking tests from anywhere in the system with a webcam and internet connection. However, they can only guarantee the integrity of their professional qualifications. That shows they are still relying on the process of monitoring human testing. Therefore, making the monitoring process work without compromising credibility and cost-effectiveness is a challenge discussed in this paper. The system proposed here uses a single webcam with microphone and internet connection. With these low requirements.

II. RELATED WORK

Digitized Exam Paper Evaluation Rajesh.R1, Kanimozhi.R2: Currently examining exam papers and presenting expired results is a difficult task for academic schools, colleges, institutions, departments and universities. The preparation of handwritten test papers is therefore very difficult and many counterfeit activities have taken place today. To simplify and more accurately the proposed purpose is to make automated test paper software and grading system. In the field of education despite the teaching, research and performance of many organizations that started with the use of advanced technology. The method of testing test papers has changed although computer use wherever computer use is mandatory



in all various analytical methods. This paper is organized into different patterns such as offline, online and test paper by hand with different analyzes and techniques.

Continuous User Verification Project for Online Testing in M-Learning: Asep Hadian SG, Yoanes Bandung: The use of m-learning or other remote education continues to increase due to its ability to reach people who do not have access to campus. Tests are an important part of the education system and online learning program. In testing, a way to find and reduce the chances of cheating is very important to ensure that students have learned what is given. Various methods have been suggested to provide effective, comfortable testing for online testing. Start by using a complex test design for non-proctoring tests, remote webcam proctoring, machine-based proctoring and finally research with automated online proctoring. Visual verification throughout the test period is required for an online test, so face verification is required. The only problem left in the face area is the systemic stiffness of the contrast and lighting variations. In this paper, we have proposed a way to strengthen stamina and brightness by performing a growing training process using a set of training data obtained from online m-learning sessions.

Intelligent Online Monitoring System: Swathi Prathish, Athi Narayanan S, Kamal Bijlani Over the past few years, e-learning has become popular internationally due to its flexibility, availability and user-friendliness. As for online testing; a major challenge facing the research community is the printing methods used. In this paper, we present a way to avoid the presence of a champion throughout the trial by building a comprehensive multi-method system. We have used Hardware such as web-cam to record audio and video as well as active window scanning. This combination forms the input of a law-based understanding system that has the power to determine whether any wrongdoing has occurred. Examinee face is available and used to extract feature points thus limiting the shape of the head. Misbehavior is found based on variation of the yaw angle, the presence of noise and active window shooting. Our system has been tested in the e-learning environment and we have been able to make monitoring monitoring easier.

III. IMPLEMENTATION

We use the Haar cascading algorithm for face detection. For the first one, the system will capture the face of the person who neglects it, the background, and then saving it in the database, it is given after the start of the final exam after each question, there will be a new face in order to capture a user's camera, and restore it, along with the first base was occupied during the registration. If the system detects that it has been matched to an image, or a person, you can go to in order to proceed with the test. For a second, we are using the local histogram of the binary patterns (LBPH), in order to train the system with the photos taken, when you sign up with the help of the stored data. Then, the algorithm will have to be trained. Each have been created for the use of the histogram for each photo, and data to be learned. So, if we look at the picture, we can see once again, the steps for this slide, in order to create a histogram that represents the image. So, in order to find an image that matches the input of the picture, we only need to compare the two histograms, and return to the photo, next to the histogram.

IV. METHODOLOGY

4.1 System Architecture:

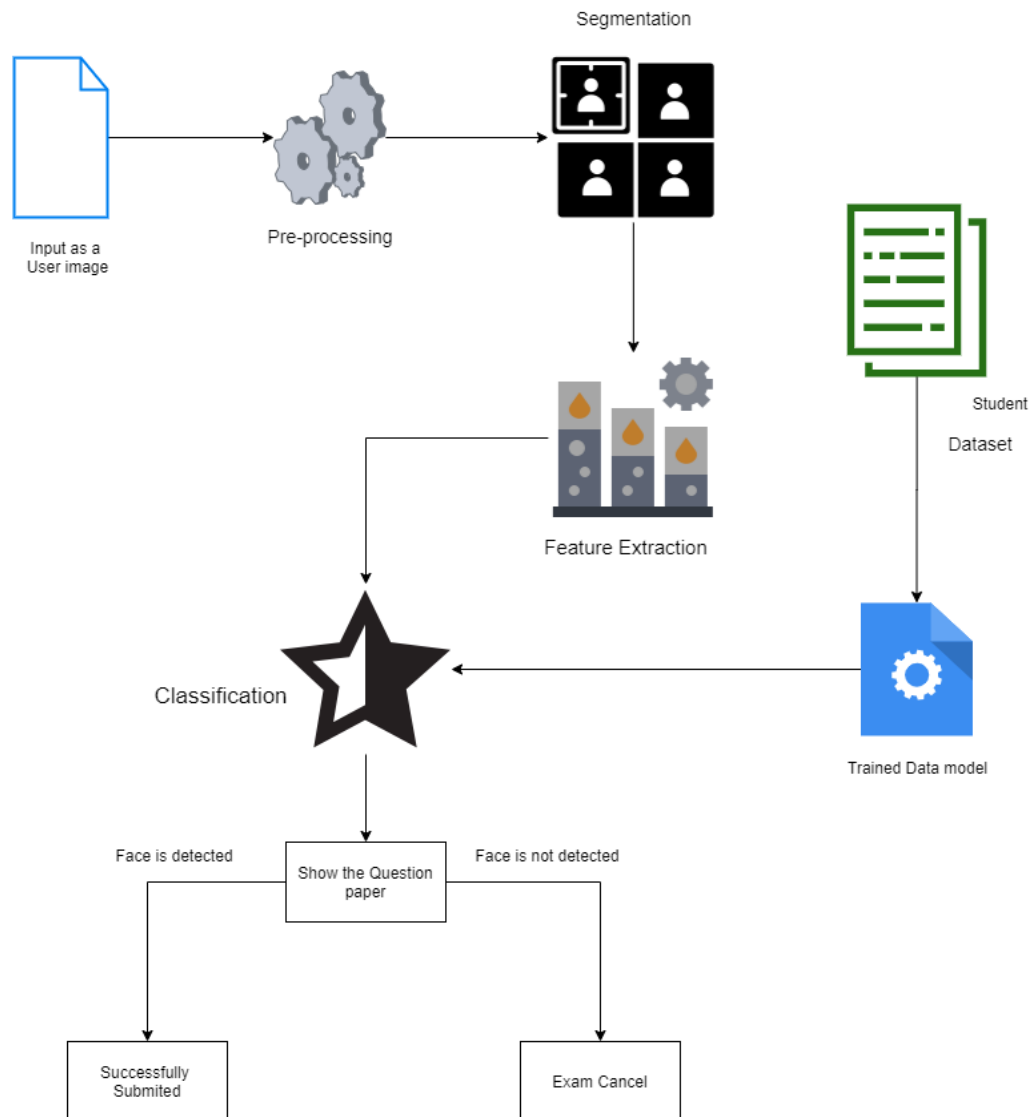


Fig 1 System Architecture

4.2 Image Extraction :

The extraction from relevant data through particular field and preprocesses the information in order to enhance data and eliminate noise. The characters are recognized by the extraction of field is nearby subsequent to the present analysis.

4.3 Pre_processing :

Stage Pre-processing step involves RGB to grayscale image alteration, noise removal, Thresholding etc. In RGB to grayscale picture conversion, RGB image is converted to gray image. Thresholding converts gray to black and white image. If needed the key document could be resized if needed.

4.4 Haar Cascade Algorithm :

Object detection using Haar feature-based cascade classifiers is a detection method proposed by . It is a Machine Learning based approach in which the cascade function is trained over a lot of positive and negative images and then used to detect objects in other images .Here in case of facerecognition, the algorithm requires a lot of positive images(images of faces) and negative images(images without faces) to train the classifier. Then the features are extracted from it. For this, haar features shown in the below image are used.

Each feature is a single value obtained by subtracting the sum of pixel values under white rectangle from the sum of pixel values under black rectangle. In order to solve each feature calculation that requires a lot of computation, a simple solution called integral images was introduced. It simplifies calculation of sum of pixels, to an operation involving just four pixels .Also among all the features we calculated, most of them are irrelevant. So we need to select the best feature out of these. For this, each and every feature is applied on all the training images. For each feature, it finds the best threshold which will classify the faces to positive and negative images.

Then the features that best classifies the face and non-face images with minimum error rate is selected .Still applying all the final features on an image to check if it is face or not is a little inefficient and time consuming. (Take each 24x24 window in an image) Hence the concept of Cascade of Classifiers was introduced in which instead of applying all the features on a window, the features are grouped into different stages of classifiers and applied one-by-one. If the window fails at any stage, it is discarded and no further stage is checked. Whereas, if it passes, the second stage of features is applied and the process continues. The window which passes all the stages is a face region.

4.5 Flask, Numpy and Pandas :

Flask is popular python web Frame work , which has extending feature ability to work with python basically used for developing web Application.

NumPy is a Python library used for working with arrays. It also has functions for working in domain of linear algebra, fourier transform, and matrices. It is an open source project and you can use it freely. NumPy stands for Numerical Python.

4.6 Local Binary Patterns Histograms (LBPH) :

1. Training the Algorithm:

First, you need to train the algorithm. In order to do this, we use data from the photos of the faces of the people we want to admit it. And we also need to specify an identifier (such as a phone number or the name of an individual) of each frame, so that the algorithm will use this information to recognize the image, and you're going to get to the exit door. Once again, it is that the person must have the same user ID.

2. Applying the LBP operation:

LBPH, the first computational step is to create a brand image, the better the description of the original image, to highlight the facial features. In order to do this, the algorithm uses the concept of ma, the window is based on the radius, and the neighbor's stats.

The image below shows this procedure:

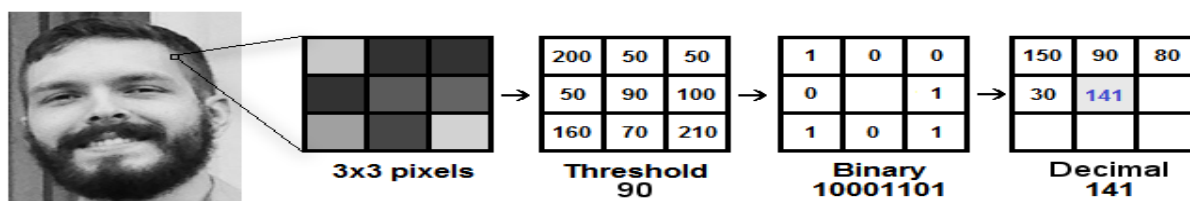


Fig 2 Procedure of how LBPH Algorithm works.

Based on the image above, let's break it into several small steps so we can understand it easily:

Let's say that this is a photo of a face, the shades of gray. We, as you are able to purchase any of these images for a 3x3 pixel on the screen. It can also be represented as a 3x3 matrix, which has the intensity of each pixel is (0~255). Then, we need to get to the center of the value of the array to be used the day before. This value will be used to determine the values of the 8 neighbors. Each of the adjacent central value (threshold value) is assigned to a new binary value. We will create the following applies to 1, the value is equal to or greater than that of the preceding day, and for a 0. Now, the array will only contain a binary value (ignoring the key-value). We need to combine all of the binary values of the matrix, the position of the line-by-line in order to create a new binary value (for example, 10001101)...

3. Performing the face recognition :

At this point in time, the algorithm has already been trained. Each of the created histogram, using a training data set for each image. So, if we consider that the set of an image, we can see once again, the steps for this slide, in order to create a histogram that represents the image. So, in order to find an image that matches the input of the picture, we only need to compare the two histograms, and return to the photo, next to the histogram. We may use a variety of methods in order to compare the histogram to calculate the distance between two histograms, for example, the Euclidean distance, chi-square, absolute value, etc., In this example, we will use the Euclidean distance (which is a fairly well-known), according to the following formula:

$$D = \sqrt{\sum_{i=1}^n (hist1_i - hist2_i)^2}$$

So the algorithm output is the ID from the image with the closest histogram. The algorithm should also return the calculated distance, which can be used as a 'confidence' measurement. **Note:** don't be fooled about the 'confidence' name, as lower confidences are better because it means the distance between the two histograms is closer. We can then use a threshold and the 'confidence' to automatically estimate if the algorithm has correctly recognized the image. We can assume that the algorithm has successfully recognized if the confidence is lower than the threshold defined.

V. CONCLUSION

In this project we have implemented Haar Cascade algorithm and Local Binary Patterns Histograms (LBPH) for to recognize face and detecting fraud person while appearing for the exam .We have used Numpy , Pandas ,Tkinter libraries for better experience . Finally we got accuracy in detecting the fraud and creating better system to conduct exam in a proctored environment.

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