iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 7 **Issue:** I **Month of publication:** January 2019

DOI: http://doi.org/10.22214/ijraset.2019.1080

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 6.887
Volume 7 Issue I, Jan 2019- Available at www.ijraset.com

A Review on ATM Module to Help Blind People

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***Abstract:** It is very important that the blind and the visually impaired should be able to live as independently as possible. They have their own rights to have control over their personal finances. Access to automatic teller machines (ATMs), is an important part of banking services. This paper gives review on different techniques applied to provide ATM services for blind people such as hand gestures, GSM, biometric authentication, security issues etc. Hence the blind people are enabled to use ATM independently.*

***Keywords:** ATM Module, Authentication, Audible Instructions, Security, Blind people*

I. INTRODUCTION

With the revolution of mobile and computer network technologies it is essential to use Automatic Teller Machines -ATM facility, mobile banking facility for banking services. In bank there is a limited time provided for money transactions, banking services. So it is a preferred choice of customers to use ATMs as ATM gives 24 hours banking services to users. It saves the time also. ATM and Online Banking are some of the most useful methods of accessing one's bank account. The ATM was invented by Scot John Shepherd-Barron. The first person to use the machine was Reg Varney a famous, British Television actor from the 1960s .The idea of a PIN stored on the card was developed by the British engineer John Rose in 1965 . The world's first ATM was installed in a branch of Barclays[14] in the northern London borough of Enfield, Middlesex, in 1967. Hongkong and Shanghai Banking Corporation introduced the ATM concept in India in 1987. The first ATM was set up in Andheri East, Mumbai. The first 'Talking ATM' [15] was installed by Blind People Association - BPA in Ahmadabad by the Union Bank of India (UBI) in 2012.The blind person is supported with audio instruction set. The blind person has to follow the audio instructions step by step and press the keys on the keypad accordingly. The blind people have problem for digital transaction. It is necessary to help the blind people for access to banking services .Since many of the blind people usually are not comfortable with internet or mobile banking. They have an assistant, a normal person to help them complete their banking activity. They tell their PIN to their assistant a normal person who can complete the transactions for them. The banking sector should work towards improving accessibility to banking services for blind person. There is a need to develop blind friendly ATMs that can be used effectively by the blinds without the assistance of normal people who may take advantage of their visual challenged state. There is no safety and freedom of choice to blind people. They have the right of full access of banking services independently for better life in society

II. RELATED WORK

A. Related Work to Support Normal People

Researchers developed a technique [1] for transaction of money in atm. This system provided one time password to user. In this system ATM card is supported by mobile phone. This system depends on Secured Scored App (SSA) in mobile phone. These system gives most effective protection , as well as safety for transaction. It provides security concerned with theft of ATM card. It controls the usage of ATM card by unauthorized person. This system consist of pic microcontroller , A to D converter, UART and GSM model. Transmitter and receiver module provide the great security to ATM users45qa.

Another system [2] provided proper security of money transaction in ATM PIN & OTP received through GSM. When ATM card is lost the cardholder cannot send OTP. It provides double security for transactions.

Another system [5] developed by researchers was a dual mode secured ATM system using biometric authentication with GSM recognition. Biometric data- fingerprint of every person is unique which is used as authentication of security purpose. a system provided a mode of transaction by using RFID tag & GSM for adermotoglyphia affected person. A system[6] used PIN of the customer for authentication and hence enhanced the security of ATM machine for safe transactions . This system also used voice as a biometric feature for the secured transaction in ATM.

The group of researchers [8] mainly focused on GSM technology. It provided a system without using debit card. This system using AVR microcontroller is very complex system. It requires GSM module, IVRS,DTMF,ARM 9 microcontroller.

This method [9] was used a pioneering maneuver algorithm to detect brutal activities using f-measure. In pioneering maneuver technology 3D output is obtained in x,y and z dimension for removing high frequency noise. Preprocessing is done with average

filter which is compared with database. If it is not matched then alert message will be send. This system uses gesture recognition which avoids the ATM robberies.

The system[12] was provided a secured & efficient transaction of ATM. It was useful for emergency conditions. This technique is used to overcome the problem of loss of ATM card or damage of ATM card. This system is implemented by using GSM module for security purpose.

A system consist of vibration sensors to avoid the robbery of ATM machine.

This system[13] used a iris recognition system for the authentication as well as voice enabled transactions. If iris of the users is matched with database then authentication is completed. for the transaction user has to speak into a microphone. MATLAB is used for the segmentation & localization of iris. Classification of iris image is take place by using learning vector quantization(LVQ).

A designed system [14] was used a biometric voice based access control in atm. This system is working in two phases namely as training phase & testing phase.

The system was used to avoid the problems faced by customers during the transaction of money in ATM. This system mainly consist of three components voice sensor, speaker verification system and ATM access control.

B. Related Work to Support Deaf People

A blind friendly ATM software system [3] was specially designed for blind people. There are two types of sign languages Indian and American with one or both hands. Sign language contains different gestures corresponding to numbers , characters, phrases. A system consists of Indian sign language to be used for numbers. This system consists of image processing technique. Here a video is captured from the camera which is connected to the system. The processes such as segmentation, noise removal and gesture identification are implemented here.

The morphological operation such as erosion and dilation are used to remove the noise present in the image. Erosion is used to remove the noise in the background and dilation is used for to remove the noise in the gestures. These are useful for the people who do not know the Braille language. The gestures are captured by video and mapped to identify the pin numbers. If pin number is correct then the further transaction process is continued.

Another system [7] was a talking ATM machine for blind people who have difficulty to understand the sign language. The designed system was consisting of flex sensors which work on principle of change in resistance with respect to change in position. The output signals of sensors are in analog voltage form which is converted into digital form and applied to the microcontroller to link to the system as a PIN. By using voice chip the system produces voice instructions..

C. Related Work to Support Blind People

This method[4] gives detail information about ATM for visually challenged people. A system used Rivest, Shamir, & Adleman-RSA algorithm which encrypt and decrypt message. It was a working in two modes such as blind mode & normal mode. This system consists of voice commands and fingerprint. Customer can choose their modes by audible instructions. The fingerprint is compared with stored fingerprint in database for authentication. The system consists of different indication alarms. The system consists of 4 modules entry module, login module, normal mode and special mode. This system is not only useful for blind people but also aged and uneducated people.

This technique [11] used the finger printing & voice recognition of user. It was specially designed for blind people. These system used C# programming and SQL database.

Author gives a method which increased performance and security of ATM machine. This system is made by 6 interfaces such as login interface, enroll fingerprint transaction mode, transaction type selection, pin mode interface, voice mode interface which provides the strong authentication. The drawback of the system is it requires large time.

This system[10] was focused on novel methodology for ATM. It consist of British sign language & java programming. A system has based on high speed algorithm for identifying hand gesture for blind people .This system provided better efficiency as compared to other system.

The all algorithms and methods as developed using MATLAB and they are tested by using java programming language along with open cv and java cv software.

The system[15] has given different types of assistive technologies for visually impired people .This system is very complex. The navigation and object detection is carried out by using human computer interface (HCI). Assistive technology is divided into 2 parts : first part is daily life and second part is used for navigation.

TABLEI I

REVIEW RELATED TO NORMAL PEOPLE

Sr. No	Authors	Year	Technology			
			Main Part	Person Identification	Pin Number	Security Features
1	A.Ramathilagam	2018	Pic microcontroller. MATLAB	Two way authentication	Keypad	One time password and secured score app with mobile phone, buzzer
2	Miss Sanchita R.Jantre	2017	Microcontroller	RFID card	Keypad	GSM module
3	Baby Ruksana	2017	8052 Microcontroller	RFID, fingerprint	Keypad	GSM module
4	Ankit Singla	2017	MATLAB	Biometric	Keypad	Voice depended access control
5	Pranav Gebad	2016	Arm Microcontroller	Password	Keypad	GSM technology without using debit card
6	S.Mahaboob Hussain	2015	Image processing	Gesture recognition by using camera	Keypad	Pioneering maneuver algorithm with hand gesture technology
7	Harshad Joshi	2015	Microcontroller	Pin number	Keypad	GSM module and vibration sensors
8	R.D. Salagar	2014	MATLAB	Iris recognition	Keypad	Image processing
9	Yekini N.A	2012	Voice sensor	Voice verification	Keypad	Voice

TABLE III

REVIEW RELATED TO DEAF PEOPLE

Sr.No.	Author	Year	Technology			
			Main Part	Person identification	Pin Number	Security Features
1	Sharma SPG	2017	Enclosed box, Image processing	Gestures, Pin number	Keypad	Alert system, Indian sign language
2	K Sasirekha	2016	Pic microcontroller and Arduino	RFID card	Keypad	Audible instructions, flex sensors

TABLE IIIII

REVIEW RELATED TO BLIND PEOPLE

Sr. No	Authors	Year	Technology			
			Main part	Person Identificaton	Pin Number	Security Features
1	Aneesh Chandran	2017	Microcontroller	Fingerprint,	12 keys keypad	IR sensor, audio instructions, buzzer, RSA algorithm
2	Jaswinder Singh	2015	Embedded system	Fingerprint , Pin with voice	Keypad	Voice instructions
3	Sudhir Rao Rupangudi	2015	MATLAB, java programming	Gestures recognition , password	Keypad	High speed algorithm British sign language
4	Sandor Tihamer Brassai	2011	Sensor fusion module, wireless communication module	Biometric	Keypad	Assistive technologies such as GPS,GPRS,WIFI

III. CONCLUSION

It was studied that different types of technologies are being used to facilitate blind people. By using these techniques they are enabled to operate ATM machine independently. Blind people may access ATM for but there are some security issues. So that, it is necessary to provide a better ATM system with security for blind people. It is important to provide audible instructions and reliable, robust authentication techniques to ATM module so that blind people will be able to handle ATM functions easily without help of other people.

IV. ACKNOWLEDGMENT

We take the opportunity to thank a few of our friends from the society who are suffering from deep mute, deafness and blind i.e. impaired vision states for their contribution in research work. Their struggle for life is a motivation to the authors to do research and enable them for better life conditions.

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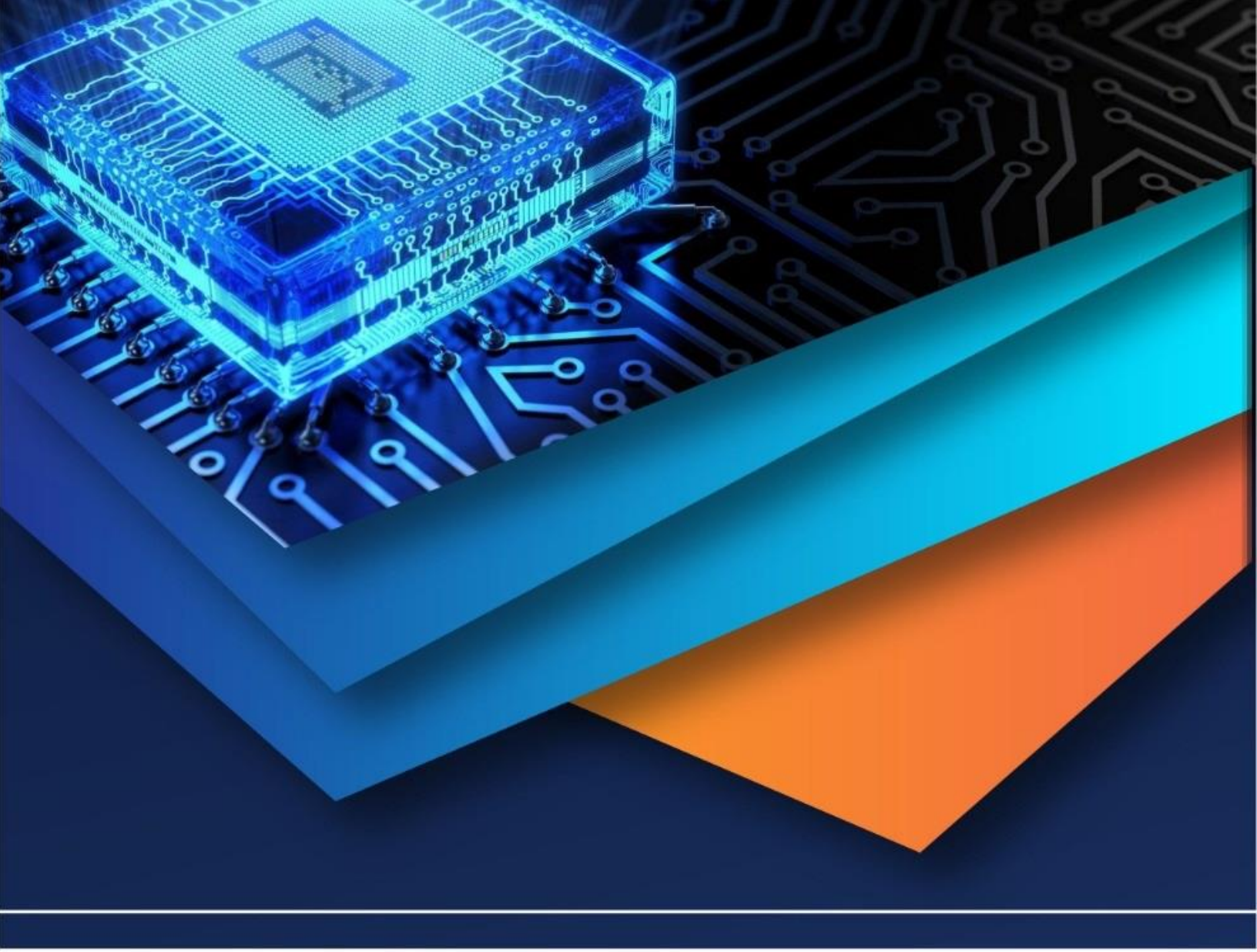

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