

Sixth Sense Hand-Mouse Interface Using Gestures & Randomized Key

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Abstract – Frauds related to the ATM (Automatic Teller Machine) are increasing day by day and has become a serious issue. Though security is provided for ATM machine, cases of robberies are increasing. Bankers and security experts state that card skimming or cloning is the most widely known form of fraud at ATMs. In case of card skimming, a card reader, which can extract all the information from the magnetic strip present on cards, is installed in the slot where you dip your card. A hacker will then transfer this information on to a duplicate card. Another typical way of robbery of ATM money is by breaking the ATM machine using welding equipment to derange the machines. In addition to security issues, ATMs are the prominent habitat of bacterial colonization on key pads and touch screens. This paper combines the solutions to security issues and prevention from bacterial infections. The proposed model is a sixth sense ATM machine, which enables a contactless transaction based on color bands and hand gestures, hence eradicating the problem of bacterial infections and spread of diseases through touchpads in ATMs. Also, it has a high alert security system made of sensors such as temperature sensor, image sensor, IR sensor for reducing or eliminating the ATM thefts.

Key Words: Skimming, Cloning, Magnetic strip, Welding, Bacterial infections, Sensors, Sixth sense, gestures.

1. INTRODUCTION

According to a survey conducted by the World Health Organisation (WHO), ATM keypads represent a specific and unexplored microhabitat for microbial communities and hence they remain as one of the most important means of spreading infections. To overcome the spread of infections through the keypads in ATMs a contactless sixth sense technology used. Sixth sense technology is the unseen world of digital world which includes our ability to understand the process behind these digital events. We all see this world through our physical senses of 5 types that includes smelling, sighting, tasting, hearing and feeling. Other than this we tend to work or act to the signal or gesture we receive from the other end people. This sixth sense technology fills the gap between the tangible digital computing device and user by interfacing them using natural hand gestures. Thus gesture recognition could be used for improving human-machine interaction.

Gesture recognition is an active research area in machine learning and gaming interface. Vision based gestures recognition has been attracting more attention due to no hardware requirement except camera, which is very suitable

for ubiquitous computing and emerging applications. Among all the gestures that we perform, hand gestures play an important role. Thus in this project we focused on hand gestures recognition.

This non-touch image based input method does not require any devices such as keyboards, mouse devices and body worn devices e.g. cyber-gloves but an image capturing device such as cameras. Thus they satisfy the requirements for hygiene and cleanliness to prevent the spread of bacterial infections. Although voice recognition supports non-touch input, it has some drawbacks such as being vulnerable to ambient noise, privacy problems related to being overheard and problems of mispronunciation and speech disorders of users.

2. LITERATURE REVIEW

In the literature review of gestures recognition, there are two important definitions need to be cleared: hand posture and hand gesture. A hand posture is defined solely by the static hand configuration and hand location without any movements involved. A hand gesture refers to a sequence of hand postures connected by a continuous motion (global hand motion and local figure motion). The following problems were found while investigating the previous researches on the methods for the image based hand gesture recognition:

1. A substantial practice was needed for users to get adapted to the hand gesture communication. This restricts hand gesture languages and finger alphabets from being commonly used.
2. Users had difficulty in expressing proper nouns with the finger alphabet.
3. The methods of character handwriting in the air require a considerable time for character handwriting and hand gesture recognition. Some systems had problems related to the writing speeds of the users and processing time for recognizing characters written in the air.

3. THE EXISTING SYSTEM



The existing ATM system authenticates transactions via the card and PIN-based system. Thereafter, it grants access to bank customers to several services such as cash withdrawal and deposits, account to account transfers, balance enquiry and utility bill payments. The ATM system compares the entered PIN against the stored authorization PIN for every ATM users. If there is a match, the system authenticates the user and grants access to all the services. If there is a mismatch on the other hand, the user authentication process fails and the user is given two more opportunities to enter a correct PIN. If any incorrect PIN is entered for the third time, the card gets blocked.

Thus, in the existing system there are higher possibilities of skimming cards, tracing PIN from the touchpad and spread of bacterial infections from the touchpad and screen.

4. THE PROPOSED SYSTEM

In our proposed system, the solutions to security issues in ATMs and the spread of infections through the keypads in ATMs are combined. In this system, ATM card is scanned using image sensor and then the system provides the user with an aerial virtual keypad placed at the clear space in front of the user.

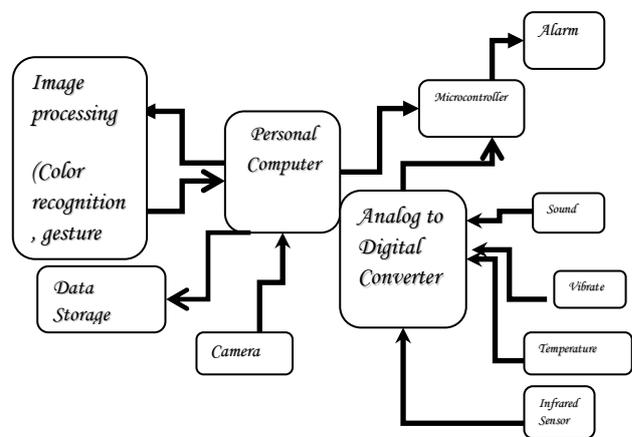


The users will be given color bands for performing the operations in the virtual keypad. Two different color bands

are used to differentiate the operations performed by the fingers. The middle finger with green color band is used for selecting objects in the virtual keypad and the red color band in the fore finger is used to move the cursor point. Thus the virtual keypad prevents the spread of diseases through touchpads in ATMs and also eradicates skimming of cards.

To overcome the security issues, sound, IR, temperature and vibrating sensors are placed on the ATM so that when someone tries to rob the money using welding equipment the sensors turn on the alarm and notifies the security guards.

The following block diagram gives a brief idea of the input and output devices and sensors interfaced to the ATM machine.



Additionally, this system has an option for finding the entry and exit of persons in the ATM counter. The time spent by the customer in the counter is monitored and if it exceeds a certain limit an alarm is generated to notify the security guard.

3. CONCLUSIONS

ATM Security has always been one of the most prominent issues concerning the daily users and they are so frequent ones as well. While the ATM is used in large amount in the commercial banks and postal savings to deposit and draw conveniently and praised by the users, dispute cases and financial crimes about it are increasing day by day. This paper emphasizes on the hypothetical, yet very possible scenario of an individual's ATM machine security with a low but Efficient cost hardware system. Our proposed model uses certain factors which would be monitored right from the initiation of a transaction, to the end of the respective transaction. We have proposed a sixth sense ATM which performs contactless transactions by just using our gestural interface; it lets us do the normal operations of ATM authentication system. Also it has a high alert security system for reducing or eliminating the various forms of thefts that occur in ATM.

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