

An Embedded Approach for ATM Security Using Han Technology

Ravi V¹, Divyashree Y V²P.G. Student, VLSI Design & Embedded Systems, Dept. of E.C.E, SJBIT, Bangalore, India¹Assistant Professor, Department of Electronics and Communication, SJBIT, Bangalore, India²

ABSTRACT: Nowadays there is a need for better security and high protection everywhere, being a technology based world. People expect most genuine technologies for security, in so one of the most growing and new technology is HAN based Redtacton which is developed by NTT's a Japanese based corporation. This is one of break-through in the advancements of technologies like WLAN, Bluetooth, infrared etc.

The main objective of this proposed work is provide better security for accessing, locking and unlocking of the things which we use in daily life more easily and efficiently. In particularly this work guides about the ATM security in embedded nature which would be cost effective and significant. REDTACTON is a HAN based technology which uses mainly the parts of human body as interface between the user and the machine for a particular use. It develops the user to access the ATM card through his body parts which would have stored before in the transmitter section and then the account would be authenticated and finally he can complete his transaction. In the case if he doesn't hold a account in bank and tries to manipulate a message would go to bank authorities for further action. Thereby, providing security to users and banks.

KEYWORDS: Nippon Telegraph and Telephone, Human Area Networking, WLAN, ATM

I. INTRODUCTION

Due to wide range of development in technologies, the electronics world has being playing a important role. There is always a chance for technology to be super-fast in various fields and needs to be expertise. Such a one among the growing technology is REDTACTON a HAN based technology which is founded by NTT by Japanese corporation.

REDTACTON refers to warmth in touch and in turn action. This is nothing but whenever there is a contact made on device it should authenticate if the user is owner.

This is spreading technology which can overcome LAN in networking, WLAN, Bluetooth, infrared etc.

These technologies have become daily usage and more prominent in industries. The redtacton has overcome these by means of safety, transmission, communication, security etc.

Redtacton processes in three steps which are unique for every application. In this work we are using ATM has main significant role in terms of security. The three main features are named below

- i) Touch
- ii) Broadband Interactive
- iii) Any-Media.

Touch: Touch of human body parts like toes hands fingers foot etc can be a part of communication interface for locking and unlocking the devices with these data.

Broadband Interactive: There is no chance for data to be loss in middle. The speed of communication is of 10mbps which is duplex communication.

Any Media: In certain to human body we can use various conductors and dielectrics as a part of transmission media.

REDTACTON works by the usage of minute electric field emitted on the surface of human body which is different from various technologies. A communication path is at the time of accessing the account when body comes in contact with trans receiver. Using this type of communication we can carry signals to the device for accessing and controlling. It can also work through clothes and shoes within distance of 10cm.

International Journal of Innovative Research in Science, Engineering and Technology

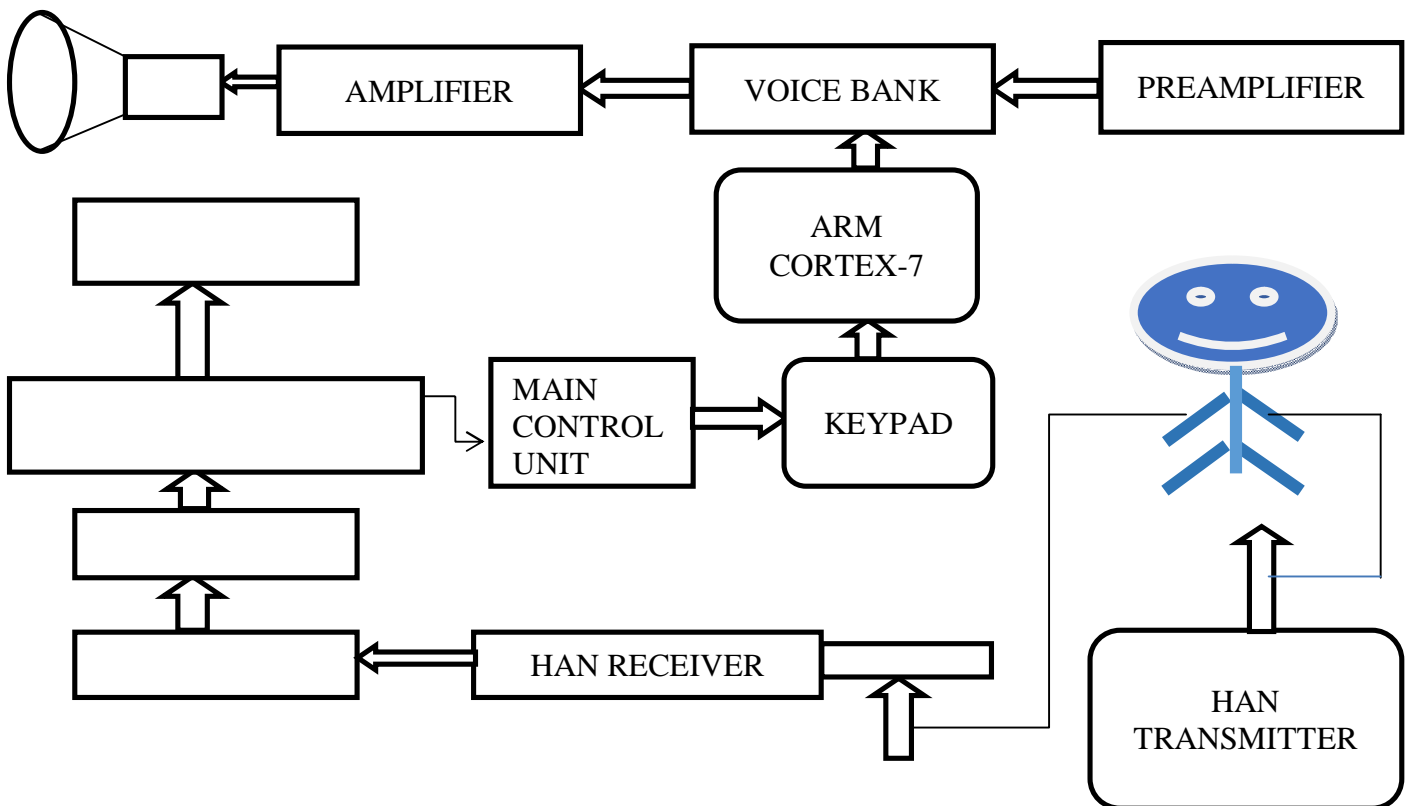
(An ISO 3297: 2007 Certified Organization)

Vol. 5, Issue 5, May 2016

II. RELATED WORK

Before the introduction of HAN technology, there were numerous technologies in existence which are as follows LAN,MAN,WLAN, Intrabody communication, RFID Technology etc. LAN refers to local area network, a network is nothing but communication between any two objects. LAN mainly deals with communication between two computers for exchange of data. We need to maintain security for these data theft and data transfer rate should be in terms of high speed communication and loss should be not there due to traffic of input and output signals. LAN fails to maintain security between the users to overcome to factor REDTACTON can be placed in networking. Intrabody communication is developed by IBM which was a first attempt to transfer signals from human body which is less effective at that stage. It was just similar to REDTACTON which uses minute amount of electric field signals of the human body. The main limitation of this intrabody communication is the data transfer rate, it's about in the range of 20-40 bits per seconds. To overcome this issue REDTACTON was emerged by NTT Corporation. RFID technology is also one of the prominent step in the field of electronics, while the main usage of this type of technology is to carry the RFID tag for authentication of users, attendance mandatory systems. It requires the usage of the card to be carried every time and any user can use the same card to get his work done. So, as a result to overcome this REDTACTON can be replaced here. Not only in this type of technologies it is also give a fight to daily day technologies like Bluetooth, WIFI, Infrared and So on. REDTACTON has been grown widely in these years giving high performance for the users

III. PROPOSED METHODOLOGY



The figure shown above shows the full view of proposed REDTACTON work which consists of 3 parts namely

- HAN TRANSMITTER
- HAN RECEIVER
- HAN

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 5, Issue 5, May 2016

- 1) The HAN TRANSMITTER is used as encoder which behaves as a input to the system. The input to the system is Mainly human body which is present in the atm-machine of valid user.
- 2) The HAN RECEIVER is used as decoder which behaves as a output to the system. The output gives as a valid signal if it the signals from the transmitter section and in the receiver section match.
- 3) Thereby the user is able to perform his transaction easily and securely by the use of redtacton technology without any cards.
- 4) After authenticating the HAN the microcontroller present in ARM7 helps the user to enter the four digit security pin through the 4x4 hex keypad interfaced in the hardware shown in the figure.
- 5) If it successful entered then he can continue his transaction and complete his transaction successfully.
- 6) The voice box show in the figure is of the use of recording and replays the voices of the user for a time for 30sec with a quality of higher output. The main thing we need to appreciate is it doesn't require any software for replay.

IV. IMPLEMENTATION

Implementation of the proposed HAN technology includes HARDWARE and SOFTWARE implementation. The hardware part is shown in the figures below figure 1 shows the section of ATM figure 2 shows the section of HAN which the user need to Carry and the figure 3 shows the bank machine which is used to monitor all the accounts of various users. Figures represent the HARDWARE section. The software section mainly consists of keil micro vision 3 and 4 versions for programming in Embedded C and a JTAG debugging for dumping the code on the microcontroller. Both the microcontroller works on Embedded C platform and displays the results on the LCD section.

ATM MACHINE SECTION

The ATM machine section consists of Decoder to decode the input signals. The arm7 microcontroller is interfaced with a LCD display to display various output stages. It also consists of various devices interfaced to it likely voice recording chip, driver circuit,4x4 hex keypad section, main control unit. The voice recording chip is used to record the voice of the user for 30s and playback without the software. The 4x4 hex keypad is used to generate the password of the account holder and also to check the working stage of the all the devices in the ATM section.

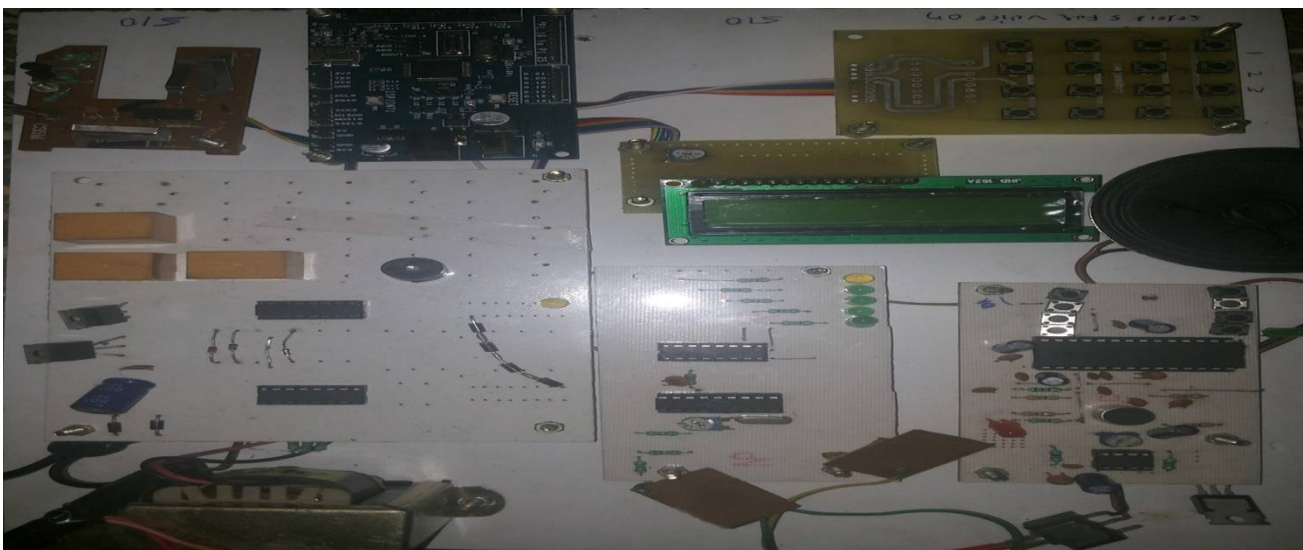


Figure 1 Represents The Atm Machine Section

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 5, Issue 5, May 2016

HAN MACHINE

It consists of a single ic DTMF encoder which provides output signal to the copper plates shown in the figure. The circuit is powered up by a 9V battery which is external. A switch is given to operate the cards at different frequencies range.

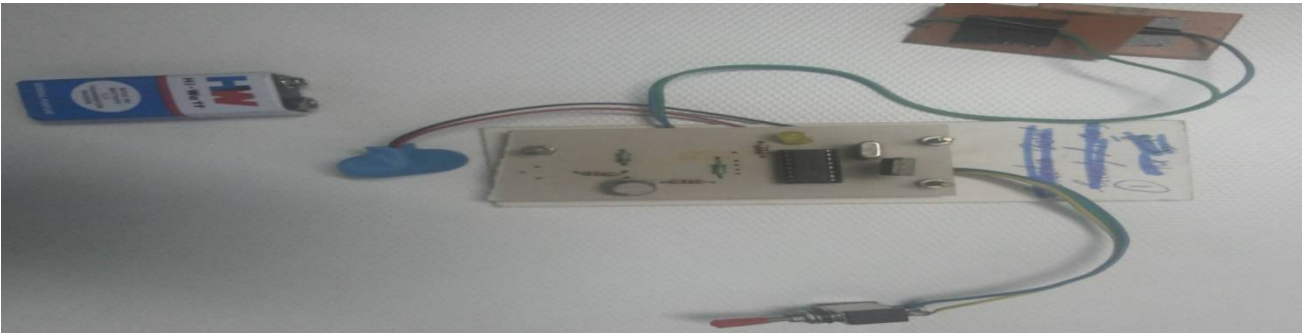


Figure 2 Represents The Han Machine

BANK SECTION

The Bank section consists of mainly Radio Frequency Receiver which receives the signal from RF transmitter in the ATM machine section and in turn it will display the user is authorized or unauthorised. It consists of 8051 Microcontroller which is used to display the output stages in LCD display and RF section to input and output the valid and invalid signals



Figure 3 Consists Of Bank Machine Used To Monitor

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 5, Issue 5, May 2016

IV. EXPERIMENTAL RESULTS

In this figure the both copper plates of the atm machine section and atm card section are made in contact for the user to authorise or unauthorise the ATM account. When the copper plates are incontact with the ATM machine,if the user is has correct HAN then the user is available to authorised and needs to enter the passwrd and contiune his transaction.

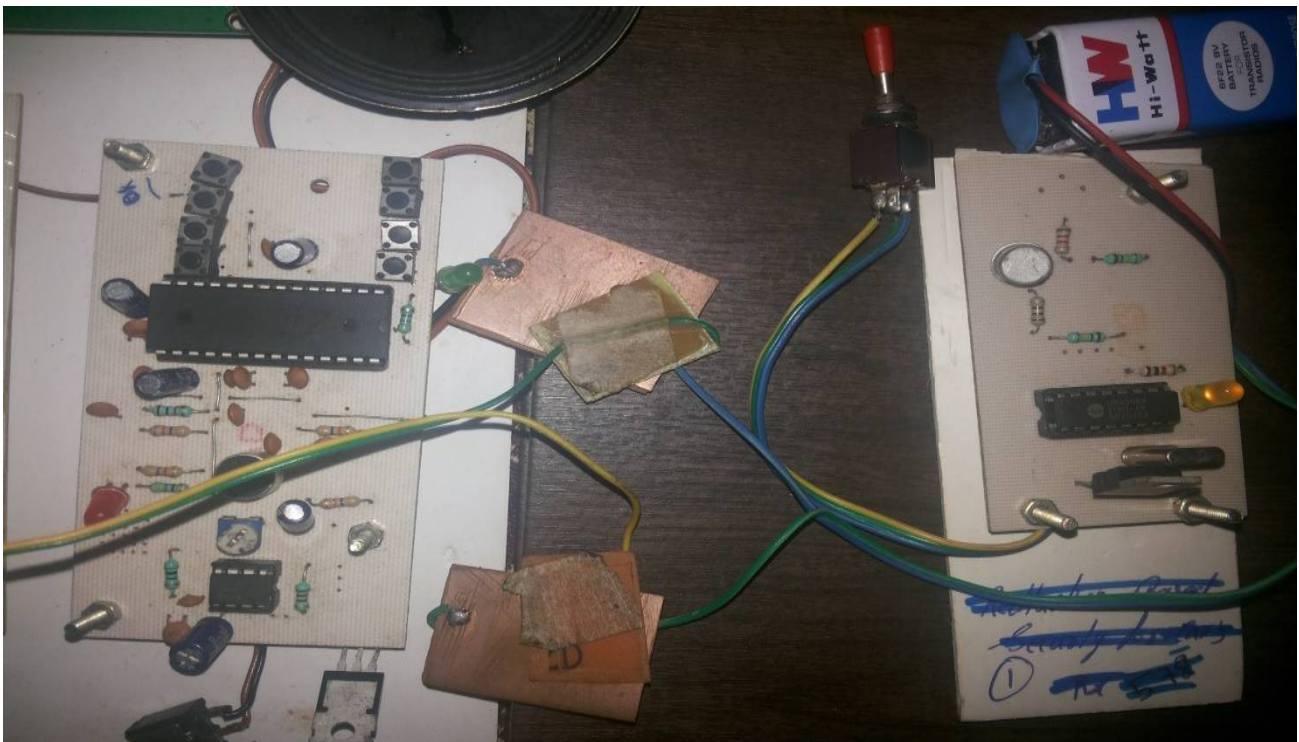


Figure 4 Shows When Han Is In Contact With Transmitter Section

The figures shown below represents the various output stages and needs for the ATM section.

STEP 1: Whenever the copper plates are incontact with the transmitter section the transmitter section shows the user is authorised or unauthorised in LCD display,if the user is unauthorised then bank gets a message about someone trying to access the account and further action can be taken and if the user is authorised he will be continued to step 2.

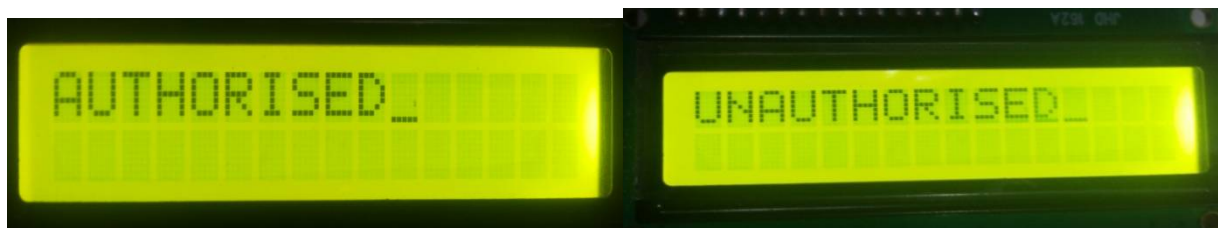


Figure Displays The Results Of The Authorised And Unauthorised Users

International Journal of Innovative Research in Science, Engineering and Technology

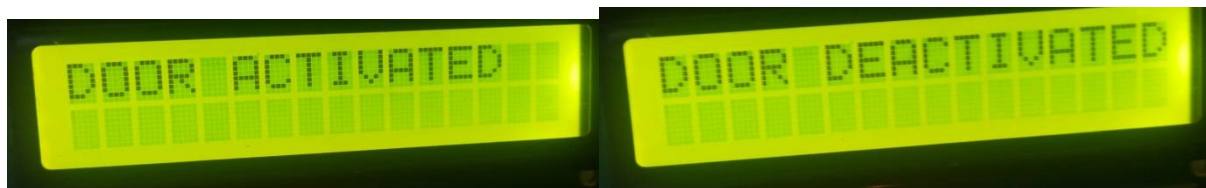
(An ISO 3297: 2007 Certified Organization)

Vol. 5, Issue 5, May 2016

STEP 2: When the user is authorised the transmitter ask the user to enter a valid password which is secured with him.if the user enters a invalid password the he gets a pop-up in display as incorrect password.If the user enters a valid password he gets a messages as correct password and he can carry on step 3.



Figure Displays The Authorised Users To Enter Password And Checks If It Correct Or Incorrect Password
STEP 4:After successfully entry of password he will be now available to carryon his transaction. He can check the status of door by pressing keys 1 and 2



Figures Shows The Results Of The Door Status

STEP 5: He can perform voice recording and playback by pressing key 5 on the keypad and he can check the various devices are in working condition or not by the pressing various keys on the keypad.



The Figures Show Below Helps The User To Check The Circuitry Of Machine Are In Working Condition

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 5, Issue 5, May 2016

V. CONCLUSION AND FUTURE WORK

The proposed work “An Embedded Approach For Atm Security Using Han Technology” has been successfully implemented and tested and verified using the hardware results. It has been one of newest technologies in this world which can grow very vast in upcoming years as it uses the human body as communication interface to talk to the machines and also it provides high security and decreases theft rate in ATM’s. There is no problem of hackers in the bank accounts as it uses human body for authentication which cannot be duplicated and produced by any one. Using these type of security we can use this in military, hospitality, defense areas etc

The future work of these proposed works can be developed and implemented in the allied fields of

- Military in accessing guns like m16
- Monitoring the patients 24*7
- Monitoring the insulin content in human body for sugar patients
- Accessing the bank lockers and home doors etc.

VII. COMPARSION WITH OTHER TECHNOLOGIES

PEFORMANCE EVALUATION CRITERIA	WLAN	INFRARED	REDTACTON
Transfer Speed(Dvd Quality)	Excellent	Poor	Excellent
Performance Deterioration During Periods Of Congestion	Poor	Excellent	Excellent
Duplex Data Transfer(Interactive Processing)	Excellent	Excellent	Excellent
Synchronization With User Behavior	Poor	Poor	Excellent

REFERENCES

- [1]. Ankit Verma, "Intra-body Communication using RedTacton – Human Area Network Technology", IJERS International Journal of Engineering Research and Studies, Vol. 01, August 2013.
- [2]. J.Arun Prakash, "RedTacton: An Innovative Human Area Networking Technology", Advances in Digital Multimedia (ADMM).
- [3]. Mrignayani Chhotwani and Anshul Vyas, "Red Tacton (An avantgrade Human Area Networking technology)", IOSR Journal of Computer Engineering (IOSR-JCE).
- [4]. T.G Zimmerman, “Personal Area Networks: Near field infrabody communication”, IBM System Journal.
- [5]. NTT(February 2005) "RedTacton: An innovative Human Area Networking technology"
[Online].Available:<http://www.ntt.co.jp/news/news05e/0502/050218.html>
- [6]. <http://www.HAN.com/en/index.html>
- [7]. <http://en.wikipedia.org/wiki/HAN>
- [8]. The 8051 Microcontroller & Embedded Systems – Mazidi