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Research Paper on ATM Based on Face Recognitions System

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Abstract: Automated Teller Machines are widely used nowadays by people. But it's hard to carry their ATM card everywhere, people may forget to have their ATM card or forget their PIN number. The ATM card may get damaged and users can have a situation where they can'tget access to their money. In our proposal, use of biometrics for authentication instead of PIN and ATM card is encouraged. Here, The Face ID is preferred to high priority, as the combination of these biometrics proved to be the best among the identification and verification techniques. The implementation of ATM machines comes with the issue of being accessed by illegitimate users with valid authentication code. The users are verified by comparing the image taken in front of the ATM machine, to the images which are present in the. If the user is legitimate the new image is used to train the model for further accuracy. Thissystem uses open CV to process the image being obtained and Hear Cascade Classifier to detect the faces in the image. The face recognitions done using Local Binary Pattern.

Keywords: Haar cascade, Automatic Teller Machine, Webxel, Machine learning,EigenFaces, Fisher Faces

I. INTRODUCTION

An Automatic Teller Machine (ATM) is a computerized machine that is used to withdraw cash from a customer's respective bank account. As financial users prefer ATM for cash withdrawals, cash deposits and much other transaction, the banks are focusing a lot over the security of ATMs. Hence ATM should be protected properly from the criminal activities or from any unwanted things.

Due to rapid development in science and technology, upcoming innovations are being built- up with strong security. But on the other hand, threats are also being posed to destroy this security level. Though enhancement in automation has made a positive impact overall, various financial institutions like banks and applications like ATM are still subjected to thefts and frauds. The existing ATM model uses a card and a PIN which gives rise to increase in attacks in the form of stolen cards, or due to statically assigned PINs, duplicity of cards and various other threats. Then another major problem is hacking of PIN. There are other fraudulent attackslike eavesdropping, spoofing, brute force attacks, blackmailing the user. An Automatic Teller Machine (ATM) is a computerized machine that is used to withdraw cash from a customer's respective bank account. As financialusers prefer ATM for cash withdrawals, cash deposits andmuch other transaction, the banks are focusing a lot over the security of ATMs. Hence ATM should be protected properly from the criminal activities or from any unwanted things.

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To overcome these problems, the project 'ATM Security system based on Face recognition, PIN and PIN' consists of conventional features i.e. is Personal Identification Number (PIN) along with additional features like face recognition and one-time password (PIN) is used. Database holds information about a user's ac- count details, images of his/her face and a mobile number which will improve security to a large extent.

First, the user will come to the ATM machine and a live image is captured through the Web Camera interfaced with System defining as the ATM system, which is compared with the images stored in the database. If the face is recognized, then the user is notified to type the PIN.If the PIN matches, an PIN will be sent to the corresponding registered mobile number. If the user correctly enters the PIN, the transaction can proceed. Therefore, the combination of face recognition algorithm, PIN and an PIN drastically reduces the chances of fraud.

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II. LITERATURE REVIEW

1) Paper Name: An Introduction to the Good, the Bad, and the Ugly Face RecognitionChallenge Problem.
Author: P. Jonathon Phillips, J. Ross Beveridge, Bruce A. Draper, Geof Givens, Alice J. O'Toole, David S. Bolme, Joseph Dunlop, Yui Man Lui, Hassan Sahibzada, and Samuel Weimer
Abstract: This paper introduces the Good, the Bad, and the Ugly Challenge Problem. The main goal of the challenge is to encourage the development of algorithms that are robust to recognizing frontal faces taken outside of studio style image collections. The three partitions in the GBU Challenge Problem emphasize the range of performance that is possible when comparing faces photographed under these conditions. This structure allows for researchers to concentrate on the hard aspects of the problem while not compromising performance on the easier aspects.

2) Paper Name: Deep Face: Closing the Gap to Human-Level Performance in FaceVerification
Author: Yaniv Taigman Ming Yang MarcAurelio Ranzato Face- book AI Research Menlo Park, CA, USA yaniv, mingyang, ranzato@fb.com Lior Wolf
Abstract: This paper, demonstrates that coupling a 3D model- based alignment with large capacity feed forward models can effectively learn from many examples to Overcome the drawbacks and limitations of previous methods. The ability to present a marked improvement in face recognition, attests to the potential of such coupling to become significant in other vision domains as well.

3) Paper Name: Toward a Practical Face Recognition System: Robust Alignment andIllumination by Sparse Representation
Author: Andrew Wagner, Student Member, IEEE, John Wright, Member, IEEE, Arvind Ganesh, Student Member, IEEE, Zihan Zhou, Student Member, IEEE, Hossein Mobahi, and Yi Ma, Senior Member, IEEE
Abstract: In this paper, the system achieves extremely stable performance under a wide range of variations in illumination, misalignment, and even under small amounts of pose andocclusion. We achieve very good recognition performance on large-scale tests with public data sets as well as our practical face images, while using only frontal 2D images in the gallery and no explicit 3D face model. Our system could potentially be extended to better handle large pose and expression, either by incorporating training images with different poses or expressions or by explicitly modeling and compensating the associated deformations in the alignment stage.

III. PROPOSED SYSTEM

1) *Motivation:* Motivation is to provide the latest review of the existing literature on facial recognition and to bring to the limelight, the studies of computer vision in recognition of human faces. A facial recognition system is a computer application for automatically identifying or verifying a person from a digital image.
2) *The goal of Object:* detection is to detect all instances of objects from known class, such as people, cars or faces in an image. Typically, only a small number of instances of the object are present in the image, but there is a very large number of possible locations and scales at which they can occur and that need to somehow be explored.
3) *Problem Definition:* Now a days ATM card are easy to Hack and get fraud. So because of that we are developing a face unlocking transaction system in this we are using image processing. so user face is first capture their own image then system store it into data set after that training of model operation is performed with the help of ML algorithm and give permission to do transaction.
4) *Objectives:* The goal of object detection is to detect all instances of objects from a knownclass, such as people, cars or faces in an image. Typically, only a small number of instances of the object are present in the image, but there is a very large number of possible locations and scales at which they can occur and that need to somehow be explored. Each detection is reported with some form of pose information. This could be as simple as the location of the object, a location and scale, or the extent of the object defined in terms of a bounding box.
5) *Scope of the Work:* To study the effects of age in a face biometric system and to review face biometric technology available on PDAs and laptops. So it is helpful for future scope as it will Recognize face at different times and it will helpful as the age increases of a person there are changes in face of a person so it detects the face at specific age.

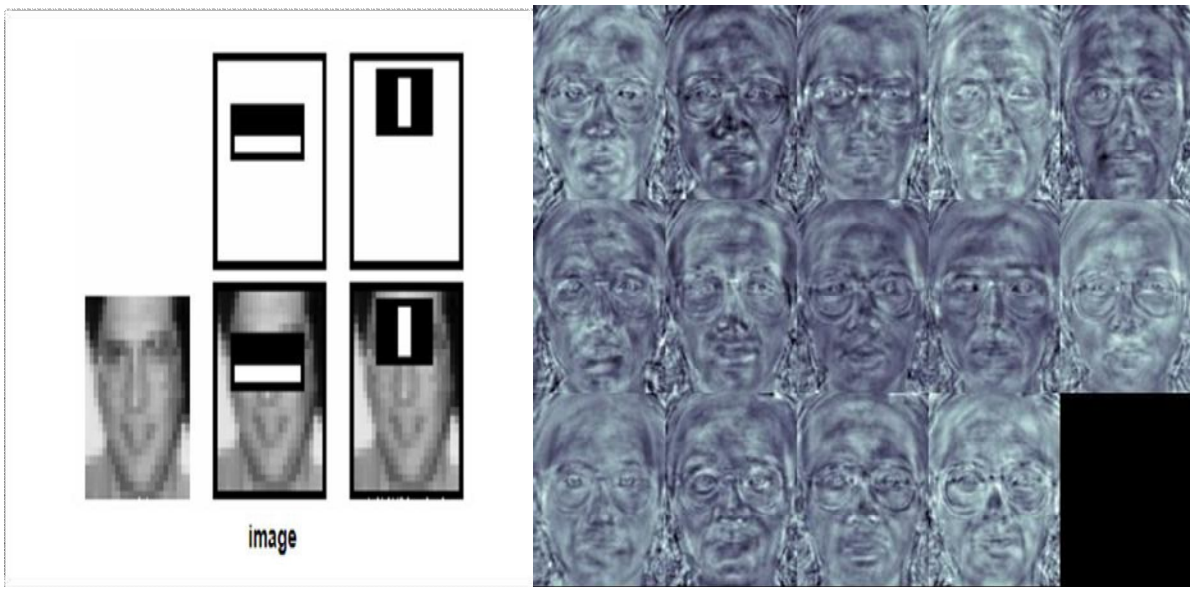
IV. METHODOLOGY

Hear Cascade Hear Cascade is an Object Detection Algorithm used to identify faces in an image or a real time video.
The algorithm uses edge or line detection features proposed by Viola. Hear Cascade is a machine learning-based approach where a

lot of positive and negative images are used to train the classifier.

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This algorithm considers the fact that not all parts of a face are equally important or usefulfor face recognition. Indeed, when you look at someone, you recognize that person by his distinct features, like the eyes, nose, cheeks or fore- head; and how they vary respect to each other. Focus is on the areas of maximum change. For example, from the eyes to the nose there is a significant change, and same applies from the nose to the mouth. When multiple faces are given, comparison is done by looking at these areas, because by catching the maximum variation among faces, they help to differentiate one face from the other. This is how Eigen faces recognizer works. It looks at all the training images of all the people as a whole and tries to extract the components which are relevant and useful and discards therest.



A. System Architecture

1) *Face Detection:* This module locates and detects faces within the camera's field of view. ATM Software: Thesoftware running on the ATM terminal that manages the user interface, transaction processing, and interacts with the facial recognition system.
2) *Transaction Processing:* If the user is authenticated successfully, the ATM software proceeds with the requested transaction, such as cash withdrawal or balance inquiry.

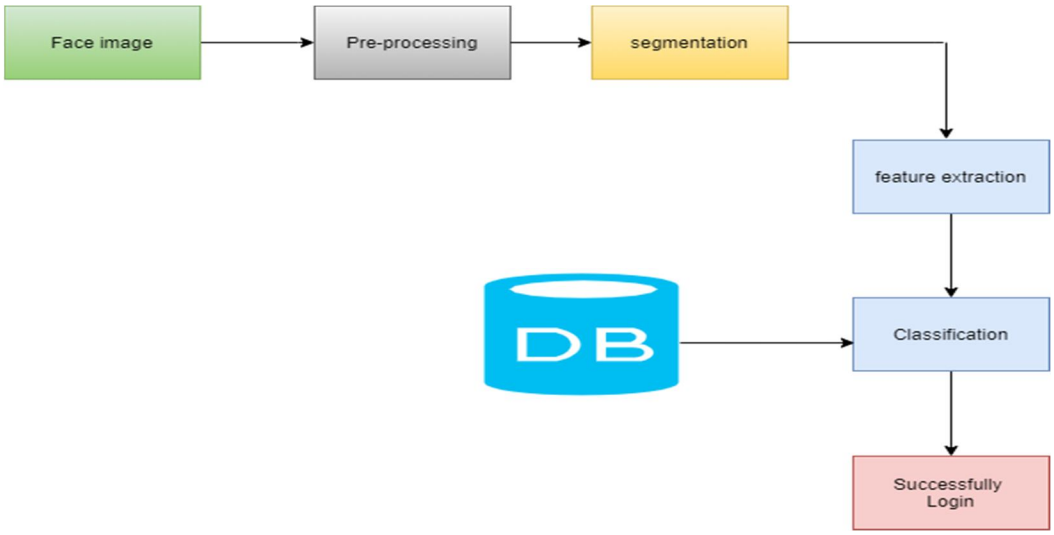


Fig. System Architecture

V. IMPLEMENTATION PLAN

A. *Model Training*

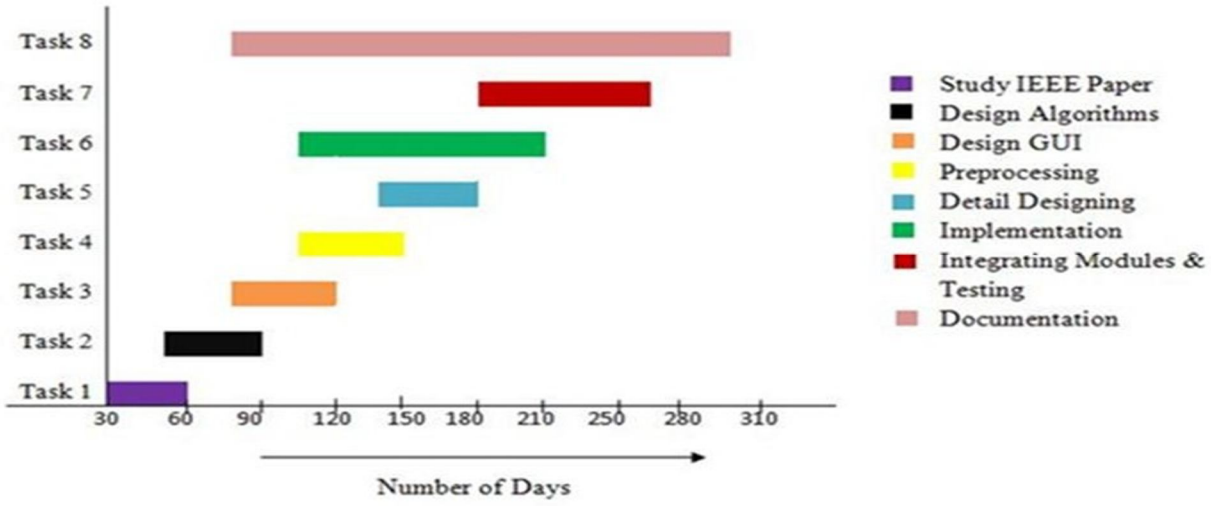
Train the face recognition model using the labeled dataset. This typically involves optimizing the model's parameters to minimize the difference between the predicted face embeddings and the ground truth labels

B. *Model Testing and Evaluation*

Evaluate the trained model's performance on a separate test dataset to measure its accuracy, precision, recall, and other relevant metrics.

1) Front End: HTML, CSS
2) Backend: Python, Django Framework
3) Framework: Spyder
4) Algorithms: Haar Cascade

C. *Graph*



VI. RESULTS



Fig. Main file



Fig. Registration

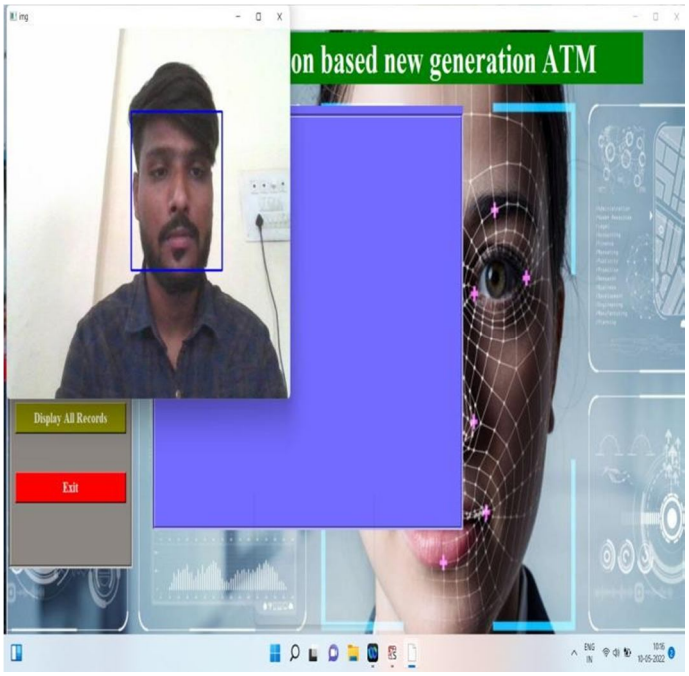


Fig. Capture User Image



Fig. Granted Permission

VII. CONCLUSION

1) This project focuses on developing an automated system for ATM, and security purpose.

2) In this project we are developing a system in this system user face detect and then system give permission to user for complete transaction or next process.

3) The motive of our system is card less transaction.so there is not card we are using user face for authentication.so reduce the robbery of ATM card money. Through this system, face which are in front of the camera are detected.

4) The distance of the face from that person is calculate.

5) Facial recognition has proven to be one of the most secure methods of all biometric systems to a point for high level security and to avoid ATM robberies and provide security for ATM.

6) It replaces the traditional ATM system. It has advantages such as saves manufacturing cost of cards and overcomes drawbacks of the traditional system like carrying the ATM card, losing of card, fraud calls related to ATM card, etc.

7) With new improved techniques in the field of artificial Intelligence that help eliminate more disturbances and distortions, the rate of effectiveness of the system can be improved.

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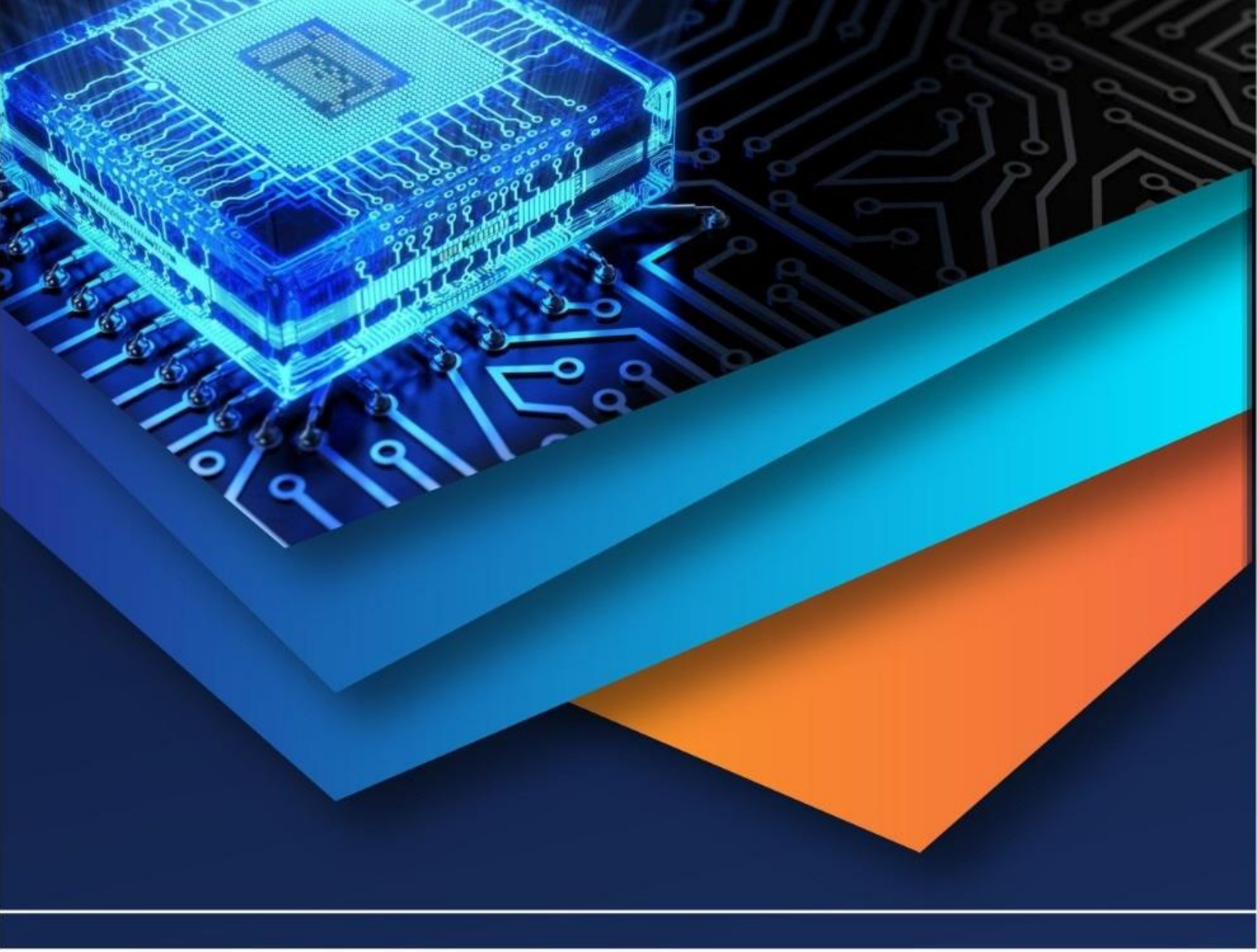
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