

ADVANCE ATM SECURITY SYSTEM

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Abstract: - This project indulges in the elimination of ATM theft by incorporating two sensors to overthrow the loopholes found in the existing technology. Whenever robbery occurs, one sensor senses vibration produced from an ATM machine, and the other senses vibration from the camera. The system uses an 89s52 micro controller-based embedded system to process real-time data collected utilizing the sensors. The H bridge-driven DC MOTOR is used for closing the door of the ATM. The camera is continuously processing real-time feed with no hindrance. The LCD display board felicitates the output message continuously. This allows prevention of any threat /robbery, and also, the suspect is caught immediately. Keil μ vision tools are used to implement the idea. Results are obtained. Keil μ vision tools are used to write the microcontroller and run the whole process of the IR cam sensor and touch plate sensors. The System uses Wi-Fi module so send alert to concerned person where keyword is also there for opening door.

1. INTRODUCTION

In present scenario, ATM has become one of the most important facilities in our day to day life. This facility enables us to withdraw the money from the authorized account at any time. Security is the major aspect, as the need of ATM is increasing day by day. Security systems are the demands of the day, which helps to avoid theft. Although the banks are deploying security personnel at the ATM spots, but the security arrangement is not quite good enough to secure the facility in case a group of thieves tries to stole the ATM machine. Recently we have seen many cases wherein a group of people entering into ATM and overpowering the security personnel and stole the money from the ATM. Generally, a single person is unable to handle the gang of robbers. Thus, an automatic security system plays very important role to avoid robberies.

The Idea of Designing and Implementation of this advance ATM security system project is born with the observation in our real life incidents happening around us. This project deals with prevention of ATM theft from robbery. So to overcome the drawback found in existing technology in our society. Whenever robbery occurs, Vibration sensor is used here which senses vibration produced from ATM machine.

The system uses a microcontroller from 8051 family. Based embedded system to process real-time data collected utilizing the vibration sensor. The H bridge-driven DC MOTOR is used for closing the door of the ATM. The camera is continuously processing real-time feed with no hindrance. The LCD display board felicitates the output message continuously. This allows

prevention of any threat /robbery, and also, the suspect is caught immediately. Keil μ vision tools are used to implement the idea. Results are obtained. Keil μ vision tools are used to write the microprocessor and run the whole process of the IR cam sensor and touch plate sensors. Here, we will use WiFi module (ESP 8266 NodeMCU). NodeMCU is a low-cost open source IoT platform. It initially included firmware which runs on the ESP8266 Wi-Fi SoC from Express if Systems, and hardware which was based on the ESP-12 module. Later, support for the ESP32 32-bit MCU was added.

2. LITERATURE SURVEY

1. IOT Based Progressive Anti-Theft ATM Security System, December 2020, IOP Conference Series Materials Science and Engineering 981(4):042095 DOI:10.1088/1757-899X/981/4/042095 Authors: S. Ramyasri, M. Mahalakshmi

ATM customers use a lot of ATM facilities and make billions of transactions. In the meantime, Due to inadequate of security, the thefts in the ATMs are also disproportionate. The main objective of our analysis is to minimise the number of ATM robberies. N of this assignment, we use the camera to recognise the face. The IR will activate, the buzzer will warn the sound, and the corresponding alert message will be sent to the assigned user if any of the sensors including temperature. In addition, if someone wants to open the money locker, the gas is sprayed on the robber to make him unconscious. This is why a low-value portable Integrated database server primarily based on the ARM11 computer and the Raspberry Pi operating gadget for Linux needs to be put into operation. This configuration is suggested for ATM safety, consisting specifically of door lock modules, internet, sensors and a face-recognition camera. Whenever theft occurs, an infrared sensor is used here that detects the vibration and temperature of the ATM system and takes critical motion. This machine uses the ARM11 controller to process real-time information acquired using the IR sensor. The DC engine would then be used to shut down the Automated teller machine lock, the circuit will be used to release fuel inside the ATM to deliver the robber to the unconscious point, the GSM modem will send signals to the local police station and the approved person concerned, and the alarm will eventually come from the buzzer.

2. Advanced ATM Security System Deepa. R1, Kalaiselvan .M2, Mr. R .Rajagopal3,(Assistant Processor, Department of Electrical And Electronics Engineering, Saurie College Of Engineering, Vijamangalam-638056

In project, implementation of various features like image processing, GSM, vibration sensor, door locking mechanism. The door of ATM opens only when the face of the person is completely recognized. In case, if the person covers his/her face and tries to enter, the door will not be opened. If the person breaks the camera and approaches the door and breaks the glass door, secondary steel door will operate. If the person tries to steal the amount by breaking the

ATM machine, the vibration sensor operates and the anesthesia in the corner of the room spread in the room. At once the person inhales the anesthesia, he will faint. Simultaneously the information will be send to the nearby police station and as well as respective bank.

3. Smart ATM System using AVR Microcontroller
Pratik Pise, Kasturi Bidwai, Samiksha Bandbuche, Shashant Jaykar, Department of Electronics and Telecommunication Engineering, Rajiv Gandhi College of Engineering and Research, Nagpur, India

In the era of digitalization, everyone needs money without interaction with bank at any time. So the ATM (Automotive Teller Machines) are installed everywhere in the localities. As the number of ATMs increased, prevention of theft and security of customer is the prime objective. At present, security systems are not highly secured as they are only provided with alarm system. This project deals with design and implementation of ATM security system using RFID and GSM Modem. The prime objective of this project is, to secure the ATM system using RFID and GSM modem. In this project, user have to use RFID card to access the machine then OTP is send to the mobile number. After entering OTP the amount is to be enter. Then user can collect the money. When a thief enters and tried for unwanted issues for user the user have to enter the OTP in reverse form then SMS is send to police. The project is implemented and worked successfully.

4. International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering (An ISO 3297: 2007 Certified Organization) Vol. 5, Issue 9, September 2016 Copyright to IJAREEIE DOI:10.15662/IJAREEIE.2016.0509066 7601
An Advanced Smart ATM Monitoring System using Raspi Jalla Pavan Sai Kumar Reddy1 B. Tech, Dept. Electronics and Communication Engineering, CMRIT, Hyderabad, India 1

The implementation is achieved with the use of Machine-to-machine (M2M) communications technology. The idea of M2M platform suggests new system architecture for positioning and monitoring applications with wider coverage and higher communication efficiency. The aim of the proposed work is to implement a low cost standalone Embedded Web Server (EWS) based on ARM11 processor and Linux operating system using Raspberry Pi. It offers a robust networking solution with wide range of application areas over internet. The Web server can be run on an embedded system having limited resources to serve embedded web page to a web browser. The setup is proposed

for ATM security, comprising of the modules namely, authentication of shutter lock, web enabled control, sensors and camera control.

2.1 PROJECT FORMULATION

Our project is advance ATM security system, which will help in detecting any suspicious activity in Atm. Here we using AT89S52 microcontroller and ESP8266 NoduMCU. We are incorporating two sensors to overthrow the loopholes found in the existing technology. Whenever robbery occurs, one sensor senses vibration produced from an ATM machine, and the other senses vibration from the camera. The system uses an IOT and embedded system to process real-time data collected utilizing the vibration sensor. The H bridge-driven DC MOTOR is used for closing the door of the ATM. The camera is continuously processing real- time feed with no hindrance. The LCD display board felicitates the output message continuously. This allows prevention of any threat /robbery, and also, the suspect is caught immediately. Keil u vision tools and arduino ide are used to implement the idea. Results are obtained. Keil is used to write the microcontroller and run the whole process of the IR cam sensor and touch plate sensors.

2.2 OBJECTIVE

The main objective of this to prevent ATM robbery. Many real time incidents around us has been the main motivation of this Project. We are using embedded system and iot technology for this purpose. It is also sending them critical situation message if any unauthorized access taken place with the help of sensors.

3. RESEARCH METHODOLOGY

In this project embedded system and IOT technology is used for preventing ATM theft. Components we are using are microcontroller 89S52, ESP8266 Nodemcu , IR sensor touch plate sensor, buzzer, dc motor, lcd display, transistors , resistors, LEDES, switch, keypad and voltage regulator. Whenever robbery occurs, one sensor senses vibration produced from an ATM machine, and the other senses vibration from the camera. The system uses an microcontroller based embedded system to process real-time data collected utilizing the vibration sensor. The H bridge-driven DC MOTOR is used for closing the door of the ATM. The camera is continuously processing real-time feed with no hindrance. The LCD display board felicitates the output message continuously. This allows prevention of any threat /robbery, and also, the suspect is caught immediately. Keil µvision and arduino ide is used with the help of embedded c language.

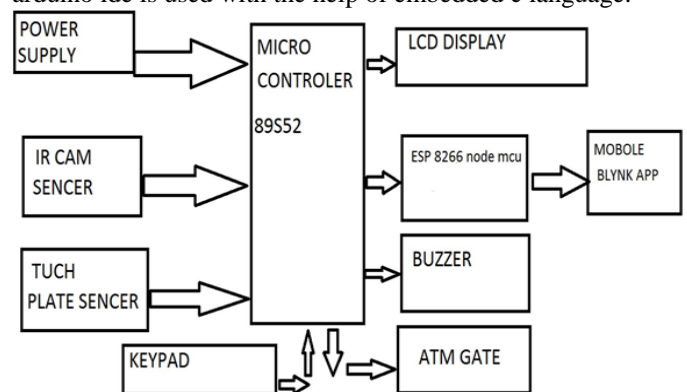


Figure3.1: Block Diagram

4. CODING

This code of keil u vision for Atm security in microcontroller.

This is written in Embedded C. #include <REG51.H>

```
#include "led.c"
```

```
#include <string.h>
```

```
sbit r1 = P1^0;
```

```
sbit r2 = P1^1;
```

```
sbit r3 = P1^2;
```

```
sbit r4 = P1^3;
```

```
sbit c1 = P1^4;
```

```
sbit c2 = P1^5;
```

```
sbit c3 = P1^6;
```

```
sbit buzzer = P2^0;
```

```
sbit call = P2^1;
```

```
sbit motor_t1 = P3^0;
```

```
sbit motor_t2 = P3^1;
```

```
sbit INT0_CAMERA_PROBLEM = P3^2;
```

```
sbit INT1_ATM_THEFT_PROBLEM = P3^3;
```

```
void keypad(void);
```

```
unsigned int check(void);
```

```
unsigned int count; unsigned char password[4];
```

```
unsigned char set_pass[] = "1133"; unsigned int flag;
```

```
void EINT_EMERGENCY1() interrupt 0
```

```
{
```

```
buzzer = 0;
```

```
lcd_out(1,1,"CAMERA SECURITY ");
```

```
lcd_out(2,1," PROBLEM ");
```

```
}
```

```
void ATM_THEFT_PROBLEM() interrupt 2
```

```
{
```

```
buzzer=0;
```

```
call=0; //gsm call to security motor_t1=0;
```

```
lcd_out(1,1,"CLOSING GATE");
```

```
delay_ms(100);
```

```
call =1; //for creating a 1 second impulse for call
```

```
delay_ms(1500);
```

```
motor_t1=1; buzzer=1;
```

```
//gate closed while(flag!=1){
```

```
check();
```

```
}
```

```
lcd_clear(); lcd_out(1,1,"OPENING GATE");
```

```
17
```

```
motor_t2=0; delay_ms(2000); motor_t2=1; password[4] = "0000";
```

```
}
```

```
void main()
```

```
{
```

```
buzzer=1;
```

```
IT0=0; //LEVEL TRIGGERED IT1=0; //LEVEL TRIGGERED
```

```
IE=0x85; //enable interrupt for EINT0 EXTERNAL INTERRUPT 0 & EINT1 EXTERNAL INTERRUPT 1
```

```
lcd_init();
```

```
lcd_out(1,1," ATM SECURITY ");
```

```
lcd_out(2,1," SYSTEM "); delay_ms(5000);
```

```
}
```

```
void keypad(void){
```

```
count=0; lcd_clear();
```

```
lcd_out(1,1,"Enter Password"); delay_ms(1000);
```

```
while(count<4)
```

```
{
```

```
18
```

```
//Scanning Starts
```

```
r1=0; if(c1==0){
```

```
lcd_out(2,count+1,"1"); password[count] = '1'; while(c1==0);
```

```
}
```

```
if(c2==0){ lcd_out(2,count+1,"2"); password[count] = '2'; count++; while(c2==0);
```

```
} if(c3==0){
```

```
lcd_out(2,count+1,"3"); password[count] = '3'; count++;
```

```
while(c3==0);
```

```
} r1=1;
```

```
//row1 scanning complete r2=0;
```

```
if(c1==0){
```

```
lcd_out(2,count+1,"4"); password[count] = '4'; count++;
```

```
while(c1==0);
```

```
} if(c2==0){
```

```
lcd_out(2,count+1,"5"); password[count] = '5'; count++;
```

```
while(c2==0);
```

```
} if(c3==0){
```

```
lcd_out(2,count+1,"6"); password[count] = '6'; count++;
```

```
while(c3==0);
```

```
} r2=1;
```

```
//row2 scanning complete r3=0;
```

```
if(c1==0){
```

```
lcd_out(2,count+1,"7"); password[count] = '7';
```

```
count++; while(c1==0);
```

```
} if(c2==0){
```

```
lcd_out(2,count+1,"8"); password[count] = '8'; count++;
```

```
while(c2==0);
```

```
} if(c3==0){
```

```
lcd_out(2,count+1,"9"); password[count] = '9'; count++;
```

```
while(c3==0);
```

```
} r3=1;
```

```
//row3 scanning complete r4=0;
```

```
if(c1==0){
```

```
lcd_out(2,count+1,"*"); password[count] = '*'; count++;
```

```
while(c1==0);
```

```
} 21
```

```
if(c2==0){
```

```

lcd_out(2,count+1,"0"); password[count] = '0'; count++;
while(c2==0);
} if(c3==0){
lcd_out(2,count+1,"#"); password[count] = '#'; count++;
while(c3==0);
} r4=1;
//row4 scanning complete
}
}
unsigned int check(void){ flag=0;
keypad(); if(strncmp(password,set_pass,4)==0){
lcd_clear();
lcd_out(1,1,"Correct Password");
delay_ms(1000); flag=1;
}
else{
lcd_clear(); lcd_out(1,1,"Incorrect Pass"); delay_ms(1000);
}
return flag;
}
    
```

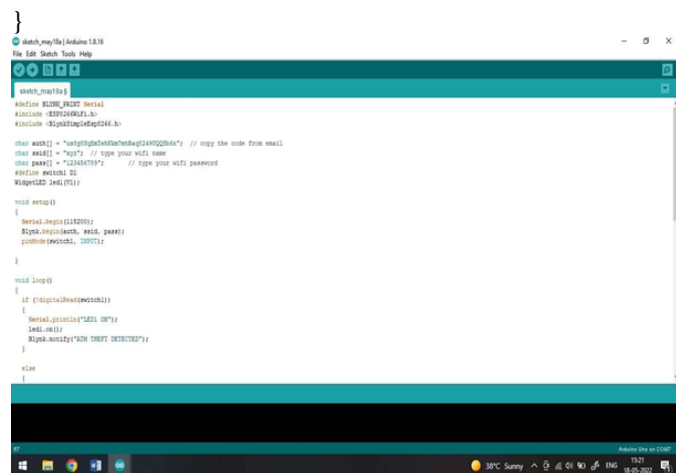


Figure 4.1: Wi-fi code 1

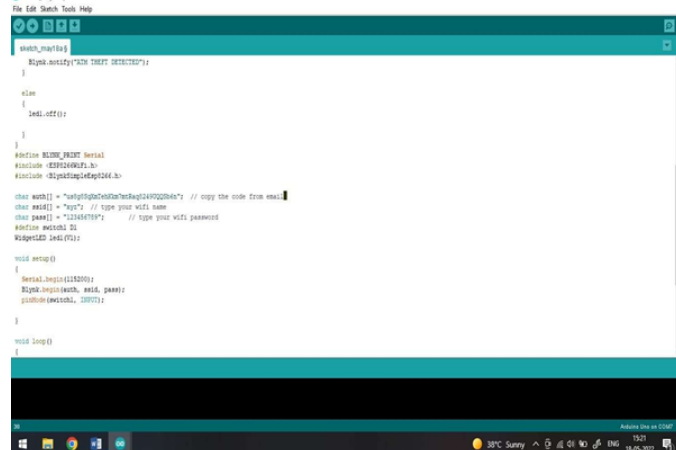


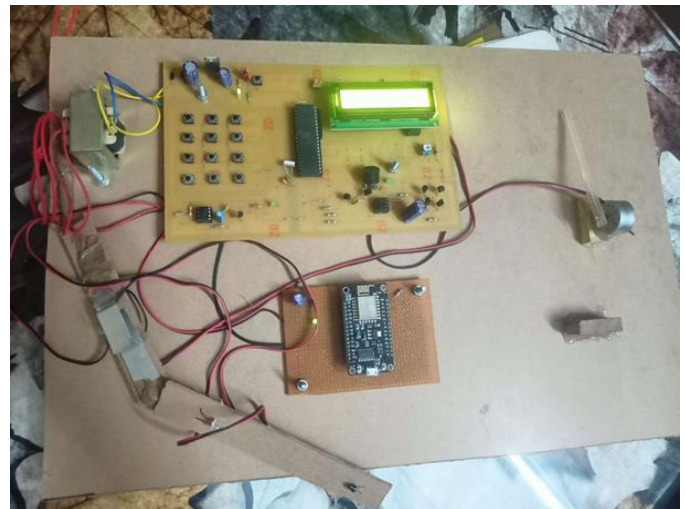
Figure 4.2 Wi-fi code 2

5. RESULT AND CONCLUSION

5.1 RESULT

In this project, both the sensors are working if someone try to do in malfunction in camera and ATM machine then the buzzer will ring, then if again someone intentionally want to harm the ATM then the gate will close immediately and alert

will be send in headquarters and then they will come and enter unique password by which gate opens.



5.2 CONCLUSION

We thus develop an ATM Security model that is more reliable in providing security by using microcontroller and Wi-fi module. Based on the results obtained, the objective of implementing ATM security system using ESP8266 & sensors has been achieved. This project is used to provide security to ATM. Whenever a person tries to distract the ATM, the sensor which senses the vibrations & send a signal to the microcontroller. Once the controller receives signal, it locks the door of ATM room by sending signal to the dc motor and buzzer, door will get closed. At the same time, the buzzer also gets activated. Simultaneously, the controller will send a message to an authorized person through Wi-fi module and the door is made to open only after entering the password.

6. FUTURE SCOPE

This is embedded system and IOT based project. So, we can make our own algorithm in microcontroller for more security concerns. We can use these high level security system for banking, military etc. for enchanting there security. We can add many other high level security features such as fingerprint recognition, face detection ,Retina detection in future to make this system more secure. We can use powerful antennas for longer communication in case of transferring message.

REFERENCES

1. IOT Based Progressive Anti-Theft ATM Security System, December 2020, IOP Conference Series Materials Science and Engineering 981(4):042095 DOI:10.1088/1757-899X/981/4/042095 Authors: S. Ramyasri, M. Mahalakshmi
2. Advanced ATM Security System Deepa. R1, Kalaiselvan .M2, Mr. R .Rajagopal3,(Assistant Processor, Département Of Electrical And Electronics Engineering, Saurie College Of Engineering, Vijamangalam- 638056
3. Smart ATM System using AVR Microcontroller Pratik Pise, Kasturi Bidwai, Samiksha Bandbuche, Shashant Jaykar, Department of Electronics and

- Telecommunication Engineering, Rajiv Gandhi College of Engineering and Research, Nagpur, India
4. International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering (An ISO 3297: 2007 Certified Organization) Vol. 5, Issue 9, September 2016 Copyright to IJAREEIE DOI:10.15662/IJAREEIE.2016.0509066 7601 An Advanced Smart ATM Monitoring System using Raspi Jalla Pavan Sai Kumar Reddy1 B. Tech, Dept. Electronics and Communication Engineering, CMRIT, Hyderabad, India 1
 5. <https://www.sciencedirect.com/science/article/pii/S2214785321046708#!>
 6. <https://iarjset.com/wp-content/uploads/2021/06/IARJSET.2021.8644.pdf>
 7. <https://ieeexplore.ieee.org/document/7830124>
 8. <https://www.youtube.com/watch?v=bCzL9LstoXQ>
 9. <https://www.engpaper.com/ece/iot-based-atm-security-system.html>
 10. IOSR Journal of Electrical and Electronics Engineering (IOSR-JEEE) e-ISSN: 2278-1676,p-ISSN: 2320- 3331, Volume 15, Issue 3 Ser. I (May – June 2020), PP 34-42 www.iosrjournals.org