Conducting Fair Smartphone Based Online Examination

Pranil Dukare, Ashish Vishwakarma
ASM's INSTITUTE of MANAGEMENT & COMPUTER STUDIES
C-4, Wagle Industrial Estate, Near Mulund (W)
Check Naka, Thane (w) - 400604

Abstract-

Smartphone devices have gained huge market share due to the popularity of its applications, ease of use in day to day life. Apart from users the developers also find it easy to build these applications which run on smartphone Operating Systems like Android, iOS, Windows Mobile. Online exams can be defined as a method in which the exam content is published on the internet and the exam results are automatically analyzed and reported to the respective candidate. We are familiar with Online Examination where candidate goes to examination center and gives test but in this we are discussing about Mobile based online Examination. In Mobile Based Online Examination, with the help of modern technologies and smartphones we can conduct examinations which can be attempted from home only by stamping some restrictions on candidates. In this a candidate should allow application to have an access to his/her Mobile Phone's Camera and Mic. The proposed system is easy to implement, is secured and even easy to maintain.

Keywords- Smartphones, Examination, Camera, Mic.

1. INTRODUCTION

The Computer aided controls helps us to make online examination easier. These methods of examination take help of computing capabilities. But still to give these Exams candidate has to visit exam center. These exam centers can be near or can be situated miles away from candidates home. There are some issues in the Online Examinations, they are mostly related to the travelling problems of the candidate and network issues, also the issues like natural calamities, which cannot be tackled by candidates.

To overcome these issues which cannot be tackled we are proposing more intuitive method i.e. Mobile based Online Examination.

In this system we will take advantages of new technologies and allowing candidates to use his/her smartphone to give Online Examination. We will collect the candidate's Fingerprints, Face Pattern and Retina pattern and stored them in database for authentication purpose. Before giving exam every student must be logged in into the Exam System. He must complete all the required authentications in order to give Examination

Existing System

We are already familiar with online examination. In these examination candidates visits examination center to attempt these exams. Consider a scenario where candidate is facing natural calamities or transportation strikes or other transportation issues where He/she is unable to reach the examination center. These kind of issues cannot be tackled by the candidates.

Proposed System

To **overcome above discussed issues which cannot be tackled** we are proposing more intuitive method for Online Examination i.e. **Mobile based Online Examination.** In mobile based online examination system we are allowing students to use their smartphone

2. TECHNIQUES

A. Creating Web Application

Creating web application is most common solution for this. By creating Web-Application and hosting it on internet will help us to achieve this. Here we will also consider the uniformity of the web-application. It should be uniform across all devices.

It is not necessary that all the students will have the same device. So each device has its own resolution. Our Web-application should give same look and feel across all the devices. To solve this problem we can use Bootstrap-Framework.

Bootstrap Framework:

Bootstrap is front-end-design-framework used to build a responsive website. Bootstrap provides a set of style sheets that provide basic style definitions for all key HTML components. These provide a uniform, modern appearance for formatting text, tables and form elements.

Bootstrap makes front-end web development faster and easier. It's made for developer of all skill levels, devices of all shapes, and projects of all sizes.

B. Creating Native Application

Native-Applications

Native applications are those which are made for specific operating system. We can create Native application in all leading smartphone OS

C. Creating a platform independent application

Another way is, we can create an app which can run on multiple operating systems

Xamarin Platform

With a C#-shared codebase, developers can use Xamarin tools to write native Android, iOS,
and Windows apps with native user interfaces and share code across multiple platforms. Xamarin has over 1 million developers in more than 120 countries around the World as of May 2015.

3. SECURITY REQUIREMETNS

The biggest problem with online examination is SECURITY.
This problem is constant when Internet comes into the picture. In this also this security problem is difficult.
The online examination should have following features:

1) Authenticity

The identities of the examinee, examiner, should be authenticated at every step in the online exam process, It is difficult to identify them because it's an automated process.

2) Secrecy

The problem sets should be available to the examinees only during the exam   period. The answer sheets should be kept securely before grading.

3) Integrity

Problems and answers should both be checked for their integrity, to detect unauthorized changes. Only one submission of the answer sheet should be allowed, and the submission of answers after the exam has ended should be prohibited. The unauthorized deletion or the modification of the materials related to the exam should be impossible, or at least detectable.

4) Detection & Prevention of Copy

This section of security Requirements is discussed in detail.

- ✓ Blocking Access to Internet & other Application
- ✓ Intercepting or interfering with communications
- ✓ Discussing the exam with others
- ✓ Impersonating Examinee

SOLUTION ON DETECTION & PREVENTION OF COPY

Blocking Access to Internet & other Application

While giving examination student may access Internet and can grab answers of all the questions or he may access any other application to give answers.
These acts are not acceptable, To prevent these type of frauds we should have access to candidate's smartphone services.
We'll create an app which will block other apps from opening.
Once the examination is started candidate cannot open any other app than that of examination app. We'll be using OS's Auditing Facility to check any bad means or cheating.

Intercepting or interfering with Network

There may be a chance that hackers may intercept a change the answers after submitting the exam. To avoid this we must have secured network.

Discussing Exams with others

The exam may be conducted at any place. It is not necessary for Examinee to come to Examination Center because of this supervisor will not be present physically during exam. To avoid any frauds related to this we are keeping it Mandatory that student should have a smartphone, so that we can have an access to the students' smartphone's camera and microphone. Camera will capture each and every second of exam hours and microphone will record the surrounding sounds. Both will help us to keep a watch on student's activity.

Impersonating examinee

This is the biggest challenge for Smartphone based online Examination. Because there will be no hall-tickets, or I-Cards of Examinee as he/she may give his/her exam from any place. The lack of Hall-tickets and I-Cards will rise a problem of Impersonation Examinee.
To avoid Impersonation we can use the capabilities of Smartphones.

Solution to avoid Impersonation
1. Username and password validation
1. Fingerprint Detection.
2. Iris Recognition
3. Face Recognition.

Username and Password validation
It is the simplest way to validate whether user is authorised or not for performing this action. But this way can be very easy to breach any security as Examinee can tell his user credentials to personating person and can fool us.

ISSN: 2278 – 1323

International Journal of Advanced Research in Computer Engineering & Technology (IJARCET)
Volume 5, Issue 5, May 2016

Fingerprint Detection

Fig: Fingerprint Detection

In fingerprint Detection we use Fingerprint capturing capability of Smartphones. We will use this while Loging In into the Examination System. The scanned result will be sent to the Server and server will authenticate the user by matching scanned results with the stored one.

Human beings happen to have built-in, easily accessible identity cards. The skin of fingers do have ridges and volleys Which make human being Unique. By scanning fingers we can identify the Identity of examinee.
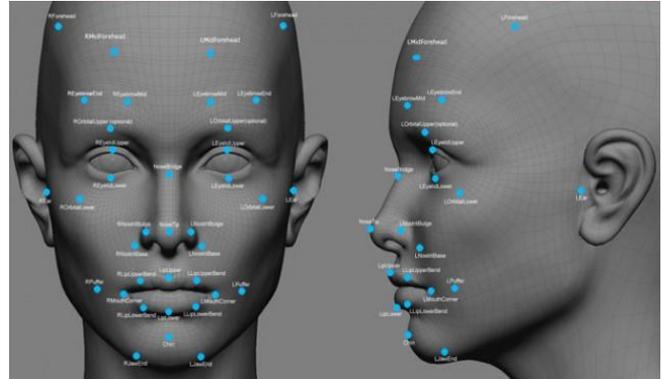
Iris Recognition

Fig: Iris Scanning

Iris recognition is an automated method of biometric identification that uses mathematical pattern-recognition techniques on video images of one or both of the irises of an individual's eyes, whose complex random patterns are unique, stable, and can be seen from some distance

In iris recognition, the identification process is carried out by gathering one or more detailed images of the eye with a sophisticated, high-resolution digital camera at visible or infrared (IR) wavelengths, and then using a specialized computer program called a matching engine to compare the subject's iris pattern with images stored in a database. The matching engine can compare millions of images per second.

Face Recognition

Fig: Face Recognition

A facial recognition system is a computer application capable of identifying or verifying a person from a digital image or a video frame from a video source. One of the ways to do this is by comparing selected facial features from the image and a facial database.

It is typically used in security systems and can be compared to other biometrics such as fingerprint or eye iris recognition systems.

4. CONCLUSION

The final conclusion is, this type of web application or application can be developed by developers & examination can be held.

By knowing the fact that the price of smartphones which support face recognition, iris recognition, fingerprint detection is very high and cannot be affordable by every examinee.

We hope that evolving technology will solve this problem.

5. ACKNOWLEDGEMENT

6. REFERENCES

Referred Research Paper:
  1] A Novel Approach to Enhance Security for Online
Exams by Naresh.Chiranji, CH.Deepthi, T.P.Shekhar

Websites:
  1] Wikipedia.
      https://en.wikipedia.org/wiki/Main_Page

  2] Bootstrap
      http://getbootstrap.com/

  3]WhatIS Techtarget
      http://whatis.techtarget.com/definition/iris-recognition

  4] HowStuffWoks
      http://computer.howstuffworks.com/