



INTERNET OF THINGS (IOT) BASED ADVANCED ONLINE EXAMINATION USING RASPBERRY PI

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Abstract:

In this research we have proposed IOT based advanced Online examination using Raspberry pi for Alarm system and border security. With the event of recent education, considering the defect of current online exam system, a replacement projection of online exam system primarily based on Raspberry pi IOT is projected, and also the key implementation techniques and ways also are represented. Internet of Things (IOT) has provided a promising chance to make powerful Examination systems and applications by leverage the growing omnipresence of wireless, RFID mobile and detector devices. a large vary of IOT applications are developed in recent years. In a shot to grasp the event of IOT in on-line examination, here we tend to propose this analysis of IOT, IOT key facultative technologies, major IOT applications in on-line examination and identifies analysis trends and challenges. Here we tend to introduce all the examiner details square measure holds on within the server. Then if somebody needs to starts on-line examination, 1st they ought to apply face recognition (in Open CV based) technique. as a result of it slow unwanted person conjointly enter to Wright the examination, thus this can be the simplest thanks to known any culprits square measure found or not. Then examination enter to Wright the exam, here conjointly I am apply some security. Currently a day's already queries square measure hold on within the on-line or any paper written copy.

Keywords: Facial Recognition; Facial Identification; Neural Network Classification; PIR Sensor; Raspberry Pi.

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1. Introduction

As engineering is continually evolving, education systems cannot stay firmly dedicated to the previous ancient ways that of learning. The standard examination procedure needs a good variety of human resources, stationery, and investment of your time in composing examination queries. In distinction, the new models of on-line examinations have varied edges for each the professional person and also the students. With on-line examination, the professors supervise additional simply the students' progress and set examinations fluently. Some courses have four examinations per semester, so while not new technology developments, the work of the testier would be skyrocketed. Besides, students will take the test from a distance once they square measure ready.

The main purpose of this project was the event of associate integrated system that generates examination papers with random questions about the programmed of digital circuits courses. This method consists of an information, a web site and a questions program generator. Every examination becomes distinctive, because of the various random queries provided by an info of queries, that is created by a tool program. Moreover, it ought to be mentioned that associate extension of the web site is that the anonymous free exams construct of the examination tests for college students to apply often and check the obtained data. Online learning mechanism could be a newer and improved version of distance learning. it's a way of delivering education data through the web. it's not like the traditional education system wherever time and site matter slot. Through this, a student has the pliability of not being physically in a tutorial institute continuously.

The student will set his/her own pace and select the foremost convenient time and place to check. Students around everywhere the globe will learn from these on-line courses since they are doing not ought to physically go to those instructional institutes. once it involves pedagogy, most of the institutes use Learning Management Systems (LMS) to deliver their course materials to the scholars. once the scholars square measure engaged in on-line learning, the prospect of obtaining the feedback from a teacher won't be effective, since the teacher doesn't grasp the emotional state/behavior of the scholar. Not just for on-line education systems, once it involves Game based mostly learning or Gasification, there's no thanks to get the teachers' feedback betting on the student's emotional condition/behavior.

According to Goleman, associate skilled teacher is ready to acknowledge the emotion of a student associated reply to student in an acceptable approach so it'll completely impact on the student's learning method. Once it involves on-line education, there's nobody to observe the scholar, and it's essentially supported student focused learning mechanism. Therefore, the student is unable to induce the feedback per his/her emotional state/behavior. Rather than that the scholar can get a general feedback from the course organizer or from the trainer. However, that ought to not be the proper approach. Thence there ought to be how to spot the emotional state/behavior and give the feedback to the scholar. The opposite drawback is that the chase of the emotional states/behavior of the scholars. Since this is often for on-line education systems, the emotional states cannot be detected by victimization physical devices.

This literature review is distributed to seek out the way to learn to learn and to spot the present ways that and suggests that of evaluating the performance of the scholars once they square measure engaged in ancient learning and on-line learning. Finally, there'll be a comparison of every and each mechanism.

An examination is used to apply for the important one and therefore it's taken before a political candidate examination. In such a mock test the marks don't count, i.e. this trial examination does not count for credit. A mock examination is usually given to an equivalent standard and below an equivalent controlled conditions because the official examination. Hence, it offers students the chance to apply for the later, vital examination, to urge a plan of the kinds of queries asked, and to induce accustomed laws and locations of the official examination.

Furthermore, students will apply to figure below time pressure with solely those aids allowed to be employed in the official examination. Another, even additional vital aim of mock examinations

is to supply the scholars with info on their actual learning progress. Students get a plan of what they still ought to learn. Thanks to the time gap of typically a number of days to a number of weeks between mock and official examination, there's still the chance to fill these data gaps. It's up to the scholar to use this chance.

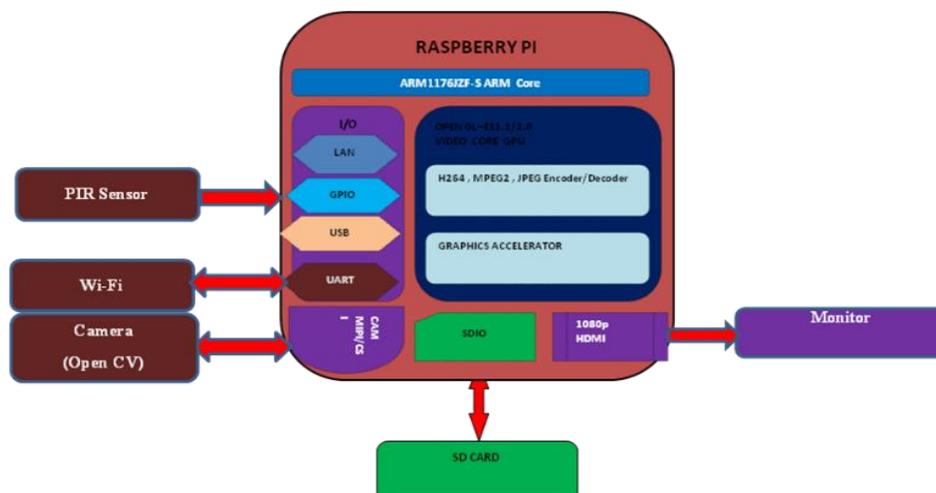
An electronic mock examination, i.e. on-line mock test is a variant that differs considerably from those taken on paper. Electronic mock examinations are performed unattended. Students will take them reception at a time of their alternative. Additionally, it's approach easier to permit students to require electronic mock exams over once than for the paper-based version. Students profit of this chance, for example, to apply solely bound components, e.g. theory queries, of the exam. Altogether cases of electronic mock examinations, feedback is sometimes additionally given electronically. During this work, we have a tendency to describe the setup for associate mechanically marked electronic mock examination for the course Basics of pc Science. we have a tendency to discuss question sorts apart from multiple-choice queries that allow machine-controlled marking.

In this paper we tend to propose the internet of things is thought to be the third wave of knowledge technology once web and mobile communication network, that is characterized by additional recognition, additional comprehensive ability and intelligence and conjointly we tend to introduce new issue of open CV primarily based face recognition.

In the Introduction section, present clearly and briefly the problem investigated, with relevant references.

This section should put the focus of the manuscript into a broader context. As you compose the Introduction, think of readers who are not experts in this field. Include a brief review of the key literature. If there are relevant controversies or disagreements in the field, they should be mentioned so that a non-expert reader can delve into these issues further. It should conclude with a brief statement of the overall aim of the research or experiments and a comment about whether that aim was achieved.

2. Materials and Methods



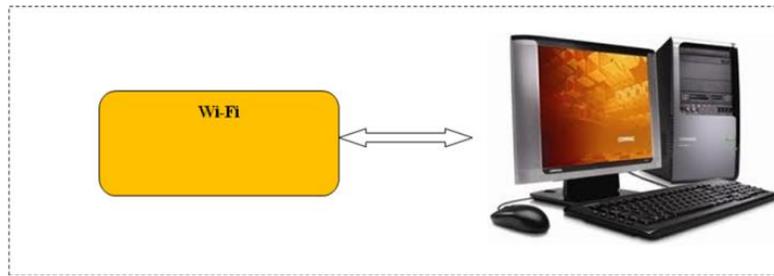


Figure 1: Block diagram of IOT based advanced online examination using Face recognition

1) Software Development

In software system development, the face recognition method is completed in OpenCV. The system is developed victimization pc Vision tool case, applied mathematics and Image Acquisition tool case. Eigen faces methodology: an initial set of pictures of faces are accustomed produce a coaching set. The quantity of face shots of every person keep within the information depends on what quantity processing time they'll take. These faces are then de-escalated into individual vectors. The magnitude of every vector represents the brightness of individual sectors of the grey scale image. A variance matrix is created by normalizing these vectors. After this, eigenvectors are derived from this variance matrix and a collection of eigenvectors of a picture forms an Eigen face. Eigen face helps in precisely focusing at the most face features instead of the total face information. In different words, it permits to find the load of every face.

When a replacement face image is non-inheritable the load of that face is calculated then deducted from the every of the weights of different pictures within the information. Those distinction numbers represents what quantity completely different every image is from the initial image. The lower the quantity the nearer is that the match. This distinction is additionally referred to as the easy lay geometer distance.

Image acquisition: during this method, the input face image is captured via integrated digital camera. Once the input image is captured, the options information are extracted. the aim of image acquisition is to hunt and extract an area that contains solely the face.

Pre-processing: In pre-processing, the non-inheritable image is resized to a particular size and backbone. The image is resized to 180x200 pixels. Dimensionally reduction is completed by pressing the initial options while not destroying the necessary information from the image.

Feature Extraction: this technique used global options approached for feature choice. Global options approach weights every element equally regardless it's the face element or the background element. This approach will cipher the whole face and represent face as a code purpose in higher dimensional image area.

DRLBP: The descriptor local binary pattern is employed to check all the elements together with the middle pixel with the neighboring pixels within the kernel to boost the hardness against the illumination variation. An LBP code for a neighborhood was created by multiplying the edge values with weights given to the corresponding pixels, and summary the result. LBP codes square measure weighed victimization gradient vector to come up with the bar chart LBP and

discriminative options are determined from the robust native binary pattern codes. DRLBP is drawn in terms of set of normalized bar chart bins as native texture options. it's wont to discriminate the native edge texture of face invariant to changes of distinction and form.

Neural Network classification: The performance of the artificial neural network was evaluated in terms of coaching performance and classification accuracies. Artificial Neural Network offers quick and correct classification and could be a promising tool for classification of the result. The ANN with FF is trained with reference options set and desired output exploitation news and train command. Here, target one for dataset1, two for dataset2 and dataset3area unit taken as desired output. Once the coaching, updated weight issue and biases with alternative network parameters area unit hold onto simulate with input options. At the classification stage, take a look at image options area unit utilized to simulate with trained network model exploitation sim command. Finally, it returns the classifiedpriceasone,2 or three supported that the choice are going to be taken as our age classification.

2) Hardware Development using Raspberry Pi

The Raspberry Pi is a series of credit card sized single-board computers developed in the United Kingdom by the Raspberry Pi Foundation to push the teaching of basic computer science in colleges and developing countries. Raspberry Pi 2 includes a quad-core Cortex-A7 C.P.U. running at 900 megacycle per second and one GB RAM. it's represented as 4-6 times additional powerful than its forerunner. The GPU is similar to the initial. The Raspberry Pi doesn't have a built-in real clock, and doesn't "know" the time of day. It have several models All models feature a Broadcom system on a chip (SoC), which incorporates an ARM compatible central process unit (CPU) and an on chip graphics process unit (GPU, a Video Core IV).CPU speed ranges from 700 MHz to one.2 GHz for the Pi three and on board memory vary from 256 MB to 1 GB RAM. Secure Digital (SD) cards are wont to store the package and program memory in either the SDHC or small SDHC sizes. Most boards have between one and 4 USB slots, HDMI and composite video output, and a 3.5 mm telephone jack for audio.

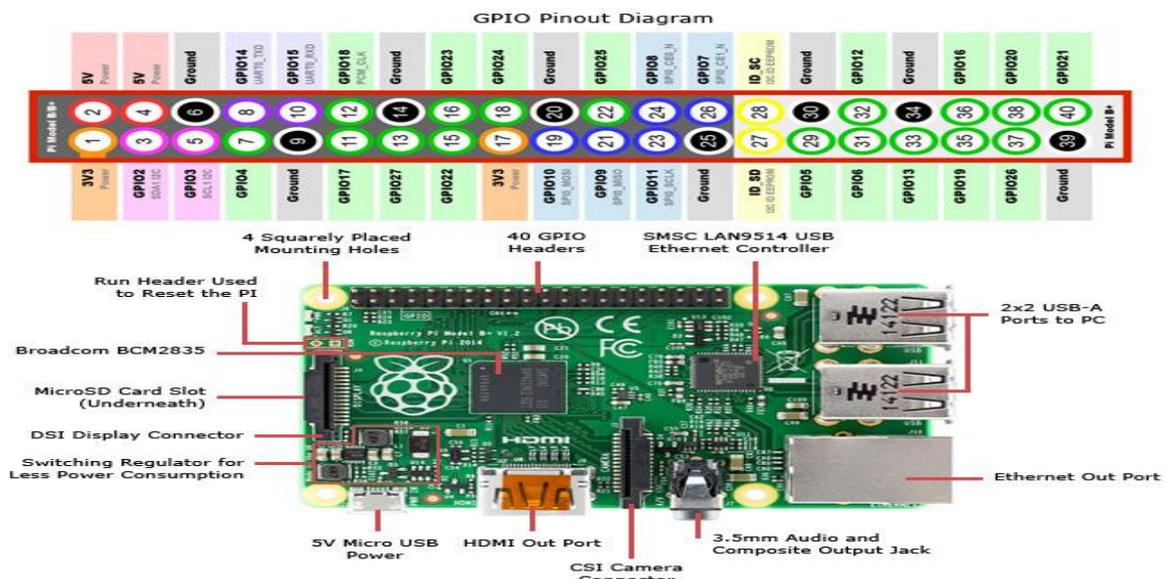


Figure 2: Raspberry Pi micro controller

3. Results and Discussions

In existing system we are using two databases one is input database and another one is storage database. In this technique we are using Gabor filter we can calculate the individual face and mark the key points after that we are applying LBA feature extraction we can get the output. The output result should be come 75% of accuracy only. But in our proposed system we are introduce the detecting face using DRLBP, neural network classification we can get the output. The output result should be come 92.5% of accuracy.

4. Conclusions and Recommendations

The face detection module achieves a high correct detection rate. It's able to acknowledge multiple faces. So the system is in a position to tell apart between recognized and unrecognized faces and therefore the microcontroller connected to alternative systems are able to take acceptable action in either of the situations.

The implementation of the online examination system designed during this paper primarily uses the OpenCV based mostly face recognition technology. And design of the system primarily uses the ARM-11 design and raspbian jessie OS, and its coinciding access capability is five hundred users. The logic structure and system operate design of the common information on-line examination system is given first of all within the paper. Then analysis of the progress of on-line examine supported the system has been taken out. Concerning the planning and realization of the info, the structure and relationship of the most tables are given thoroughly. the safety mechanism is incredibly important to the system, thus we've paid a lot of attention to the 2 following necessary aspects design: security mechanism of the question library and therefore the security mechanism of on-line testing. The system may be applied to forms of courses and question sorts. And what's a lot of, the system conjointly provides the operate of on-line learning, and by these students will study by themselves at anytime, anyplace (of course there ought to be field network), and by this we will notice the coaching of learning method for college students. Application of the net communicating nation system has greatly reduced the employment of academics and improved the standard of the exam. And therefore, the fairness and sound judgment of the exams even have been achieved by the net system, thus by this the interest to review for college students has been higher excited.

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