

# Authentication System for Web Examination using Keystrokes Dynamics

Yogendra Narayan Prajapati, Pradeep Pant, Ravindra Chauhan

**Abstract:** This research deals with the security trend in the web examination system. In today's technological world web examination has become a new trend as a means of examination. This security pattern will surely bring an evolution in web examination. web examination is new pattern of examination which has many secure platforms through which a student can give exams. To provide more security to this online exam we can use a new security feature which is key loggers documentation. This new security feature will be used widely in future. This paper consists of a system which is based in the typing behavior of a user as everyone in the world have a unique typing style. It will extract its features from the typing style of the user and will use for the further certification during the examination time period. It will be cheap and easy to install this system. It will provide a secure platform without the knowledge of user and will prevent in cheating during the examination. In coming years it will be widely used certification system for e examination.

**Keywords:** keystrokes dynamics, Template generation, biometric Authentication

## I. INTRODUCTION

As we are moving towards standardization of tests, web examination are considered as more reliable, an on-line examination system may be a take a look at machine to require online takes a look at. The growth of internet has evolved the web examination system. Web examination system helps students to supply a fast in addition as straightforward thanks to out there for the paper it can also provide results automatically. The main advantage of web examination system is that it can be conducted for students who live in remote areas and the answers can be evaluated automatically. There are other advantages of computer based examination that it can be conducted any time and it costs very low as compared to the traditional exam, which requires paper, invigilators and center for exam. Most of the subjective exams are taken traditionally and it requires a lot of paper and it consumes lot of time in checking those subjective papers thus, teachers may feel loaded and the work load of teachers will be increased. The computer based examination system will help in speeding up the process of conducting exams. Pen- paper exams are held on fixed days and fixed schedule therefore it rarely gives another chance to the absentees to reappear in the exam. However, it is not our

main concern, our main concern is to provide security to web examination so that students can be identified and also cheating can be avoided during the exam. During computer based examination, there is no direct between students; teachers and administrator so a secure platform is needed on which exams are given. A secure platform provide a smooth way for conducting the computer based exam, but the main problem lies that how to stop students from cheating? Students always wait for an opportunity to cheat during examination. They always find new tricks and techniques to boost their score during examination. There are several methods to stop students from doing so, but somehow they always succeed in cheating during the online exam. They succeed by sending someone else to attend their exam by giving their ID and Password. These types of frauds are possible during the web examination system through which a student can cheat during the exam. The online methodology and security of information superhighway human activity system helps with eliminating cheating. This paper proposes the us-age of biometrics that supports the protection management, certification and integrity of on-line human activity methodology. E-monitoring of students uses finger prints and cameras for preventing cheating and substitution of the primary student. This paper targets information superhighway human activity for basic laptop in university courses with students at specific locations, at a group time and disorderly queries for all examinees at the restricted dislocation of the examinees

This paper deal with existing certification choices, and re-views their edges and constraints. We tend to got designed and developed identification Framework (BAF) for web examination. In section [2] discussing concerning the foremost vital intimidation of web examination and section [3], we have a tendency to review varied certification strategies of computer based examination. Section [4], we have a tendency to review varied identification and section [5] gift the framework of secure computer based examination and section [6] discuss on future analysis and getable implications of the pro-posed analytical framework for observe square measure provided.

## II. MAJOR INTIMIDATION

The web examination completely differs from the traditional face to face assessment. In web examination students interact and submit their work virtually, therefore building trust and confidence is very important. In web examination security remains one of the major issues as in traditional direct examination. In suggested that dishonesty remains one of the threats in higher education and cheating in computer based examination session to the literary theft.

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**A. Literary Theft:** - literary theft is a major challenge in the examination whether it is traditional or web examination. Students copy the original idea of others and claim to be their own. Studies suggest that the literary theft is on the rise in both web and traditional examination. But in web examination there is much software that checks the originality; however our research is based only on student certification.

**B. Cheating:** - cheating in web examination is an intimidation and it can be done easily as compared to the traditional face to face examination. Students often cheat in examination to secure higher marks. Agulla identifies a major rise in cheating in online exam to gain more marks. The intimidation is higher in computer based examination system because it has increased the opportunities for cheating by the use of internet and technology.

### Methods for Certification

Certification provides a secure way of identifying the correct user during the web examination. Certification provides security and a secure platform to conduct the web examination where there is very less chance for any user to cheat in between. Certification ensures the currency of the examination and provides a legitimate way to the users to interact with the web examination and provide authentic results.

### A. CERTIFICATION USING KNOWLEDGE

The certification using the knowledge is based upon the knowledge of the user. In this system the user is provided with a unique user id and a password. During the examination the user have to log in with this user id and the password to start their web examination. As analyzed in Studies, low entropy passwords are at risk of lexicon attacks. Hence, web examinations wishing on a user-id and parole are liable to collusion and malicious attacks. The most use of this certification is in banking sector, and company e post.

### B. OBJECT BASED CERTIFICATION

In object based mostly certification, the users square measure known by presenting physical objects like RFID, magnetic cards etc. The identity objects like electronic and magnetic cards have the nice issue concerning storage of individual's identification selections. in a very web examination state of affairs, the presence of each entities i.e. identity object and student, will increase the protection. However, objects may even be transferred to a 3rd party or compromised, that poses potential intimidation to internet examination e.g. collusion. To boot, it ought to re-quire special purpose devices to need user input for registration and certification.

### C. BIOMETRIC BASED CERTIFICATION

Biometric based mostly certification may be a form of certification that focuses on the physiological and activity characteristics. The physiological characteristics embody face, hand, eye, ear, skin and alternative varied factors whereas the behavioral characteristics area unit, sound, clip, keystroke ,autograph ,mouse mobility and pulse. a minimum of 3 factors mentioned are often combined during a system to enhance the accuracy of recognition in on-line exams. Some further factors like height, weight, age, gender, and eye color can add additional accuracy.

The life science certification is performed by the verification of degree individual's physical or behavioral

characteristics. Biometric frees individuals to hit the books passwords and carry cards; as a result of the person is that the key for identification. Several identity verification options have emerged till date like face recognition, video certification, finger print certification, voice recognition, signature and combination of these biometric certification systems. The biometric certification system was designed to overcome the problem of remembering the passwords and to make the certification more easily and at the same time to make it more safe and secure. It works when a user register a biometric in a very system wherever biometric templates are hold on and supply a similar biometric for brand spanking new measurements. Now, the output of recent activity are processed with a similar rule as those used at the time of registration. If the similarity is larger than a system-defined threshold, the verification is prosperous otherwise it'll be thought-about unsuccessful.

### FINGERPRINT CERTIFICATION

A. Ramin planned approach which can incorporate a random fingerprint natural science user certification throughout web examination taking in e-learning courses. Alotaibi in addition planned practice fingerprints for E-exams. Fingerprint is one in every of the foremost commonly used natural science certification choices that provides a completely unique international image. The fingerprint Re-write once more Next certification could be a secure and normally used platform for web examination. For fingerprint certification several things square measure needed like fingerprint scanner at client's location etc.

### B. FACE CERTIFICATION

Penteado and Marana projected to use face photos captured on-line by a camera in net atmosphere to verify the presence of users throughout the course attending in an academic distance course. Face recognition biometric attribute implements image recognition and pattern matching algorithms to verify user identity. It's aiming to be a reliable certification candidate for computer based test examinations. However, face recognition biometric might not be secure certification for on-line learning system due to the quality of face recognition technology. Varied aspects like variable countenance capture purpose direction, variable light-weight, atmosphere, web camera, weather and all totally different pertinent accessories e.g. beard, glasses will have an effect on the certification results.

### C. VOICE CERTIFICATION

Voice certification system may be a kind of certification within which voice is employed for verification. It can not be used as sole certification. As in, intra-personal variations i.e. human sound choices like acoustic, sound pitch and speaking vogue or accent provides a novel image to be used as a bio-metric feature. As a activity certification technique, it's aiming to be a secure option to shield on-line examinations. However, variable speaking speed, environmental noises, quality of recording equipment's may not finish in durable outcome.

Use parentheses to avoid ambiguities in denominators. Punctuate **SIGNATURE BASED CERTIFICATION** rate of typing, keystroke pressure are the terms that are extracted in keystrokes. When we divide the flight time it further breaks into [DT2, DT3, DT4] as it is shown in the figure.

Dwell Time (DT1): It is the time when the key is pressed and released.

$$DT1 = k_{R1} - k_{P1}$$

Flight Time (DT2): It is the time when a key is pressed and another key is pressed.

$$DT2 = k_{P2} - k_{P1}$$

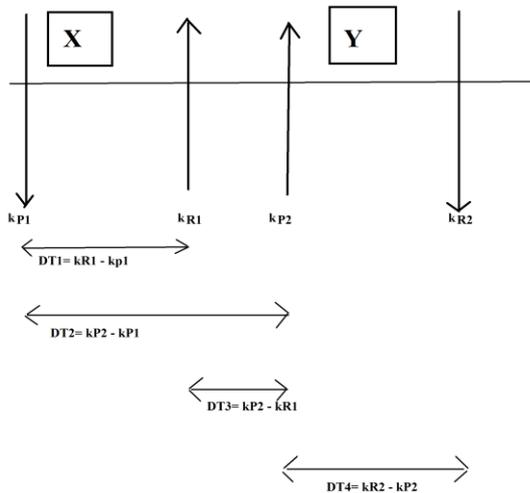
Flight Time (DT3): when a key is discharge and a new key is pursued, that time interval is DT3.

$$DT3 = k_{P2} - k_{R1}$$

Flight Time (DT4): It is the time interval between a key release and next key release.

$$DT4 = k_{R2} - k_{R1}$$

A phase where the keystrokes features i.e when user press the keys are combined and transformed into representative form is known as template generation.



$$S_{GPD} = \frac{\sum_{i=1}^K e^{-\left(\frac{(t_i - \mu_i)^2}{2\sigma^2}\right)}}{k}$$

$S_{GPD}$  = GDP score,  $t$  is for test data's latency, keystroke feature  $k$ ,  $\mu$  and  $\sigma$  are the mean and standard deviation of a reference template, respectively. The final score is based on the average of GDP score which is calculated by the formula shown above.

### III. PROPOSED SYSTEM

The below figure shows the proposed system of secured biometric certification system. The system consist of two layers of certification along with face recognition. The two layer certification consists of student biometric and knowledge based certification. Here are the steps that follows **STEP 1: FACE RECOGNITION** The system will capture the face of the student and store it to the database. This will

help to maintain a good profile of the students and used as the first certification.

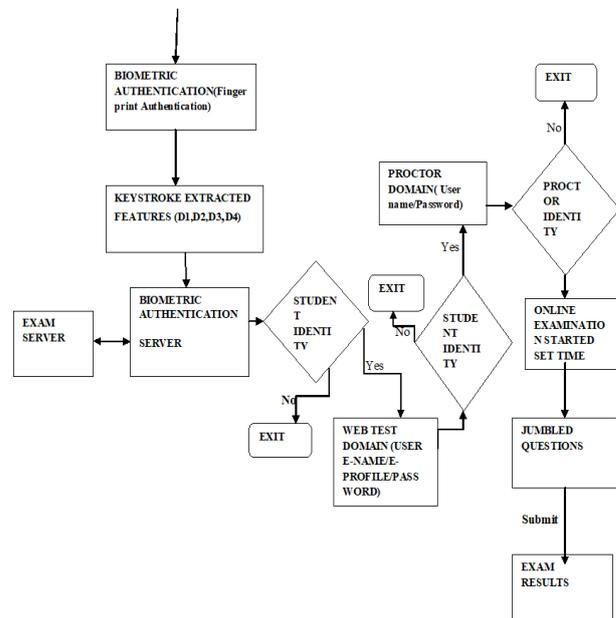
**STEP 2: STUDENT IDENTIFICATION:** Here the system can check the identity of the coed mistreatment keystroke bioscience and it'll conjointly confirm the coed is eligible for that specific examination

**STEP 3: EXAM DOMAIN LOGIN** In exam domain login student will login to the exam by using their ID and PASSWORD, if both are correct then they will proceed to the exam.

**STEP 4: ONLINE EXAM PROCTOR** Those who have logged successfully they will now enter the supervisor password that will be given to them at that time. It will give access to the exam.

**STEP 5: RANDOM QUESTIONS** The students will be asked random questions to avoid cheating. They will submit after finishing the exam.

**STEP 6: RESULTS:** When the session will be finished, the result will be shown on the screen



### IV. CONCLUSION AND FUTURE WORK

Keystrokes dynamics provides an additional security feature in low costs and provide a easiest way to secure the online examination. It works without the knowledge of user and provides security. Keystrokes along with the two biometric certification i.e face recognition and fingerprint will be easy for the student certification and there will be no chance for the students to cheat.

Keystrokes dynamics will work throughout the paper and will provide an additional security.

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