

# Eye Tracking using Gaze Pin Entry for Password Authentication

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**Abstract—** Widely using Personal Identification Numbers (PIN) for users security and authentication. PIN requires users to put the input manually, which could be possible to cracking the password using Shoulder surfing or Thermal tracking methods. Shoulder surfing is the technique by looking the shoulder movement of the person to identify the password. So from this we are losing the our sensitive information. So we are facing security issues and it is becomes very difficult to overcome. For this problem Gaze based authentication means enter the PIN without entering the password manually (hand off gaze based PIN) will be more secure. In Gaze based technical authentication will be based on the eye location and eye movement. This is presenting real time application for PIN entry based of Gaze technique. Using the smart camera PINs are indentifying by detecting and tracking the eye movement.

**Keywords—**PIN; gaze based PIN; Authentication; Shoulder surfing;

## I. INTRODUCTION

In the security PIN venture our motivation is to forestall perception assaults during PIN passage while hold a similar work process that client's are now acquainted with and with least extra equipment cost. Our arrangement can be handily incorporated in with existing plans of ATMs and purpose of exchange frameworks. Toward evade thermal tracking assaults and license clients to go through their password with no frenzy of person watched we have built up a framework to utilize an eye track gadget. Along with Safety PIN, clients select PIN numbers with their eyes by simply concentrating on digits showed on a screen. Because the objective key-push isn't utilized for the PIN passage, data is not about the entered digit is offered away to the aggressor through visual viewing. Utilization of bogus keypads are likewise render pointless.

## II. LITERATURE SURVEY

The literature study has been completed to distinguish the difficulty in different security frameworks. This overview presents a synopsis of eye-following strategies for various security frameworks, additionally gives bits of knowledge into utilizing eye-following methods in wellbeing frameworks. This paper group the methods utilizing different investigates. Investigates rely upon uniqueness of eye following information, which incorporates observer and upgrade angles, likewise it relies upon qualities identified with representation strategy. This undertaking work contribute in clarify a portion of the wellbeing framework that rely upon eye stare following, the cost the agreed and skeptical angle resulting from the utilization of eye stare following in the security framework, presents the quality and

shortcoming to remember in potential. There are numerous studies completed in regards to different parts, procedures of eye following, they may be actualized in this undertaking alongside different framework previously existing. Human visual framework is reflexive and quick, and various individuals have distinctive look data, which has pulled in extraordinary consideration in the biometric verification field. In the course of recent decades, a lot of look following strategies have risen and been utilized in the clinical field, yet their use in assault recognition and validation field has once in a while been found until ongoing years.

## III. PROPOSED METHODOLOGY

### A. block diagram

Eye gaze or eye tracking is characterized as the methodology of the recognition of the eye position all through video record outlines used for the assurance of the situation of the look. Development of the eye as per the head could likewise has few effects. This, technique can be useful for handicapped individuals in speaking by means of deliberate movements, for example, developments of face, eyes and a nose. Users that have simple incapacities might likewise acquire profits by PC access to everyday exercises, for example, mess around and web surf. The idea of eye tracking technology is utilized that persistently tracks the eye development of an individual via utilizing a basic web camera and moves curser as needs be. The entire procedure can be partitioned to four phases, for example, face identification, eye recognition, understudy location and eye gaze as appeared in figure. This framework use a USB or inherent webcam for catching and distinguishing the developments of the client's face.

Gaze based system authentication model can also be made more flexible and a reliable choice for authentication in cloud computing and visualization environment. Developing efficient gazing methods which can reduce the complexity of biometric models along with visualization may provide an efficient, feasible, cost effective procedure with high scalability, usability and security. The eye gaze techniques need to be studied and modified accordingly for better performance and accuracy. There exist various research issues that are important and need to be taken into consideration while developing, designing and implementing an eye gaze based controlled system.

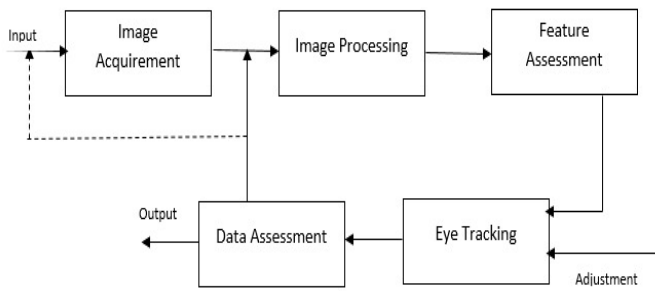


Fig. 1. Block diagram of proposed system

B. Flow chart

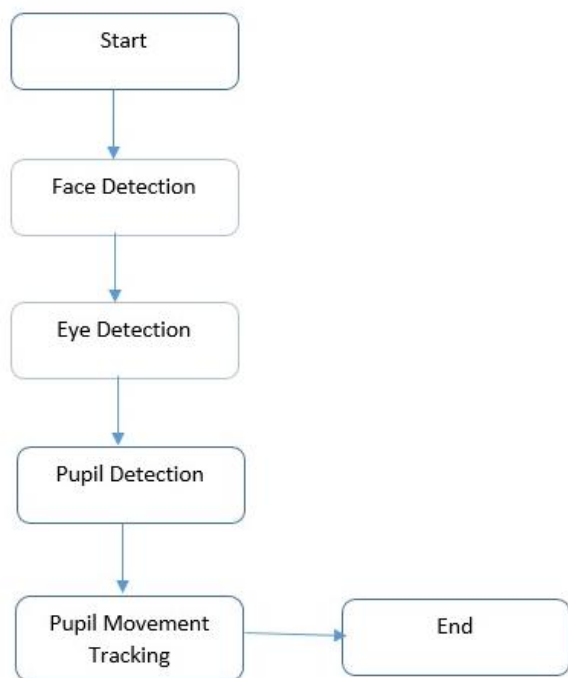


Fig.2 flow chart of proposed system

Face discovery is the most significant piece of the eye following procedure. Highlighted base and picture base techniques are the two different ways of face identification. Highlight based strategy: In this technique, facial properties are distinguished, (for example, Nose, eyes, etc), at that point evaluate their proficiency by watching position and good ways from each other. This strategy can arrive at fast in facial discovery. Basically, it is known for its speed pixel exactness.

It comprises of four projections for recognizing of eye that are Edge-Projection, Luminance Projection, Chrominance Projection, and Final Projection. Viola Jones calculation is utilized to utilize object Detector it is utilized for identifying object. In this segment the real student of eye is distinguished first. Subsequent to identifying eyes it will begin its own preparing and one kind of imprint is structure on eye parcel, after that picture is changed over into double structure. Eye following: Eye following is the last segment of this procedure, in this stage the mouse tad begin

moving from its own area. Bit by bit it fires up its procedure and begin working as indicated by eye development.

IV IMPLEMENTATION

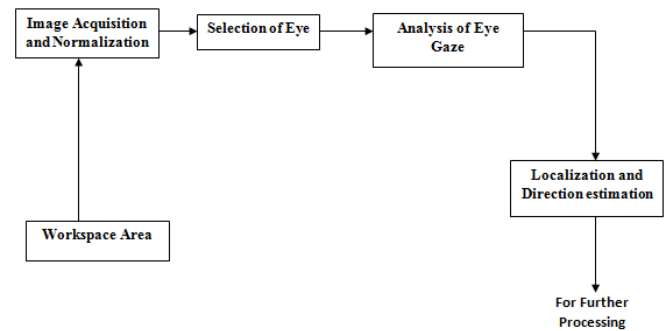


Fig. 3. Block diagram gaze based interaction

Powerful eye recognition and following are huge in making mindful UIs with the assistance of distinctive eye stare recognition and estimation strategies. In eye stare recognition, a framework needs to peruse eye developments and afterward map it to a PC. The essentialness of eye stare frameworks incorporates correspondence from a separation with no eye weariness, preparing, coordination or physical vicinity with the PC.

C. Architecture of Gaze Tracking

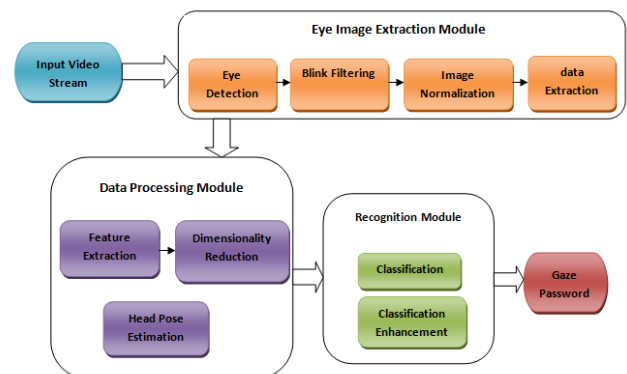


Fig. 4. Fig. 1. Block diagram of Gaze Tracking

The essential objective of Gaze tracker is to reason the delicate data or secret key casualties contribution on advanced mobile phone. As represented in above figure, Gaze tracker begins to work when console occasions are recognized. The frontage webcam is summoned to stream the input while casualty input the secret word. When video recordings is done, Gaze Tracker separates highlights from picture outlines and receives AI based techniques to assess digits the casualty inputted. In order to advance the estimation precision an upgraded technique can be used dependent on understudy's middle area.

Above figure shows the architecture of framework which has three primary modules.

[1] Eye picture exaction module: It is utilized to differentiate the eye pictures of various key strokes from information inputs. [2] Image Process Unit: This unit is used

to extract applicable highlights and to gaze head position based on eye location. [3] Identification module: This unit decides a key stroke depends on extract characteristic and position of the head for various eye pictures.

Eye stare association is more secure, coming about into decrease in object choice time and an expansion in the cooperation speed. Eye stare alludes to estimating of the look heading with the assistance of Point of Gaze (PoG) or Point of Regard (PoR) or Region of intrigue (RoI) from the eye developments utilizing static or dynamic pictures. The look course is utilized to decide client's aim or want which helps in getting, handling and executing various orders from an unmistakable area. Additionally, look estimation requires the division or extraction of neighborhood highlights like the eye plot, eye shapes, edges of student or iris, eye corners, focus of the either iris or understudy or corneal reflections or flash. There might be various flickers Gi arrangement because of numerous wellsprings of occurrence light falling on the student locale alongside iris, sclera and so on. The overall situation of the iris community (Ci) with focus of eye (Ce) can be utilized for additional look based preparing to evaluate the client's place of look. The procedure of eye stare includes the client to take a gander at the particular area on the screen and the eye picture is caught utilizing a solitary or different advanced cameras or a webcam and so on.

The caught crude picture is handled in the second stage from securing to estimation and is standardized for alteration of shading tone, trimming, position transformation. Recognizable proof and choice of best eye in the following eliminate is carried based on various boundaries. Handled picture Ip in this manner created is then contribution to eye stare model for the division and extraction of RoI. return on initial capital investment utilized in the estimation of the look heading of eye stare for additional handling. The heading of look is typically distinguished by evaluating the general situation of RoI by mapping reference point like flash or iris vector with the focal point of the understudy or iris focus organizes utilizing any of the component division method. As often as possible utilized element extraction strategies for the division of the RoI from the eye picture for the look estimation are examined in the following section. Another factor which assumes a vital job in eye stare based models is intuitiveness or reaction time. This factor is a basic measure for the online continuous frameworks. CPU intelligence, abide and the profile time are significant viewpoints to break down intuitiveness. The effectiveness of eye stare based models may improve and upgrade the efficiency of the look based frameworks with low, least intuitiveness or reaction time alongside profile time.

Once standardization is done, will get 2 related successions of fixed size eye pictures. When all is said in done, human two eyes are burdened with the goal that they flicker simultaneously and point towards a similar obsession location. From this activity, we don't judge cases which are uncommon, for example, strabismus. Moreover, the investigation likewise exhibited that estimations got one eye is like the another eye. From here, utilize the arrangement the solitary eye to decide the obsession pictures that can commonly speak to the relating keystrokes.

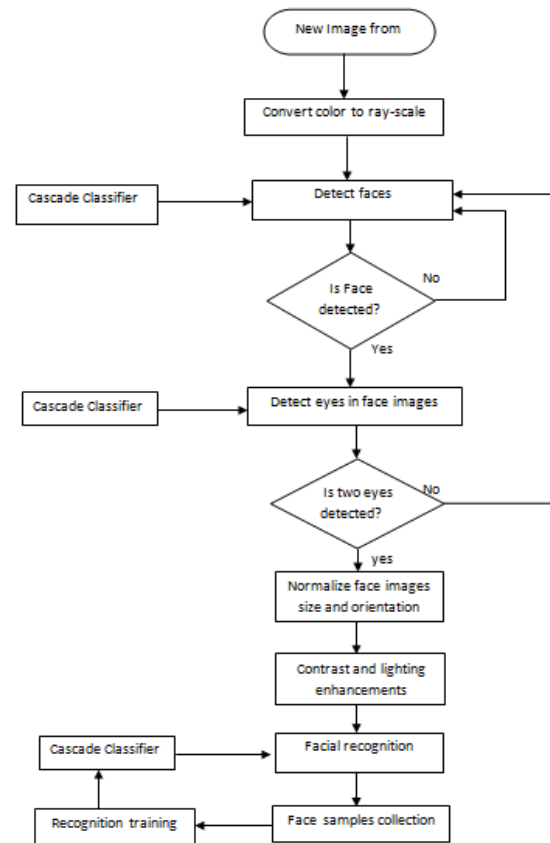


Fig. flow chart of Haar cascade classifier

## V. RESULT AND DISCUSSION

In the underlying client tests, we have inspected both the mechanical viewpoints like the effect of alignment mistakes, the effect of glasses and other eyewear, ease of use perspectives like blunder rates and client fulfillment, just as the client's impression of safety and wellbeing angles. This framework designed for multiple users, where every client is provided an order The succession of 3 or 4 digits password need to be entered by using eye tracking system.

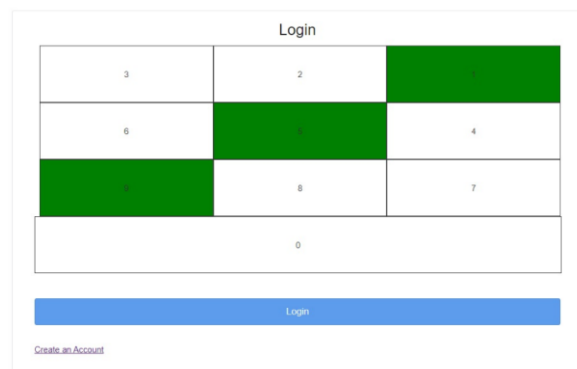


Fig. Login screen

Test was performed for every one of the three actuation strategy. The password given by the client is put away then afterward contrasted with order password with discover what

number of mistakes happened. The duration of the time taken by the clients to enter the password is recorded.

Consequences of this test has been extremely reassuring in all initiation strategies. The normal rate of error was 5 percent and the normal duration taken by each user to enter the password is 1 to 2min. A large portion of the mistakes are submitted by the clients when they didn't recollect the right password and consequently given an inappropriate password, as opposed to actuating an unexpected PIN. Clients felt this project work was easy and tricky to use and this was a more secure approach to enter their pin contrasted with the conventional pin section technique. To reach measurably huge determinations, we have to perform further tests with bigger example set.

**Welcome pavithra sr**

User Id :9

Email :sr.pavitra@gmail.com

[Logout](#)

Fig. Authentication successful

## VI. CONCLUSION

Eye stare estimation is interdisciplinary territory of innovative work which has gotten a considerable amount of enthusiasm from scholastic, modern and general client networks in the most recent decades inferable from the simplicity of accessibility of processing and equipment assets

and expanding requests for human PC collaboration strategies. The ongoing advances in eye stare examination, and data in factual arrangement is introduced to feature the assorted variety in different viewpoints, for example, stages, arrangements, clients, calculations and execution estimates existing between various parts of this field.

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