International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 06 Issue: 02 | Feb 2019 www.irjet.net p-ISSN: 2395-0072

IOT BASED HOME MONITORING SYSTEM USING ATMEGA 328

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ABSTRACT - Secured home is a need which should be fulfilled with an utmost priority. And to help fulfilling its need a home monitoring system should be deployed at every premises of the house.so here I proposed a system which will help to stop thefts and breaches and will provide a secured environment. I have used Atmega 328 as a microcontroller based system and the database server which decides the entry of a person on the basis of database matching. If it is not able to match with database it gives owner the control whether to allow or not. The owner can access the IOT server and also in case of emergency can rang the buzzer.

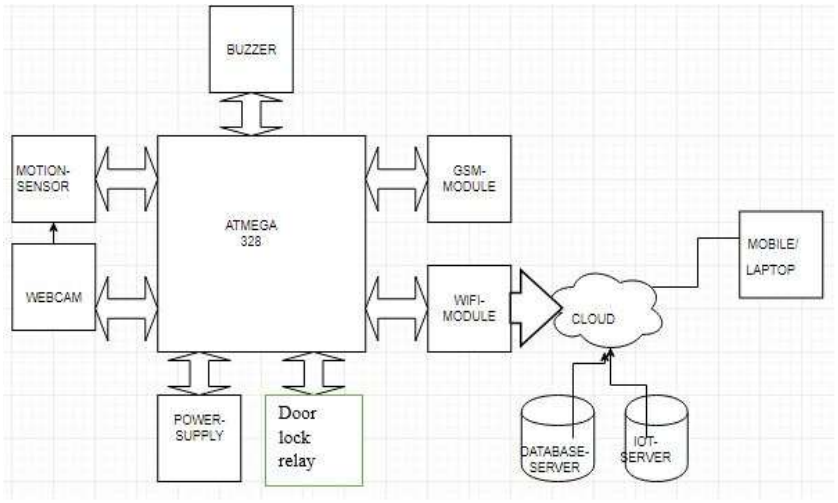
Key Words: Atmega, secured, IOT server, database server

1. INTRODUCTION

The home security has become a major concern this days as the number of thefts are increasing day by day. Though the owners deploy the human based security but it does not provide a sufficient level of security and breaches do occurs. Therefore, to overcome this problem I am proposing a system which provides a high level of security and which is very reliable and should be deployed at home, so that there are no chances of a breach. In this system I am implementing a home monitoring system using internet of things. The sensor and the webcam are interfaced to the microcontroller followed by buzzer, wireless (Wi-Fi) module, power supply and GSM module. A database server is used to store the images of the persons and an IOT server to register the IOT devices. The devices registered are buzzer and the door lock relay. This server (IOT) is also accessible by the owner remotely from laptop or mobile from anywhere and is able to confirm its home safety.

2. PROPOSED SYSTEM

(Iot server registered devices- door lock relay, buzzer)



3. WORKING METHODOLOGY

- As the human presence is detected the output of motion sensor goes high and the webcam output also goes high and it is turned on.
- Its image is captured and stored in temp memory of the database server and is compared with stored database images and a decision is made accordingly.

- If matched then the door lock relay turns on immediately and open the door or else the message is sent to the owner using GSM module stating "access the database server to check the image" and this captured image is passed to the database server with the help of a wireless module attached to the microcontroller.
- The owner can then check the person's image in database temp storage and then decide whether to allow or not.
- Owner is also asked if he wants to add person to permanent database or not.
- The database server also maintains a separate database of the visitor's images with the time of entry.
- If he wants to allow then he can simply access the IOT server and open the door by activating door lock relay.
- But if some person tries to open the door, irrespective of being in the database then an alert message is sent through GSM module and an image of that person is sent via email from database server. The owner can then remotely access the IOT server and rang the buzzer in case of emergency.

4. COMPONENTS REQUIRED

4.1 (Arduino uno atmega 328):

The Atmega 328 is a low-power CMOS 8-bit microcontroller which is based on a RISC architecture. It is powerful enough to execute instructions in a single clock cycle. It achieves the throughputs approaching 1MPS per MHZ allowing the system designed to optimize power consumption versus processing speed. Power saving is one of the important characteristics of it.

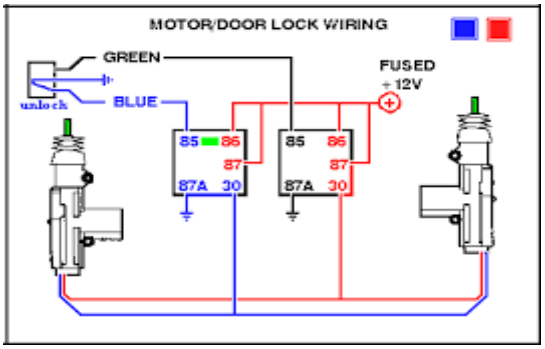
4.2 Motion sensor (ultrasonic sensor):

The Ultrasonic sensors emit short, high-frequency sound waves. These waves propagate in the air at the velocity of sound. If they hit an object, then they are reflected back as an echo signals to the sensor, which computes the distance on its own to the target, based on the time-interval between emitting the signal and receiving the echo.

4.3 Webcam:

Webcam – in short a web camera is a digital camera that is used to send the live images and pictures from wherever it is situated to another location by means of the internet.

4.4 Door lock relay:



A door lock relay is a type of relay which consists of a mechanism which controls the door by sending power to the door lock actuators which helps in opening and closing the door.

4.5 Wireless module:

The ESP8266 Wi-Fi Module is a self-contained SoC with integrated TCP/IP protocol stack that can give access to your Wi-Fi network (or the device can act as an access point).

4.6 GSM module:

A GSM module is a circuit used for a mobile communication. It is a digital cellular technology which is used to transmit data services and voice services. The technique used behind the transmission of this signals is known as TDMA (Time Division Multiple Access).

4.7 Buzzer/Alarm:

It is a device which is used to produce sound in case of an emergency. It consists of a small electromagnetic circuit consisting of a coil and a magnetic disk. When a current is passed through the coil, the coil produces fluctuating magnetic field due to which the disk vibrates at a frequency equal to that of an input drive signal.

5. ADVANTAGES:

Easy to use and monitor

Energy saving

Provides a great level of security

6. CONCLUSION

This days we have an increased risk of breaches and thefts. This system will help to monitor and alert the owner whenever there is someone on the door. This system is not only restricted to the home monitoring but can also be implemented at various other places where a higher amount of security is required.

7. REFERENCES

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