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# Secure ATM: Advanced Security for ATM using Face Liveness Detection

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Abstract: Face popularity play a important position in type of packages from biometrics, surveillance, security, identity to the authentication. In this paper we design and implement a ATM security system where access people whose faces are available in the training database. Then face reputation is accomplished to decide the authority of the individual to go into the touchy area. At the identical time, we tune the coordinate of detected motion. Failing to apprehend the face ultimately passes the predicted coordinate to anaesthetic gun for concentrated on the intruder automatically. Experimental effects reveal the effectiveness of proposed Bank locker safety machine to limit on the unauthorized get admission to and improved reliability via way of means of use of Liveness face recognition.

Keywords: Face Detection, Feature Extraction, Tracking, Machine Learning.

#### I. INTRODUCTION

Human face detection is the maximum promising discipline of picture processing that has a massive vicinity of studies orientated actual existence applications. In the actual international the idea is broadly used for the content material annotation, get entry to control, profiling and capability discrimination withinside the internet international. There is continually positive scope of recent innovations withinside the subject of generation that's as massive as galaxy on its own. This ends in the higher future. There has been a supportive improvement withinside the discipline of generation via way of means of the human beings on account that the start of mankind. The cause became in fast improvement and additionally withinside the development of generation to make certain the minimization ofhazard this is inclined at the side of the brand new innovations which could make lifestyles easier, higher and lots faster. The fundamental aim of face detection is to discover the human face withinside the given input.

The Psychological technique of finding the human face withinside the visible body is likewise possible. It is also categorized as a special case of object class detection. The Eigen face technique is taken into consideration as a promising approach of face detection. In the field of marketing the facial image detection is playing a role of huge interest for the users. It has always been an issue of personal authentication that needs to be fixed for the motive of get entry to manage of the info-protection withinside the wider context thru bodily protection. Researchers found that the face detection is an issue that needs to be taken into consideration.

In phrases of appearance, human face has excessive diploma of variability, making it a dynamic item of study. Application of face detection is found in crowd surveillance, video conferencing, biometrics etc. The concept of human face detection makes it difficult for computer vision.Detected face is saved with excessive degree of secrecy and certainty. Assuring that the data is safe, is the most important aspect under discussion. The image data consists of properties associated with, such as high level of redundancy, bulk capabilities and also high correlation between the pixels.

#### **II.RELATED WORK**

# GURUH FAJAR SHIDIK, EDI NOERSASONGKO, ADHITYA NUGRAHA, PULUNG NURTANTIO ANDONO, JUMANTOJUMANTO, AND EDI JAYA KUSUMA-

In this paper, Intelligent Video Surveillant (IVIST) is likewise introduced. IVIST is a prototype device with EDCAR know-how that gives automated guide to enforce associated inference methods which includes item monitoring and detection to cause alarms.

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IVIST machine has been investigated with the aid of using the usage of numerous goal eventualities such as "scouse borrows baggage", "crowd activity", "unattended baggage", and "fighting". From research result, every situation can exactly be detected the use of IVIST device incorporated with EDCAR Framework

#### Ahmed Abdel Moamen, Student Member, IEEE, Nadeem Jamali –

In this study, we look at the effect of non-stop cell sensing at the power utilization of wearables and smartphones. We first have a look at numerous current structures for serving such packages earlier than supplying a few illustrative non-stop cell sensing packages.

#### Syed Umaid Ahmed Hamza Khalid, Muhammad Affan-

This observe introduces a face-identification and face-reputation smart device with programs in personal security, domestic surveillance, and character tracking. In the occasion of an unidentified or unknown individual, the real-time video circulation is Processed, movement is detected, and dual-axis pan-tilt servos music that character with a camera. This is how an automated facial popularity solves protection problems with flexibility. Additionally, video recordings of those bizarre acts are synced from cloud storage, and cell notifications are generated.

#### AHMED ABDELMOAMEN AHMED -

In this paper, we gift a prototype implementation of such systems, Hawk-Eye, an AI-powered chance detector for clever surveillance cameras. Hawk-Eye may be deployed on centralized servers hosted withinside the cloud, in addition to domestically at the surveillance cameras on the community edge. Deploying AI-enabled surveillance packages at the threshold allows the preliminary evaluation of the captured pics to take area onsite, which reduces the verbal exchange overheads and permits fast safety actions.

#### Haoren Cui, Zhihua Wei, Pengyu Zhang, Di Zhang -

In this paper, we advise a a couple of granular cascaded version of item monitoring below surveillance video. For frames in surveillance video, we examine the frames from special granularity levels. At the coarse level, we make use of Gaussian aggregate version mixed with a three-body distinction technique to extract the foreground vicinity of the body. At the pleasant level, a cascaded multi-supply characteristic fusion approach is used to categorize the vicinity suggestion and attain the place of the target. Finally, we recommend a few optimization techniques for the net tracker updating. We behavior numerous comparative experiments on real surveillance video.

#### Abhishek Dutta Andrew Zisserman –

In this paper, we introduce a easy and standalone guide annotation device for images, audio and video: the VGG Image Annotator (VIA). This is a mild weight, standalone and offline software program bundle that doesn't require any set up or setup and runs entirely in an internet browser. The VIA software program lets in human annotators to outline and describe spatial areas in snap shots or video frames, and temporal segments in audio or video.

#### Yun-Xia Liu, Yang Yang, Aijun Shi, Peng Jigang, LiuHaowei-

The reveal faces dozens of surveillance video images, which is straightforward to fatigue. It might not be capable of reply in time to extraordinary conditions because of loss of concentration, and loss key data withinside the video. In addition, due to the fact a big quantity of surveillance video desires to be saved for months or years, it's going to bring about a big garage cost. Therefore, the clever video surveillance gadget is urgently had to help the tracking employees to apply the clever detection generation to process, analyses and apprehend the video sign whilst maintaining the unique video key facts, and robotically hit upon the goal class and vicinity facts without guide intervention.

#### Umadevi V Navalgund, Priyadharshini.K –

In this paper writer defined an automated handgun detection gadget in surveillance videos, System controls the occurrences of crimes with the aid of using detecting.

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The weapons withinside the surveillance videos, it'll classify items like gun or not, expect the crime happened or not, it offers the answers that have been in comparison with sliding window notion approach, the best consequences are acquired via way of means of FRCNN and RCNN primarily based totally fashions educated on this version indicates a excessive crime prediction prevalence even in low high-satisfactory motion pictures then produces the nice pleasant results.

#### Ya Wang, Tianlong Bao, Chunhui Ding, Ming Zhu -

In this paper, we advise a way for face reputation in real-international surveillance films via way of means of deep learning. First, a singular dataset from goal real-international surveillance motion pictures is built mechanically and incrementally with the technique of face detection, tracking, labeling and purifying. Then, a convolutional neural community with the categorized dataset is finetuned. On the checking out dataset amassed from the campus surveillance system, the community after fine-tuning achieves reputation accuracy of 92.1 %, which manifestly outperforms the community without fine-tuning, which returns a popularity accuracy of 83.6%.

#### Yi Zhou, Li Liu, Ling Shao –

In this paper, we gift a quick algorithm: detection and Annotation for vehicles (DAVE), which correctly combines car detection and attributes annotation right into a unified framework. DAVE includes convolutional neural networks: a shallow absolutely convolutional rapid car notion network (FVPN) for extracting all vehicles' positions, and A deep attributes mastering network (ALN), which ambitions to affirm every detection candidate and infer every vehicle's pose, color, and sort facts simultaneously.

#### **III.PROPOSED SYSTEM**

In this secure ATM, the main steps are face detection and face recognition along with OTP verification as an alternate approach. Face detection is spotting a person's face and face popularity primarily based totally at the person's capabilities that uniquely describe that person. During face detection person's face is extracted, then in line with requirement its miles cropped, resized, and transformed into grayscale. During face reputation, the detected face is as compared with the face saved withinside the database with the aid of using making use of a face reputation algorithm. Here for face detection, the Haar cascade set of rules is used and for face recognition, LBPH set of rules is used.

#### 1)Haar Cascade Algorithm:

Haar Cascade Algorithm is a machine gaining knowledge of primarily based totally set of rules proposed via way of means of Paul Viola and Michael Jones wherein the cascade photo is trained with the aid of using offering a variety of superb and bad images, this is used to discover the item in images. This set of rules wishes plenty of fantastic snap shots (snap shots of faces) and poor snap shots (i.e., Photographs without faces) to teach the classifier. Haar capabilities are used to extract the capabilities from images.

#### 2)LBPH Algorithm:

Face popularity consists of verification and identification. In verification or authentication, a person's face is as compared with the face withinside the database if you want to provide him access, and Identification, we ought to discover if the person's face is gift withinside the database, soit's miles as compared with n wide variety of faces. LBPH set of rules is a mixture of LBP (Local Binary Patterns) and HOG (Histogram Oriented Gradient) descriptors. It is a completely effective manner of efficaciously labelling the pixel of an image.

#### **3.1) SYSTEM ARCHITECTURE**

#### Advantages:

Banks offer ATM facilities to individuals as and when required Both public as well as private sector banks offer this facility to needy individuals for a small annual fee These ATM are maintained in a secure facility that is under constant surveillance and security There are several advantages of availing a bank ATM, a few best ones are listed as follows:

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- Easy access.
- Available in any financial institution branch.
- Anyone can avail.
- Nomination facility available.



#### **IV.RESULT AND DISCUSSION**

To increase a face popularity system, first, organized the face dataset for training. To expand a face dataset, we used the face detection approach that detects the face in a real-time digital digicam and captured face images. That captured pictures are stored into the dataset folder for characteristic extraction and schooling processes. Model after education is saved in the '.yml' file.

In the preliminary phase, the gadget asks for statistics approximately the individual along with name, age, gender, after which the digital digicam will open that captures 30 pics of someone on exceptional face positions. The facts approximately someone is stored into the database and captured pictures are stored right into a dataset folder with the equal id. When person desires to log in then his real-time face that's taken with the aid of using the digital digicam is as compared with the face gift withinside the dataset the usage of the LBPH algorithm. And if the user wants to use an alternative method, then OTP will send to his/her phone number and after verifying the OTP access will be provided to the user. We are looking to hit upon the faces with mask, with specifications as more capabilities of this project. The accuracy of this machine is round 98%.

| Algorithm For Face Detection | HAAR Cascade |
|------------------------------|--------------|
| No of Frames Taken           | 30           |
| Accuracy                     | ~96.24       |

Table 1. Face Detection

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| Algorithm For Face Detection | LBPH (Local Binary Path<br>Histogram) |
|------------------------------|---------------------------------------|
| Accuracy                     | ~98                                   |

Table 2. Face Recognition

#### User Login Page



#### **Registration Page**

| REGISTRATION               |
|----------------------------|
| Username: shweta_g         |
| User_Id: 2                 |
| Account_N(112002           |
| Mobile_No:                 |
| Email_Id: shweta@gmail.com |
| Address: pune              |
| Sign Up                    |
|                            |
|                            |
|                            |
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#### **OTP generation And Face Verification Page**

| GENERATE OTP                             |  |
|--|--|
| ENTER OTP<br>VERIFY OTP<br>FaceDetection |  |
|  |  |

#### **Dashboard Page**

| Welcome:shweta_g<br>Cash_Withdrawal<br>Cash_Deposite<br>Total |                  |
|---|------------------|
| Cash_Withdrawal<br>Cash_Deposite<br>Total                     | Welcome:shweta_g |
| Cash_Deposite<br>Total  | Cash_Withdrawal  |
| Total   | Cash_Deposite    |
|   | Total            |

#### V. CONCLUSION

This study introduces a face-identification and face-recognition intelligent system with applications in private security, home surveillance, and person tracking. In the event of an unidentified or unknown individual, the real-time video stream is processed, motion is detected, and dual-axis pan-tilt servos track that person with a camera. This is how an automatic facial recognition solves security issues with flexibility. Additionally, video recordings of these odd acts are synced from cloud storage, and mobile notifications are generated.

#### REFERENCES

 GURUH FAJAR SHIDIK, EDI NOERSASONGKO, ADHITYA NUGRAHA, PULUNG NURTANTIO ANDONO, JUMANTO JUMANTO, AND EDI JAYA KUSUMA "A Systematic Review of Intelligence Video Surveillance: Trends, Techniques, Frameworks, and Datasets" IEEE 2019.

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#### Volume 3, Issue 6, May 2023

- [2] Ahmed Abdel Moamen, Student Member, IEEE, Nadeem Jamali, "Opportunistic Sharing of Continuous Mobile Sensing Data for Energy and Power Conservation" IEEE 2016.
- [3] Syed UmaidAhmed, Hamza Khalid, Muhammad Affan "Smart Surveillance and Tracking System" IEEE 2021.
- [4] AHMED ABDELMOAMEN AHMED, (Member, IEEE), AND MATHIAS ECHI "Hawk-Eye: An AI-Powered Threat Detector for Intelligent Surveillance Cameras" IEEE 2021.
- [5] Haoren Cui<sup>†</sup>, Zhihua Wei, Pengyu Zhang, Di Zhang "A Multiple Granular Cascaded Model of Object Tracking Under Surveillance Videos" Department of Computer Science and Technology, Tongji University, Shanghai.
- [6] Abhishek Dutta, Andrew Zisserman, "The VIA Annotation Software for Images, Audio and Video" Dept. of Engineering Science, University of Oxford az@robots.ox.ac.uk.
- [7] Yun-Xia Liu, Yang Yang, Aijun Shi, Peng Jigang, Liu Haowei. "Intelligent monitoring of indoor surveillance video based on deep learning" \*Shandong province's electronic information products quality supervision and inspection Institute, Jinan, China IEEE 2019.
- [8] Umadevi V Navalgund, Priyadharshini.K "Crime Intention Detection System Using Deep Learning" KLE Technological University Hubballi, India IEEE 2018.
- [9] Ya Wang, Tianlong Bao, Chunhui Ding, Ming Zhu "Face Recognition in Real-world Surveillance Videos with Deep Learning Method" Department ofInformation and Technology University of Science and Technology of China IEEE 2017.

Yi Zhou, Li Liu, Ling Shao "Fast Automatic Vehicle Annotation for Urban Traffic Surveillance" 2017 IEEE.

