Leveraging Contrast Control for Strengthening ATM Card Security Against Unauthorized Access

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ABSTRACT

These days research is going in the field of crime avoidance and detection in ATM.But till now there is no good technology has came in the field of ATM that can avoid these crimes. So the idea of making this project has comed from my observation of life incidents happening in the world. So to provide some security measures for ATM transactions is what is the purpose of the project.In this project, I will analyze various facial & emotional features using various algorithms.The machine will only work if the expressions and emotions are normal and there is no sign of forced usage or any other illicit activity.Image processing technology concentrates on the development of data extraction techniques applied toward the statistical classification of visual imagery.At first,we will check that only single person is trying to access the Atm machine,if a person is entering in group then access will not be provided, and then we will recognize the emotions and expressions of a person,if they are found to be tensed or nervous,then we will send a sms alert to the guard outside the Atm machine.

KEYWORDS: Machine Learning, Digital Image Processing, emotion recognition.

I. INTRODUCTION

Now a days there is a growing demand for using automatic video surveillance systems. These video surveillance are being used in various fields in our daily life to increase security and provide better safety. Object detection and tracking has wide scope in applications like person tracking,security monitoring,traffic and road management,mobile devices,biomedical and medical,biometrics,sports analysis and in many other applications.It also Pays a good attention in the field of robbery detection.Automated Teller Machine (ATM) is a service that bank provides to allow customers access the financial transaction in public region.A user needs an ATM card to access the financial transaction. Nowadays crime and robbery in ATM has increased a lot and till now no good technology has been developed to detect these crimes and track it. So the idea of making this project has comed from my observation of life incidents happening in the world. So to provide some security measures for ATM transactions is what is the purpose of the project. In recent time there has been a proliferation of ATM fraud across the world.There are many suspicious actions in ATM,like mobile phone,multiple persons accessing the machine at the same time,suspicious and idle object and it shows event corresponding to robbery.To avoid and overcome these thefts in ATM,an intelligent system is build,whose aim is to work with coordination of ATM software and make atm transactions secure.

II.DEFINITIONS

Concept Introduction

The main function of proposed system is associated with the ATM software. The structure of proposed system is shown in the figure below. The architecture of the proposed system is divided into three categories. The first part deals with the video camera which clicks the images.Second part comprises of multiple object detection phase which detects the existence of more than one person in the Atm site.If it detects multiple user or objects then it will display an alert to the user.Now the third module is the activity and emotion recognition module.It basically recognizes human behaviour.If the emotions and behaviour of the person are normal then it is passed to normal transaction module and the transaction takes place in a normal fashion.If there are multiple objects or if behaviour of a person is not normal then it will produce an alarm and will send a sms alert to the guard outside the ATM.

Types of ATM threats

ATM threats can be classified into three types of attacks: currency and card fraud, physical attacks and logical attacks.

The main thefts that occur in ATM are :

- Theft of ATM pin number
- Theft by fraudulent transaction

- Robbery of ATM cash
- Multiple person accessing ATM
- Burglary of ATMs
- Attempt of murder at ATM site
- Violence Attacks

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III. FACE RECOGNITION INTRODUCTION

In order to recognize human face viola jones face detection has been used. The core principle of viola jones algorithm is to scan a window which is capable of detecting human faces from a given input image.The mostly used image processing approach will rescale the input image into different-different sizes and then execute the fixed size detector through these images. But this approach turns out to be more time consuming because of calculation of images of different sizes.So in contrast to the standard approach viola-jones algorithm rescale the face detector instead of image input and tries to run the face detector many times through the image and each time having different size. At the beginning we might suspect both approaches to be equally time consuming, but viola-jones algorithm has invarient detector that requires same number of calculations for large size images also.This face detector is made using integral image and some simple rectangular features This detector is constructed using a so-called integral image and some simple rectangular features resembling to haar wavelets. The architecture of face detection module is as follows:

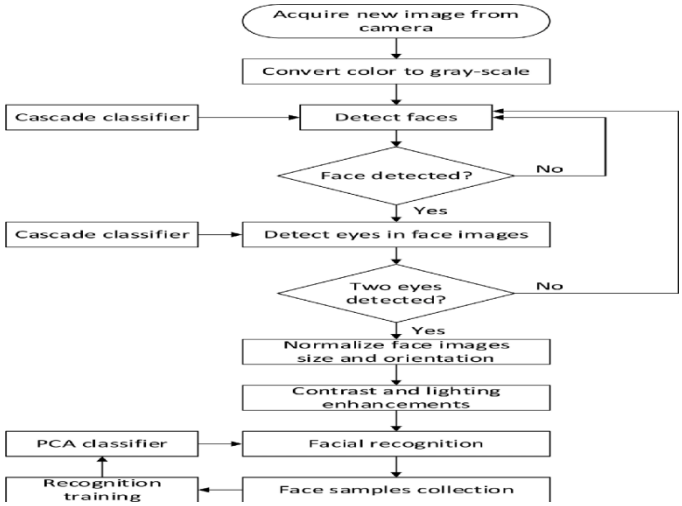

Fig:1 Flow Chart for Face recognition

Multiple Object Detection

Multiple object detection is the one of the most important task of computer vision.In most of the computer vision technology,it is very difficult to identify and detect multiple moving objects from a sequence of video frames. Tracking video is the process of detecting a moving object(or multiple objects) over a period of time using camera.It has many uses, some of them are: security and surveillance,video communication and compression,medical images,controlling traffic, human interaction with the computer and video editing.The main aim of video tracking is to associate target objects in consecutive video frames.In order to perform video tracking an algorithm is used to analyze sequential video frames and outputs the movement of target between the video frames.

MOD or multiple object detection is an experiment technique which is used to know how our visual system identify multiple moving objects.Multiple and moving object detection in digital image sequence deals with identification of the presence of the object in consecutive video frames whereas on the other hand object tracking is used to detect and monitor the the movements with respect to area of interest.Most commonly used techniques for moving object detection are statistical methods,optical flow,background subtraction and temporal differencing.

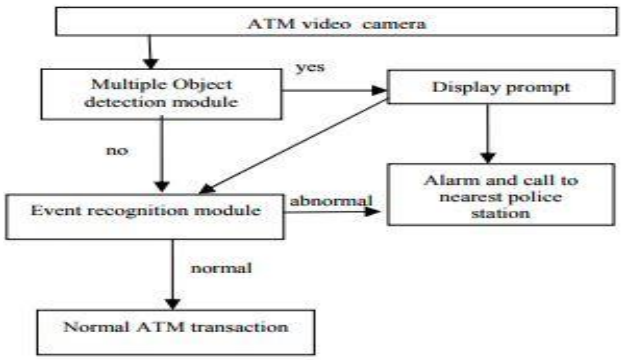

Fig:2 Flowchart for Multiple Object Detection

Activity Detection

In a video surveillance environment, the detection of abnormal and suspicious activity automatically can be used to alert police authority of potential criminal or abnormal behaviour,such as reporting of a person who is having knife aur suspicious object like bomb at an ATM site. For identifying these activities three main processing stages are considered

- Pre Processing
- Feature extraction
- Activity detection and classification algorithms.

Firstly the human object is segmented out from our video sequence.The basic characteristics of human such as shape,colours,poses and body motions are then properly extracted and then represented by a set of features. After extraction of features,a classification or activity detection algorithm is applied on the features which we have extracted to classify various human activities. Subsequently, an activity detection or classification algorithm is applied on the extracted features to recognize the various human activities.In this project i have used two classification algorithms KNN and Neural Networks in order to classify suspicious object as well to recognize the emotional features of a person.

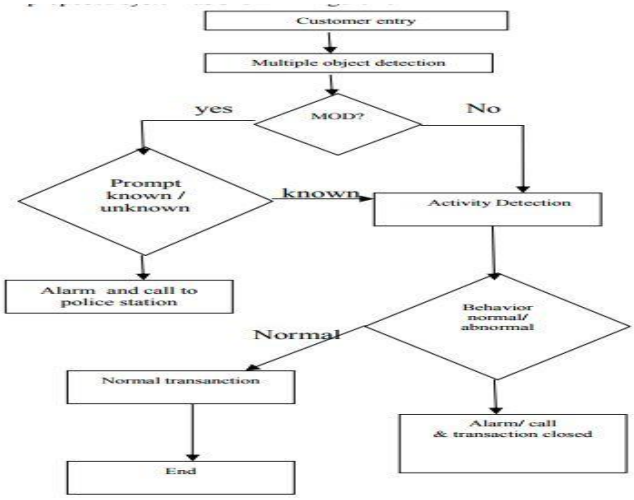

Fig:3 Flowchart for emotion detection.

framework to start with, they are coordinated to GUI window where they get an alternative to choose whether they need to pursuit or they need to embed into database.

When client chooses their choice they will be coordinated to another window as per their choice. On the off chance that they select pursuit choice they will go to look window and in the event that they select embed choice they will be coordinated to embed window.

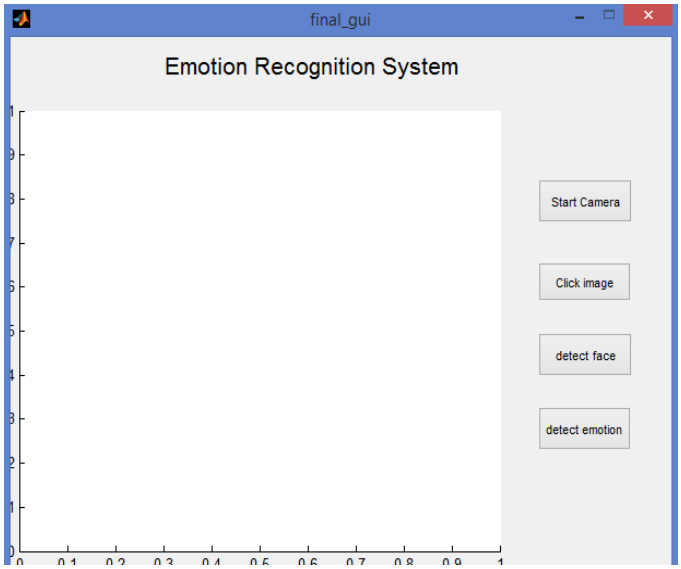

Fig:4 Real time user interface

This system is implemented in Matlab and also it used as backend tool for database creation and management.When user starts using this system first, they are directed to GUI window where the get various options to select.The human object is first segmented out from the video sequence. The characteristics of the human object such as shape, silhouette, colors, poses, and body motions are then properly extracted and represented by a set of features. Subsequently, an activity detection or classification algorithm (KNN And Neural Networks) is applied on the extracted features to recognize the various human activities. There are different method used for human activity recognition in computer vision.. .The aim of this project is to prevent the ATM crime by using computer vision techniques. This methods used here produce a robust atmosphere, which evaluate each moments inside the ATM.

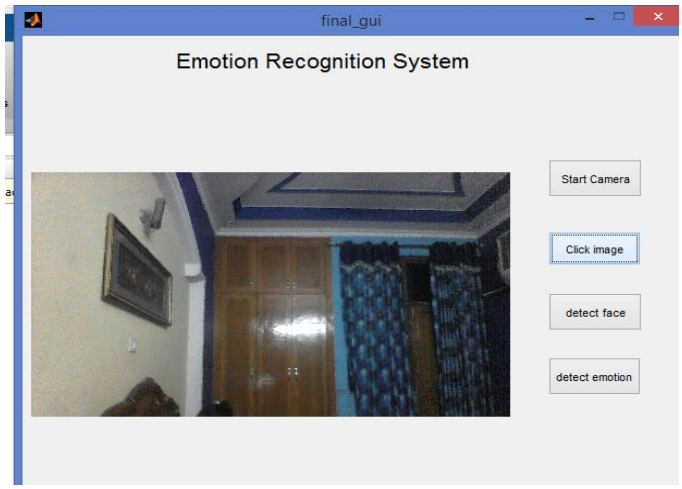

Fig:6 Captured image of User Interface

The captured image can then be compared with the required databases to identify the suspect or emotion.

IV. CONCLUSION

In this project a new Framework is built which will be very useful for the current world. Financial transactions of bank customers via ATM are facing huge amount of thefts. Among all these thefts one is related to with the existence of more than one person in ATM room and another threat is forced illicit activity performed by the user.I The main aim to this project is to propose an intelligent system,whose function is associated with the ATM software, to make the banking transactions more secure. Suspicious activities are increasing a lot in the ATM sectors. The purpose of this project is to detect and avoid ATM crime by using computer vision techniques.The methods used in this project produce a robust atmosphere,which detects and evaluate every moments inside the ATM.

V. ACKNOWLEDGMENT

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VI. REFERENCES

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