Multiple Illegal Activities Detection for Enhancing ATM Security

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Abstract: The project aims at detection of unusual activities, entry of multiple persons inside ATM and also detection of entry of person in restricted area of ATM. Unusual activity is detected based on action detection using background subtraction algorithm. Multiple person detection is done based on face detection using viola-jones algorithm. Entry of a person into a restricted area is based on face detection and boundary detection.

Key Words: - *Video surveillance, Unusual event detection, Face detection, Viola-Jones algorithm, Background subtraction, ATM security.*

I. INTRODUCTION

Automated Teller Machines ATMs are used for different ways, mostly cash withdrawals. In today's technology ATM's have become one of the basic needs for day to day human life cycle. Since the transaction through ATM's are increasing rapidly along with this miscellaneous activity. Example like hacking pin code, misuse of ATM card by unauthorized persons, thefts by breaking ATM machine have become the vast drawback due to less security. Hence to overcome this "**multiple illegal activities detection for enhancing ATM security**". Even though the ATM centers are provided with CCTV cameras and security guards the 24/7 up to-date information is not monitored. Most of the times after the theft they come to light which would be sometimes too late in order to overcome this, multiple illegal activities are identified through our project and immediate intimation to police station, security guards and banks through mail are provided by through which the above problem statement can overcome.

II. LITERATURE SURVEY

Dr. Anindya Sen, Souvik Das, Sambarta Ray [1] As there is lack of security in the ATM, there is need to protect and secure the ATM machine. In the current existence, there is only a camera which just record which is not sufficient for emergency situation. So in this paper the system can detect whether a person is wearing a mask or not and can take the count of the number of person entering the ATM.

Jinyi Wu, Zuling He, Yaoyu Chen, Yiping Tang. [2] The paper discusses about a monitoring system for the ATM by using an omni-directional vision sensor (ODVS) and the technology of the computer vision. ATM users face image with the time and location can be detected. Recognition of the malicious violent behaviors is done by ODVS it can detect whether there is vibration under the irregular outside force or not. The advantages of using ODVS is it has wide detecting range, high level intelligence, high efficiency storage and high robustness.

Song Wan-juan, Zhang Jian. [3] The paper proposes the face detection for high security the feature used for the system is haar rectangle. AdaBoost learning algorithm is also used for face detection int query and retrieval of video surveillance is facilitated and resulted for the detection of human face.

Jaihie Kim, Jae Kyu Suhr, Sungmin Eum.[4] The paper is about the face recognition by exceptional occlusion handling (EOH). The EOH is divided into 2 approaches 1) acceptation of false rejected case 2) rejection of false accepted case. to prove the validity of EOH, facial occlusion, eyeglasses and sunglasses are used.

Mohamed Abid, Shaya Abdullah Alshaya, Sabeur Elkosantini, Mossaad Ben Ayed.[5] The paper is about the complexity of intelligent. Recognizing the fear feeling using a camera as a contactless sensor is described in this paper. The technique used are bandpass lter, eulerian transformer, and lagrangian transformer the best heart rate can be estimated by the proposed algorithm.

Chuan-Pin Lu, Shih-Hsuan Chiu, Jiun-Jian Liaw,Che-Yen Wen..[6] The paper is about the detection of covered face circular arc detection method is proposed in this paper which is based upon the modified though transform.

Rajkumar K,Chirag Rayani..[7] The paper is to recognize the face which has 3 stages in the recognition. They are face detection, feature extraction and classification. viola jones algorithm is used for face detection. For facial data processing, PCA with multilevel grid search method is used.

Mrs. Jaya Devan, Rupesh Ambatwad.[8] The paper is used to detect the covered face. Background subtraction algorithm is used to eliminate the other part from image. The algorithm detects the helmet or mask in surveillance image and alerts the people around.

Nagesh Kumar, Sudhir Goswami, Jyoti Goswami.[9] The paper detects the unusual events using an algorithm where conventional low-resolution cameras are used because of low cost. Recognition of uncommon events such as overcrowding or fight in the low-resolution image by using statistical property, standard deviation of moving objects is executed in

this paper.

Bjorn Schuller and Gerhard Rigoll, Moritz Kaiser, Dejan Arsic, Atanas Lyutskanov [10] To resolve heavy occlusion and to detect the robberies at ATM machine, the multi camera system is used in this paper. The low-level activities (LLA) has been analyzed such as running, walking. The result which has obtained through the LLA analysis, will be directed to Bayesian Network, which is used as a stochastic model to model and hence called as High-Level Activities (HLA).
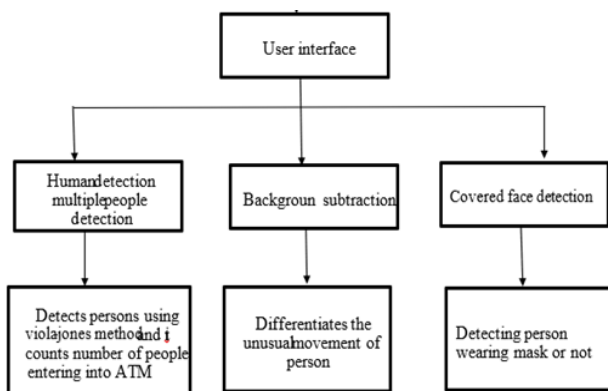
III. SYSTEM ARCHITECTURE

Fig.1. Overall architecture of the system

*Multiple People Detection***: -** The algorithm which is used will not only detect an entry of a single person but also detects multiple persons entering into the ATM. By using viola-jones method, identified multi persons can be publicized in small rectangular size area.

Restricted Area and allowed Area: - To detect whether the person is in restricted or allowed area. An area inside ATM center is predefine as allowed and restricted. If the person walks around allowed area, he/she is said to exhibit normal activity. If he/she enters in the restricted area, it detects as abnormal activity and send alert message.

Background Subtraction: - Detect the unusual event inside the ATM using Background subtraction algorithm. The captured frame finds the number of changes. If the changes are more than threshold, message is sent to the respective authority.

*Covered Face Detection***: -** It is used to detect whether the person face is covered or not. A covered face of a person can be detected using viola-jones algorithm.

IV. PROPOSED WORK

Restricted Area:
- Predefine restricted and valid areas.
- Sensing the people movements.
- Notifies if he/she enters into restricted areas.

Unusual Event Detection:
- Detecting multiple persons inside the ATM
- If the face of a person is covered then he/she is not allowed for further transactions.
- Detecting unusual events inside the ATM
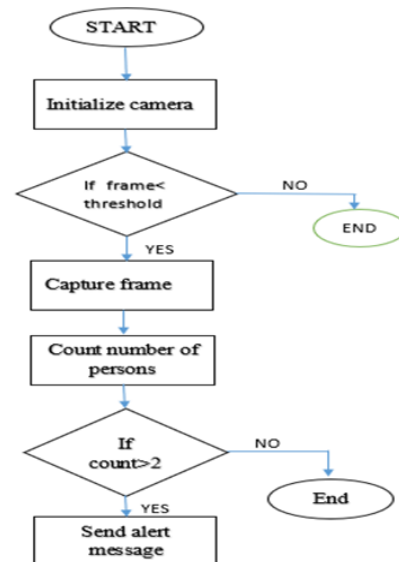
V. WORKING PROCEDURE

Fig.2. Multi Persons Detection

Above control flow diagram, Fig.2. how multiple persons are detected. The camera is initialized and then frame is captured. Based on face recognition, the captured image frame counts the number of persons inside the ATM. If the count is more than one, then it sends message to the respective authority immediately else it ends the process.

Fig.3. shows how covered face of a person is detected. The camera is initialized and the library is loaded. The captured image frame detects the face is covered or not. If the face is covered then the message is sent to respective authority otherwise it ends the process.

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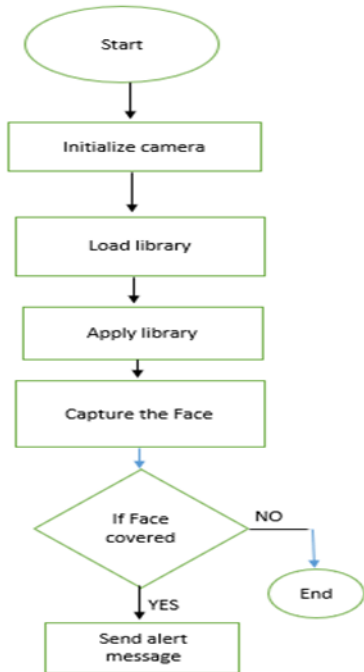www.ijprse.com

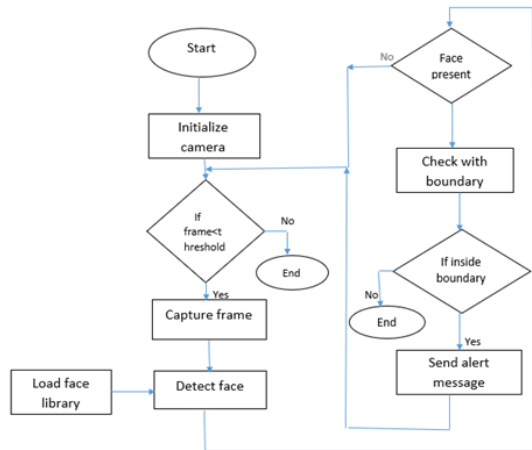Fig.3. Detection of Person Face is Covered or Not

Fig.4. Detection of Person Inside the Boundary

Fig.4. shows whether a person is in allowed area or restricted area. The camera is initialized and library is applied to detect the face. It checks whether a person is present within the boundary, if not process ends and sends alert message.

Fig.5. Shows, how unusual event is detected. The camera is initialized and the frame is captured. When frame is captured, it finds the number of changes inside the ATM and displays the changes with respect to the same. If the changes are greater than 5, then it sends message to the respective

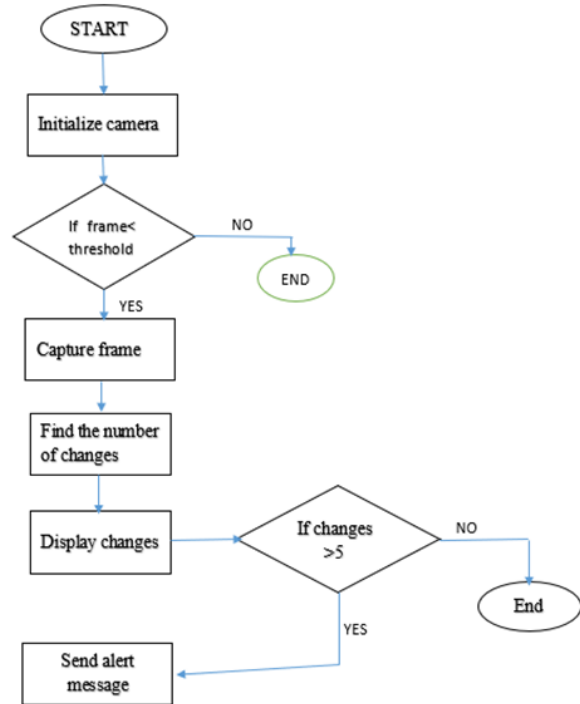authority immediately else it ends the process.

Fig.5. Unusual Event Detection

VI. CONCLUSION

As the transaction through ATMs are increasing rapidly along with these miscellaneous activities, like robberies, misuse of ATM card by unauthorized persons so on, ATM fraud has recently become more widespread. So, the main aim of the project is to design an ATM security system which is able to detect illegal activities in low resolution image that could be helpful in surveillance system for enhancing the security of ATMs. The project aims at detection of unusual activities, entry of multiple person inside ATM and also detection of entry of person in restricted area of ATM. Unusual activity is detected based on action detection using background subtraction. Multi person detection is done based on face detection using viola-jones algorithm. Detection of entry into restricted area is based face detection and boundary detection.

VII. FUTURE WORK

- The project can be further enhanced by detecting the face which is completely covered like if a person is wearing helmet and etc.,

- Automatic ATM door closing when unusual event occurs inside the ATM by using DC motor.
- Leaking the Chloroform chemical gas when the thief is detected by using stepper motor to make unconscious.

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