CHILD ABDUCTION ALERTING SYSTEM IN HOSPITALS USING GSM AND PIR SENSOR

[1]Ms.B.S.LIYA, [2]AKASH.J, [3]MANOJ KUMAR.V.V, [4]ARUN KUMAR.K.
[1]Assistant Professor, [2]B.TECH Student, [3]B.TECH Student, [4]B.TECH Student
Department of Information Technology
Prathyusha Engineering College, Chennai, India

Abstract *:* Security is the most important thing concerned in the day-to-day life. Safety and security of the new born baby is the concept of the child abduction alerting system. The system focuses on the alerting and tracking the motion of the abducted child in hospitals. PIR sensors are used to detect the motion of the cause or any activity that when the child get abducted. The GSM modem is use to send the alert message to the parents or the hospital management when the child was abducted by the thieves. In this the tracking of the abducted child is tracked by using the Bluetooth device and Smart phone. The PIR sensor sense the presence of the intruder and the Controller reads the signal from the sensor, if the intruder is detected it turns on the buzzer and sends the alert message to the predefined number through the GSM. The system consists of MQ135 and temperature sensor to detect the temperature and Air Quality in the room.

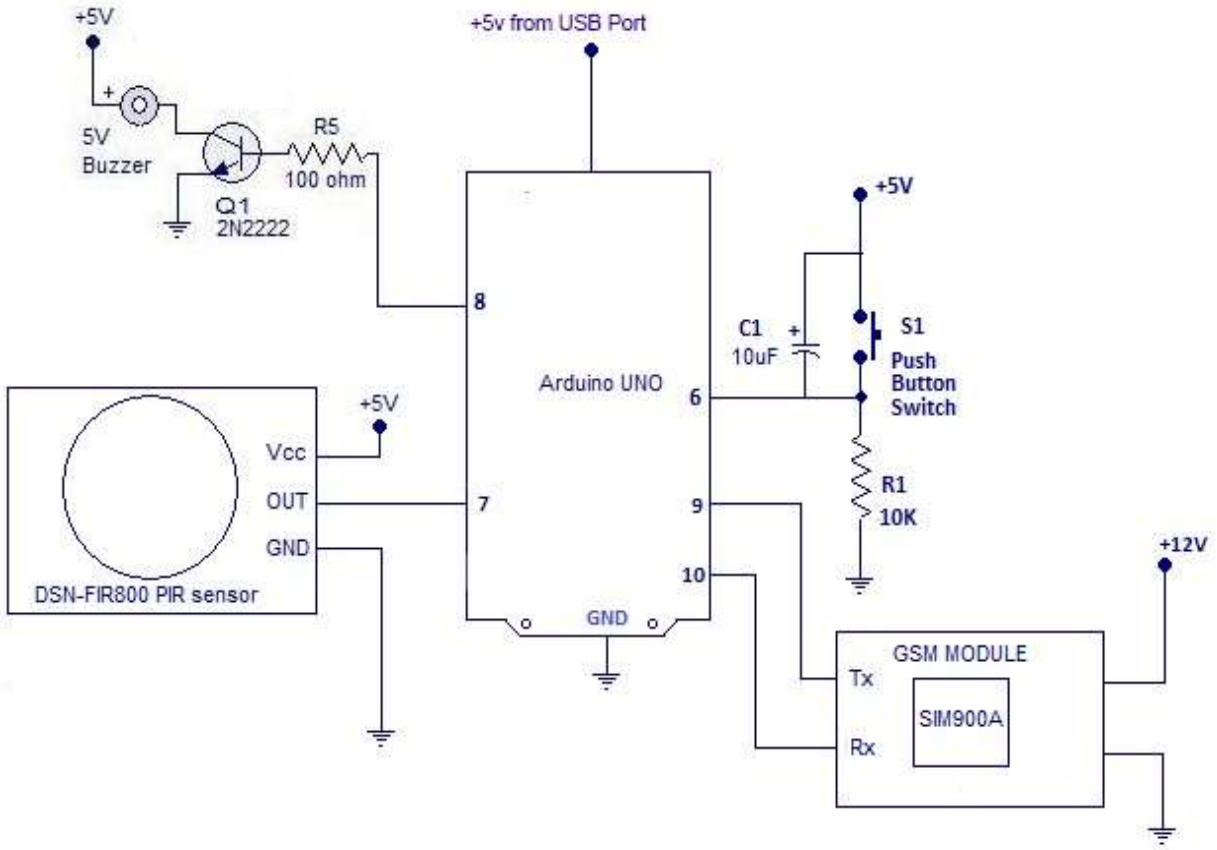
Keywords: PIR sensor, GSM module, Arduino UNO.

I. INTRODUCTION

We know that theft have been become an major issues nowadays everywhere. The new born infant had been abducted from the hospitals is the common one. Although the new born babies do not have the strength and skill to move out from the nursing room. It is not the uncommon for the babies to get abducted by cold-hearted baby thieves once in a while.so we are like to implement the system for the security of the new born babies. Everywhere the hospitals make use of the CCTV camera for the security purpose, but the CCTV. Cameras of capable of only recording and storing the data .So we have come up with this system to ensure the child safety [2]. We have used PIR sensor for the motion detection [6]. The PIR sensor can be placed at the top of the roof to sense the motion of the intruder at the specific range. The alarm results in the motion of the intruder in the nursing room. The GSM module is used to send an alert message simultaneously the alarm is triggered when the motion is detected [3]. The alert message can be send to the predefined number [7]. The Bluetooth device is used for the tracking the child theft [8]. Once when the child is abducted the bluetooth device is used to track the direction of the child [1]. Through this system the hospital management ensure the safety of the new born babies with the more concerns. This also prevents the child mix up in the hospitals. The security of the infants baby in the hospitals have been more effective through this system. The system is connected to MQ135 sensor to detect the quality of air in the room [12] where it is necessary for the child to get good air and temperature sensor is used to measure the temperature of the room[13].

II. HARDWARE DESIGN

The Hardware consist of the Arduino UNO Board,PIR(Passive Infrared sensor),GSM modem, Buzzer and the Reset button.



The hardware components are connected according to the circuit diagram .The 100ohm resistor is connected with the in pin 8.From the resistor its connected to transistor 2N2222 ,From the transistor one side is connected to the buzzer which is connected to 5V and another pin to the GND .The pin 7 is connected with the out pin of the PIR sensor .The one pin to the Vcc and the another one to the GND. On the other end the pin 6 is connected with the capacitor of C1 10uF to the switch button and the +5v.The pin 9 is switched with the Tx pin of the GSM module and the pin 10 is connected with the Rx of the GSM.

III. DESCRIPTION OF PROPOSED SYSTEM

The circuit diagram of our proposed system contains of several modules are GSM module, Arduino UNO, PIR sensor , Temperature sensor , MQ Gas sensor and buzzer. The Description of each modules is given in detail below.

A. PIR SENSOR:

PIR sensors helps you to sense motion, almost always used to detect whether a human has moved in or out between range of the sensor. These are incridible, flat control and are easy to interface with it. They are referred to PIR, “Passive Infrared”,”Pyroelectric” or”IR- motion”. PIR sensors are mostly used in the gadgets, home appliances, and business enterprises. All PIR sensors have a 3-pin connection at the side or bottom.One is for ground,another will be for signal and the last pin is for the power. Power is usually up to 5 Volt. Connecting PIR sensors with the Arduino is very simple. The PIR acts as a digital output so it has to two states flip high or low. The motion can be sensed for the high signal on the signal input. Once the sensor is active the output will be low until it detects a motion then the signal will be high .If the motion continues the output will cycle in this manner until sensor line of sight still in sight. This could be any place from 10-60 seconds. It gives the digital output when it detects the motion. PIR has pyro-electric sensor hence it can sense the infrared radiations from the human beings easily. Thus the PIR sensor is be used to sense the presence of humans within range of 3-5 meters approximately.

B. ARDUINO UNO:

The Arduino Uno is a open source hardware board based on ATmega328. It consists of 14 input/output , 6 analog inputs along with a USB port for alternative power for the board and with 12v power socket with a rest button. The UNO board is powered using a AC to DC power adapter or by simply connecting it to the PC using USB port. It runs on DC voltage .We can reset Arduino Uno board before starting your program from the start. There are two power supplys namely 3.3V and 5V .All components used with Arduino Uno board works well with 3.3 volt and 5 volt .GND pins present in the arduino board represents ground your circuit. The Arduino UNO contains 6 analog pins from A0 to A5,these pins gets the digital values from the sensors. Each Arduino board conatins its own microcontroller and there versions .There are two LED indicator present in the Arduino they are TX(transmit) and other one is RX(receive).They can exchange values with the software on computer.

C. GSM:

GSM means Global System for Mobile Communication. It is an digital cellular technology used for transmitting the mobile voice and data services. GSM can work on any GSM network SIM card similar to mobiles. It is connected to com port of the Computer or PC.it does two function for transmitting the data , they are digitization and compression by performing both these operations it sends the data in two channels. GSM module is used to transmit and receive SMS or used to make calls using Arduino .When Arduino receives the signal or alert message from the sensors the GSM module is used send an alert message to the parent number or any number which has been coded in the code of the program.

D. TEMPERATURE SENSOR:

Temperature Sensor is a device that provides temperature measurements through an electric signals. A temperature sensor is used to measure the temperature using the thermocouples present inside the sensors. It used to measure amount of heat present inside the room and gives the output in form of digital output signal. We use these temperature sensor as device to sense the temperature of the room, if the temperature raises these give an alert message to the hospital management using GSM module with help of arduino board.

E. MQ GAS SENSOR:

The MQ Gas sensor used to check and detect the leakages of gas and also used to check the quality of the air .These are very sensitive for gases and are used normally at room temperature. These are very sensitive hence it gives accurate ratios of particles present in the air. The quality of the air is checked using these sensor which gives the output as digital values and they are measured using PPM as a unit. The ouput is read or seen in the internal monitor in the IDE of the arduino software.

F. BUZZER:

A buzzer is an alerting indication device ,there are many type of buzzers like mechanical ,electromechanical or piezo electric. Usally buzzer is used as a alarm device. When PIR sensor sense the presence of the intruder it sends signals to the arduino controller, then the arduino controller turn on the alarm by generating a sound alarm or when there is a break in the circuit it turns on the sound alarm.

G. SOFTWARE DESIGN:

We use Arduino IDE software where Arduino software consist of C and C++ compilers. The software contains text editor for inputing or coding the code, compilers for compiling the codes and toolbar for choosing different tools and actions etc. Program written in the Arduino Software is called as the sketch. The editor has the almost same features of editing text in the text editor such as cut, copy and replace. The console is used to display the the error messages etc. The toolbar contains of 2 buttons, they are verify and upload . it also as options to create and open the programs and open the serial monitor for displaying the output.

IV. PROPOSED METHOD

Our paper is based on prevention of child theft in hospitals using GSM and PIR sensor. The goal for our project is to design and build a simple and low cost system to prevent child theft in hospitals. The development is based on the latest technology such as embedded systems using arduino . It has PIR motion sensors and alarm system to sense and alert the parents or hospital management about the theft using GSM by a text message and also we can check the room temperature and quality of the air using the temperature and gas sensor. It also alert the Hospital management when the air quality is too low. We can track the movement of the child using tracking device based on Bluetooth by the parent using the smart phone.

V. ADVANTAGES OF PROPOSED METHOD

- Efficient for the hospitals to prevent the child theft.
- Prevent from child mixing up in the hospitals
- Environmental friendly

VI. CONCLUSION

The child abduction alerting system in the hospitals has been designed and tested. The motion detection in the nursing room along with the alarming system had been tested .when the motion is in nursing room detected immediately the alarm alert the hospital management. The alert message is sent to programmed number by message. Hence the tracking of the abducted child was tracked and test using bluetooth. It also checks the air quality and temperature of the room correctly. It is the more effective system for the infant safety and the security in the hospitals. It also ensures the child mix up in the hospitals and this proposed system delivers the safety enhancement in hospitals in future.

REFERENCE:

[1] Kaiyan Wang, Niyang Lin,Chunhua ,2010 “Infant Management System Based on RFID and Internet Technologies”.

[2] Rupali R Ragade, 2017 “Embedded home surveillance Systems”

[3] Neha R.Ghate , K.V.Kale , 2017 “Smart home safety device using frequency hopping approach based on the GSM generation”

[4] Wu Alping , 2017, “The Design of Anti-theift Device for Vechicle Based on GSM”.

[5] Ting-Ying, Chao-Lin Wu, Yi-Wer Chein, Li-Chen Fu, Chi- Chun Chou, Chun-Chen Chou,I-An Chen, 2017 “A supporting system for quick dementia screening using PIR motion sensor in smart home”.

[6] Simant singh Saini, Hemant Bhatia, Vatanjeet Singh, Ekambir Sidhu, 2017 “Rochelle salt integrated PIR sensor Arduino Based Intruder Detection System (ABIDS)”.

[7] Xibo Wang, Yanting Yang, 2009 “Method and Implementation of Sending and Rceiving Mobile Phone Messages”.

[8] K.A.Mamun, Z.Ashraf, 2015, “Anti-theft vechicle security system with preventive action”.

[9] M. Sathish kumar and S. Rajini, “Smart Surveillance System Using PIR Sensor Network and GSM,” International Journal of Advanced Research in Computer Engineering and Technology (IJARCET), vol. 4, no. 1, pp, 71-74, 2015.

[10] P. Zappi, E. Farella and L. Benini, “A PIR based wireless sensor node prototype for surveillance applications,” Poster Abstract.

[11] H.-W. B. P. Bryant, “Some applications of a motion detecting camera in remote environments,” 2003.

[12**]**Mitar Simić Libu Manjakkal “Multi-sensor system for remote environmental (air and water) quality monitoring”.

[13]Andrea Boni_Michele Caselli_Alessandro Magnanini_Matteo Tonelli“A low power temperature sensor for IOT applications in CMOS 65nm technology”.

.