Published by :
http://www.ijert.org

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 12 Issue 05, May-2023

Advance Anti-Theft ATM Security(IOT Based)

[1]Rushikesh Chandrakant Kumavat
Student, M.TECH, NIELIT
Aurangabad, Maharashtra

[2]Dr.Lakshman Korra
Scientist-D, Dean-Skill Development,
NIELIT, Aurangabad, Maharashtra, India

Abstract—In today's world, ATM machines are part of our professional life. The ATM machines have greately simplified our few banking or finance related work by employing those things in it. One of them is "Currency transactions-Withdrawal of money" . This is one of the most important thin of everyone's life. While doing transactions, you should take care because we obviously don't want that someone will see our currency notes , PIN, etc. At this point, the ATM security system plays an important role. Because, we don't want our hard-earned money will get stolen by robbers. This project named as "Advance Anti-Theft ATM Security(IOT Based)" his designed and built to provide amazing security level to ATMs. Merely deploying security personnel at the ATM is not enough. This project comprises an advance security system that can detect undesired activities and activate security measures in case of robbery/theft. This system collects different parameters, process them, generate output and keep the concerned authorities updated. This project consists of sensors such as ADXL 345, piezoelectric disc buzzer and LM35. These sensors are used as an input. Because they will get activated when any suspicious activity will happen to ATM ex. Tilting, Shaking etc. Our Microcontroller will work as per the program we have uploaded into it. An appropriate action will be taken by alerting relevant authorities and closing the ATM door. We have set the values for sensors. Hence, if any kind of anomaly happened, it will be detected. The whole data will be logged onto IP address with date and time.

Keywords-ATMega328P,ESP8266,ATM,ADXL345,Temperature sensor

I. INTRODUCTION

Automated Teller Machines (ATM) are extensively used all over the world for the withdrawal of the cash. A unique card is issued for each user along with the unique code provided to him so as to the person can do all his transactions a personally without knowing anyone. Since transactions are extensively secured but the cash of the ATM is not fully secured. The ATM center already has the basic security features like security guards, CCTV cameras, etc. But there are many ATM robberies are still happening in our country.
In FY18, 303 such cases took place, which shot up to 515 in the last fiscal year 2018-19. Maharashtra has recorded the highest number of ATM thefts(67), followed by Rajasthan(65) in the year gone by. So, it is very necessary to have a more security to the machine. But , in the current situation only CCTV cameras, security guards are deployed at the ATM cabins. Also most of the banks do not provide security guard to remotely placed ATM's because they do not want to spend money. There are some rules to be followed to perform ATM transaction such as,1. No Helmet/scarf/cap, 2. Use of mobile phone is prohibited and 3. Only one person at a time.

But what if these rules are not followed? In what ways the CCTV cameras will be helpful if someone covers his/her face by helmet/scarf/cap and does the tampering or damages the ATM? And we also know that a human security can be breached by threatening, bribing, influencing, etc. We also know that the robbers lift the whole ATM , cut its door housing by using gas cutter. So that's why there is a need of new solutions to overcome such problems. In this project, we are implementing the system which helps to minimize the ATM robbery. In this systemEase of Use we are using GSM module, Accelerometer, Temperature Sensor, Piezoelectric Disc and other necessary parts to perform all tasks.

II. BLOCK DIAGRAM

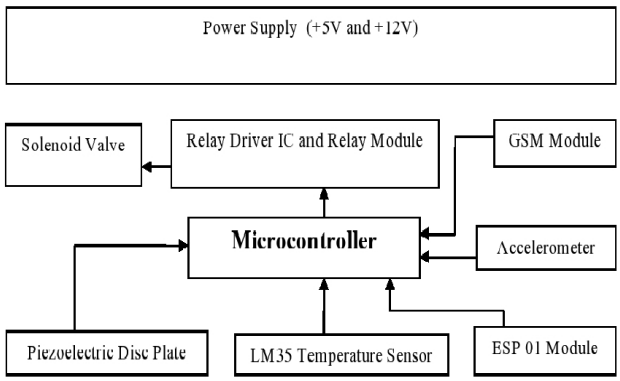


Fig.1 Block Diagram of project

III. CONSTRUCTION

The Fig.1 shows the block diagram of our project. In our microcontroller based project named as **Advance Anti Theft ATM Security(IOT Based),** we are using the ADXL 345 accelerometer which will sense the static and dynamic forces of acceleration. Along with accelerometer, we are also using LM35 temp. sensor, piezoelectric disc and ESP8266 module. To perform on-off action of door, we are using a simple solenoid valve. In addition to that, we have also incorporated the GSM module to make a call and send a SMS to relevant authority(Security guard or Bank authority). To perform the on-off action of valve, we have connected it to relay and relay driver IC which accepts low voltage. We have also connected ESP 8266 module to microcontroller to send data to the server. We have one IP address onto which we send the data collected by microcontroller from the sensors. The input supply voltage

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 12 Issue 05, May-2023

is 12V and then it is step down by regulator ICs to provide it to other parts.

IV. WORKING

The working of the project is given following: Let's suppose a robber tries to rob the ATM by cutting it and also trying to move it. To cut the door, a robber uses the gas cutter and this gas cutter generates the temperature which is more than 50 degree celcius and it will be sensed by LM35 and send to microcontroller ATMega 328P. The Accelerometer ADXL345 will sense the forces in x,y,z directions which happens due to Tilting movements of ATM Machine and will generate appropriate values in all 3 axis. Piezoelectric disc plate will sense the vibrations and the value corresponds to them is send to controller IC. We have set the ranges and max. values for sensors in our program. Similarly, for ADXL 345 and piezoelectric disc. When the sensor values goes out of the range or exceeds its max value which we set in program, the microcontroller sends the signal to relay driver IC. This will eventually turns ON the relay and it will drive the Solenoid valve. All the data which will be collected by controller is send to IP address where all data will be stored. The data is stored with Date and Time. The microcontroller will eventually pull the shaft inward or outward(door closing and opening action) and we also receive the phone call as well as message on the number. For that we have already inserted one SIM card into GSM module. So as soon as robbery is detected in ATM, the relevant authorities are called immediately and also informed by SMS.

V. PROJECT IMPLEMENTATION

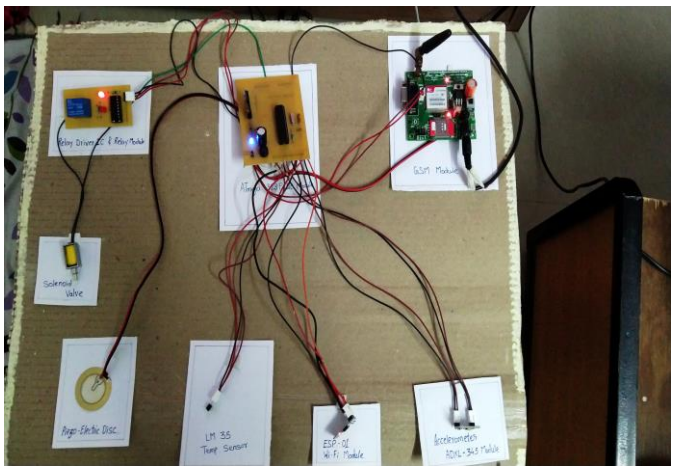
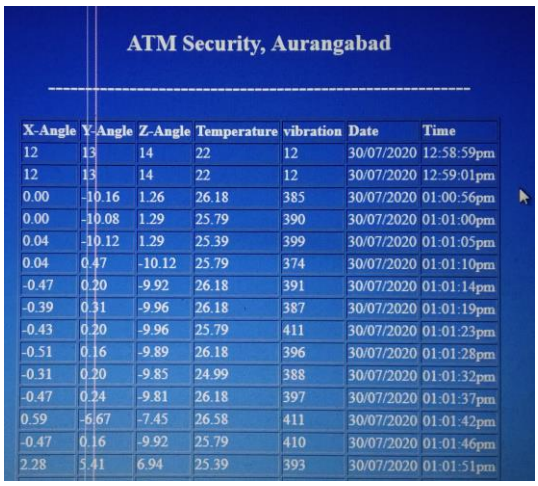


Fig.2. Circuit of project

The above Fig.2 shows the all parts of our project and also its working. We have used a solenoid value to do on-off action of ATM door. The GSM module is employed here to alert the relevant authorities. We have tested this project and it gives the output properly.

VI. PROJECT OUTPUT IMAGES

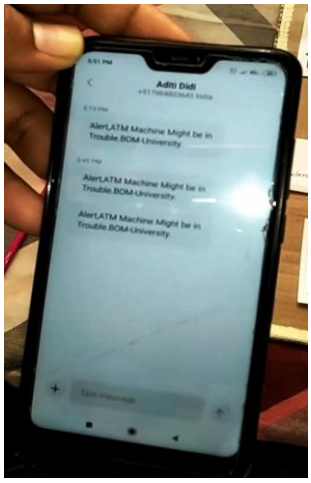
1. Data stored on IP address:



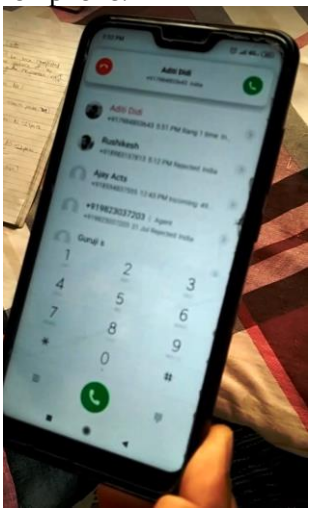
ATM Security, Aurangabad

X-Angle	Y-Angle	Z-Angle	Temperature	vibration	Date	Time
12	13	14	22	12	30/07/2020	12:58:59pm
12	13	14	22	12	30/07/2020	12:59:01pm
0.00	-10.16	1.26	26.18	385	30/07/2020	01:00:56pm
0.00	-10.08	1.29	25.79	390	30/07/2020	01:01:00pm
0.04	-10.12	1.29	25.39	399	30/07/2020	01:01:05pm
0.04	0.47	-10.12	25.79	374	30/07/2020	01:01:10pm
-0.47	0.20	-9.92	26.18	391	30/07/2020	01:01:14pm
-0.39	0.31	-9.96	26.18	387	30/07/2020	01:01:19pm
-0.43	0.20	-9.96	25.79	411	30/07/2020	01:01:23pm
-0.51	0.16	-9.89	26.18	396	30/07/2020	01:01:28pm
-0.31	0.20	-9.85	24.99	388	30/07/2020	01:01:32pm
-0.47	0.24	-9.81	26.18	397	30/07/2020	01:01:37pm
0.59	-6.67	-7.45	26.58	411	30/07/2020	01:01:42pm
-0.47	0.16	-9.92	25.79	410	30/07/2020	01:01:46pm
2.28	5.41	6.94	25.39	393	30/07/2020	01:01:51pm

2. Message received on phone:



3. Call received on phone:



VII. CONCLUSION

In this Project, we have designed a cost effective system for ATM security that will help us to prevent the ATM robberies and if such case happens, the relevant authorities such as

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 12 Issue 05, May-2023

Bank Personnel, Police and Security Guards will get informed. With the use of few sensors and WIFI module we have also collected the data of such incidents which will be helpful for us in future. The system gives fast response and takes necessary action immediately to stop ATM robbery.

VIII. FUTURE SCOPE

Currently, this whole system works on dc power supply which is regulated from ac supply. That means it is "Dependent" on ac input. In future, we can make a provision that it will run on the **Battery**. So that it is not dependent on ac input source for dc output. We will directly provide DC supply by **Li-Ion battery pack**. Also, we can incorporate the **GPS module** to send exact co-ordinates of ATM location to relevant authorities.

IX. ADVANTAGES

1. This system is easy to use and implement.
2. In this system GSM is used for longer range communication.
3. System cost is moderate.

X. APPLICATIONS

1. ATM security systems.
2. Home security.
3. Industrial security.

XI. REFERENCES

[1] Manisha Philip Dushing and Prof. Shashi Gera, "Advance Atm Security Solution" Volume: 06 Issue: 07 | July 2019, e-ISSN: 2395-0056, p-ISSN: 2395-0072

[2] Mrs. V. Sirisha, N. Bhavana, R. Padamavathi, A. Uday Sankar, K. Chandra Sekharm, "Atm Security Using Gsm And Mems Sensor" Volume: 06 Issue: 04 | Apr 2019, e-ISSN: 2395-0056, p-ISSN: 2395-0072

[3] D. Arul Kumar, N. Jeyakannan, Divyalakshmi. V , Divya . R, Mahalakshmi . T, "Atm Security Using Gsm And Gps" Volume: 08 Issue: 04 | Apr 2021, e-ISSN: 2395-0056, p-ISSN: 2395-0072

[4] Prof.Shinde S.P, Chingale R.R. , Dhane D.C. , Vader P.B,

"Atm Machine Security System Using Gsm And Mems Sensor", e-ISSN: 2395 -0056, p-ISSN: 2395-0072

[5] Mr. Shubham Modi, Mr. Pushkar Parmar, Mr. Shohrat Ali, Ms. Pratiksha, Dr. C.H. Patil, "Improving Security in Automatic Teller Machines (ATM) using Biometrics & OTP or IRIS Recognition" International Journal of Engineering Research & Technology (IJERT) ISSN: 2278-0181

[6] A. Gokul Raj, B. Tharik Salman, R. Vasudevan, Y. Vasanth, Dr. S. M. Uma Ph.D, "Biometric based Secured ATM Transaction incorporating GSM Technology" International Journal of Engineering Research & Technology (IJERT) ISSN: 2278-0181

[7] S.Kanchana, K.Krithika, "Enhancing Atm Security Using Fingerprint Recognition And Gsm", ISSN (Online) : 2278-0181

[8] S.Ashika, G.Preethi, "Atm Machine Authentication Using Fingerprint Based Iot", IJCRT ,ISSN 2320-2882