Data Capture for Screening using Augmented Reality

A. Aruna, Amrita. R, R.Aparna, Jashmitha. B

Abstract: The modern has seen a tremendous development in the field of facial recognition. This concept of facial recognition can be put into use in various fields for various purposes for instance to safeguard data using facial verification, filters and emoticons can be used with the help of facial detection and way more. This concept of facial recognition can also be used to verify the user, as in the current system used in examination centres are hall tickets where the respected staff has to verify the details of hall ticket. Instead of that, the concept of facial recognition could be used where the users or students face is scanned, and details of the student are verified in the system itself. This proposed system is more secured, faster and easier. What the facial recognition system does is that, first users face image is taken and facial points are marked geometrically. Now these points of projections are the ones which are used for verifications. If these radial points match up with the current scanned users face, then the data is accessed and verified. Else it gets rejected. This system can also be used in various other scenarios such as hospitals, companies and etc.

Index Terms: Facial recognition, Augmented Reality, Hall tickets, Radial Points, Examination Centre

I. INTRODUCTION

Hall tickets or admit cards are widely used by students in schools and colleges while taking up examinations. They carry all relevant details of the candidates which is required for the student taking the exam. Currently the process of generating, downloading and carrying them to the exam center is cumbersome. The current system has put many students in hardship and has led to unnecessary tension, delays and confusion which might affect the performance of the candidate. If the student forgets the hall ticket or lose them they are prevented them from taking the examination. This project envisages to create a software where students are not required to bring any hall tickets on them. A face recognition software is installed at the venue of the examination which can draw all relevant information such as the authenticity of the person, the subject details enrolled etc. This could save a lot of time for the facilitator of the exam and the candidate taking up the exam. The effort taken for conduction of the exam is very less and the candidate/student can focus on the performance without much thought to the cumbersome formalities.

The platform used for this project is Augmented Reality is the innovation which had caught our creative energy like nothing before. This technology works by using the computerized simulations and technique like image and speech recognition. This technology is that the increased version of reality wherever with the assistance of super-imposed computer-generated pictures, live direct or indirect views of the physical real-world atmosphere AR increased, which reinforces one's current perception into reality. This technology is commonly given because the art movement technology, however its type has been taken around for years. From being science primarily based thought to science based reality, increased reality has big from shopper house to company house. The facility required for the project is a mini hand held device comprising of camera at the back and a screen displaying the information in the front. Devices used for AR are just like that of the pc like a camera, a processor and a screen. Augmented Reality acknowledges a visible image of the candidate/student blends new data, and displays the virtual result. All of this takes place instantly and might be with confidence incorporated in office of the physical hall tickets that are presently used. Businesses have shown accumulated interest in AR and it's got large potential to present solutions to a number of their major issues, and developers are currently having access to some powerful frameworks so as to make AR apps. This is often as a result of increased reality incorporates a high potential for business growth. Augmented reality has prevailed in numerous business domains, as well as traveling, gaming, media and amusement, marketing, and education. As a whole, this technology provides ample opportunities for brand spanking new, innovative, and existing businesses.

According to Statista, increased reality is predicted to accumulate one billion users by 2020. Worldwide cargo of sensible increased reality glasses is forecast to achieve around 5.4 million units by 2020.

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The worldwide increased reality market is predicted to grow considerably to regarding ninety billion U.S. greenbacks by 2020.
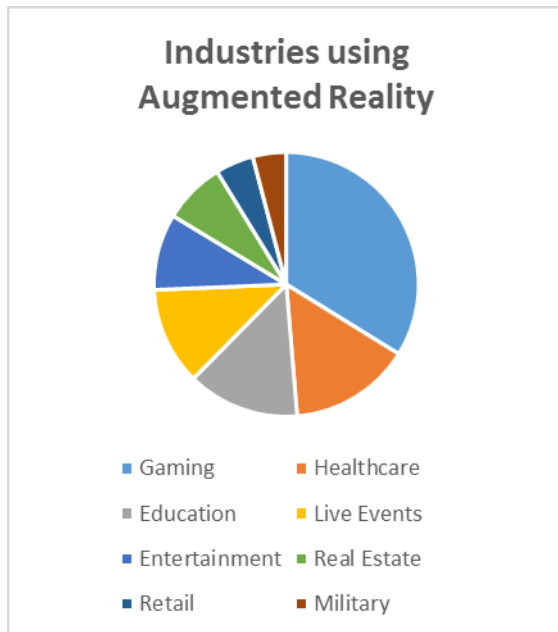

Fig.1 Industries using AR

II. PROPOSED METHODOLOGY

The methodology of facial recognition system is that, first users face image is taken and facial points are marked geometrically. Now these points of projection are the ones which are used for verification. If these radial points match up with the current scanned user's face, then the data is accessed and verified. Else it gets rejected. This system can also be used in various other scenarios such as hospital, companies and etc. The platform used for this project is Augmented Reality (AR). Augmented Reality is essentially a technology that works on computer vision based mostly recognition rule to reinforce sound, video, graphics and different detector based mostly inputs on objects with the help of the camera of your device. Augmented Reality is not just limited to desktop or mobile devices. It is used in wide areas, Google glass is a perfect example. Devices used for AR are similar to that of a computer.

Here, we propose Augmented Reality which recognizes a visual picture of a candidate/student and blends new information which displays the virtual result. The required hardware and software components for implementing this project are Dot Projector, OCR, Camera with IR Specification, Unity 2019.1b. The concept we came across in other proposed papers were based on SURF (Speed Up Robust Feature) and LBP (Local Binary Pattern). Since these algorithms were outdated, we implemented another concept Fuzzy Neural Network, LBPH (Local Binary Pattern Histogram).

III. RELATED WORKS

The existing system is more tedious and cumbersome. The real time system consists of hall tickets which are being widely used by students in schools and colleges while taking up examinations. The process of procreating, downloading and carrying them is very difficult. The software applied for the student identity system reduces all these problems.

[1] The strategy for displaying human appearances are dependent on a nonexclusive face demonstrate (a triangular work model) and individual facial estimations containing both shape and surface data. The demonstrating strategy adjusts a conventional face model to the given facial highlights, extricated from enlisted range and shading pictures, in a worldwide to-neighbourhood style. The last surface mapped demonstrated is outwardly like the first face. The underlying coordinating tests dependent on the 3D face model shows empowering results. This can likewise be utilized for perceiving faces in recordings. If there is a chance that the model made is obscured, it would not have the capacity to perceive the substance of the individual obviously. [2] The utilization of Facial Expression goes about as an activity trigger input component. Here, they have built up an Augmented Reality (AR) - based memory card where the clients select virtual cards utilizing a wand and flip them utilizing either a Facial Expression (grinning; scowling) or an Xbox controller catch. Here, the outward appearance can be utilized as a controller catch in HMD (Head-Mounted Display). Firstly, there was just predetermined number of members (n = 29 conveyed into three gatherings). Secondly, the AR diversion was most likely excessively testing. The high test incited oblivious facial movement. This is restricted just on gaming sessions and can't be reasonable for everyday reason. [3] Present picture preparing program with OpenCV library can be utilized for Apple's iPhone4 smart cell phone. This picture preparing project can do different activities, for example, thresholding, versatile thresholding, edge discovery and shape identification. Augmented Reality program on iPhone4 is executed utilizing Objective-C. ARToolKitPlus bolsters multi-marker discovery. The VRToolKit can just recognize single marker. Subsequently multi-marker discovery and enlarge multi objects are yet to be planned. [4] Ongoing Augmented Reality depends on following calculation. This calculation considers regular component focuses, and afterward does not require building of the surrounding. It consolidates the data from going before edges in conventional recursive following design. The tracker recoups the full 3D posture of the followed item, permitting inclusion of 3D virtual articles for Augmented Reality applications. The strength of the embedded articles, the high video rate and the vigour of the following procedure make the inclusion of the virtual items practical and clever. However, it isn't exceptionally intended for face tracking. [5] An individual personality explanation framework utilizing a wearable PC for an AR domain is executed, which enables its client to perceive obscure people. For executing, skin-shading pixels combined with shape and face highlights are utilized to recognize and follow faces in pictures taken by a wearable camera. For every region sufficiently huge, an elliptic region is resolved with the most noteworthy picture angle size around the edge.

The face region encased by the decided ellipses are then utilized by the framework to perceive different appearances dependent on the face comparability. If there is a chance that there is a little skin-shading contrast between the face and background, it is extremely hard to identify the face.

[6] An epic strategy for summing up the authentic limit of accessible face database has been actualized. Any two component purposes of a similar class (individual) are summed up by the element line going through the focuses. The element line covers a greater amount of the face space than the element points and subsequently extends the limit of the accessible database. The mistake rate for face acknowledgment can be improved with the utilization of highlight line portrayal rather than highlight point portrayal.

[7] There are a few diverse manners by which people tracking continuously could influence the fields of Augmented Reality and further vision based applications. It can be considered for indoor area estimation. The UAR applications on little gadgets with sensors can't decide the gadget's finished posture data without anyone else's input.

[8] A multi-source information acknowledgment calculation dependent on two-dimensional principal component analysis (2DPCA) has been broke down. The trial results on ORL (Optical Return Loss) and CAS-PEAL (Pose, Expression, Accessories, and Lighting) Face Database demonstrates that this strategy can accomplish a superior acknowledgment. The acknowledgment rate decline quickly when there are demeanour changes or a point exits in face acknowledgment.

[9] Change from a profound face model to explicit undertakings has been broke down. It manages the exchange of various leveled representations of a face model is shown as a source model and after that learn higher layer representations on a particular little training set. It likewise manages a critical open issue - traits and transferability of various layer highlights of face model. There are constrained preparing tests for a particular face acknowledgment task.

[10] The answer for a gathering diversion is proposed for testing whether the games can be utilized as a media for face to face correspondence or not. Versatile gathering games can help by being a media to urge up close and personal correspondence and avert debasement of communication. The only drawback of this paper is that, this game can only be used in an iOS platform and not suitable for other platforms.
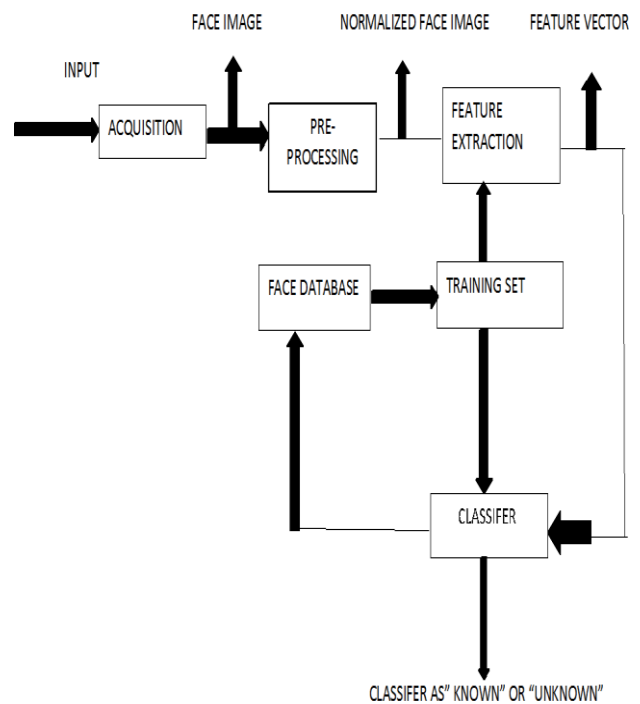
IV. BLOCK DIAGRAM
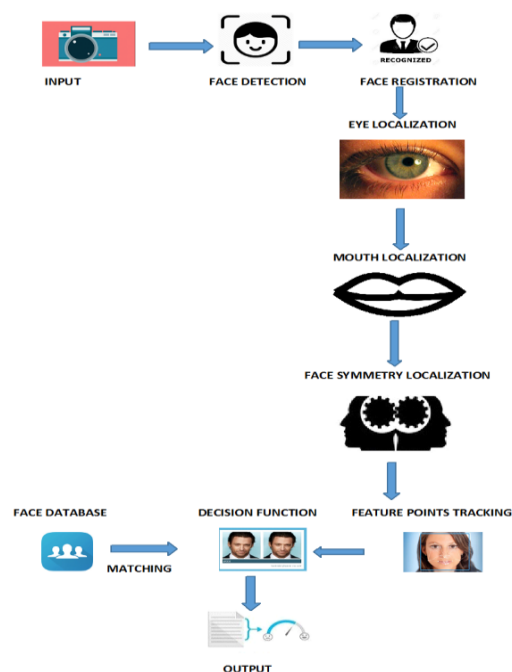

Fig.2 Working of Data Capturing

V. FLOW DIAGRAM

Fig.3 Data Capture For Screening Process
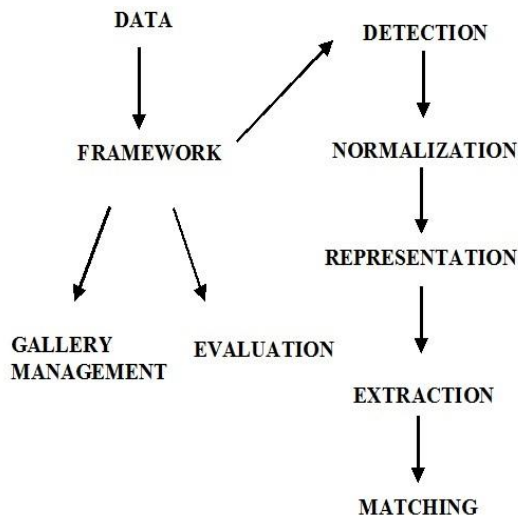
VI. ALGORITHM

Fig.4 Data Capturing Principle

VII. RESULT ANALYSIS

Our project is only a starting point for the existing systems based on face recognition and data capturing. We believe that data capturing with deep face recognition technology in our project is a promising approach for solving the problems of various systems where face and data work hand in hand. Even though there are various systems available for data capturing, our project mainly focuses on the education point of view, where the students are not required to bring hall tickets for the examination. Instead, the software we built can be used as a replacement for hall tickets.

VIII. CONCLUSION

In this paper we have proposed the design for "Data Capture for Screening using Augmented Reality". So it improves the speed of recognition. It required only one scanning without any need to a complicated analysis. So the concept of facial recognition can be used to verify the user and get the details. The platform used for this project is Augmented Reality. Augmented Reality is the innovation which had caught our creative energy like nothing before. It is a mini hand held device comprising of camera at the back and a screen displaying the information in the front.

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