Magnetic Switch and Motion Based Security System

Rajashri Bhusari[1], Urmila Khot[2],Gavade Ajit^3

^1ANNASAHEB DANGE COLLEGE OF ENGINEERING AND TECHNOLOGY, ASHTA,INDIA.

^2ANNASAHEB DANGE COLLEGE OF ENGINEERING AND TECHNOLOGY, ASHTA,INDIA.

^3ANNASAHEB DANGE COLLEGE OF ENGINEERING AND TECHNOLOGY, ASHTA,INDIA.

ABSTRACT

In our project, we are design and develop of a microcontroller based home security system with GSM technology have been presented and analyzed. Two microcontrollers with other peripheral devices.which include Light Emitting Diode (LED), Liquid Crystal Display (LCD), Alarm and Global System for Mobile Communication (GSM) Module are responsible for reliable operation of the proposed security system.

1 . INTRODUCTION:-

Security and safety is one of the most important issues in almost every field like surveillance, industrial application, office and in general, in smart environment. To secure it against theft, crime, fire etc. And the proposed security system is required not only to detect but also pre-empt hazards. Conventional security system built with various sensors such as ultrasonic detector, microwave detector, photoelectric detector, infrared detector etc. use cameras and process large amount of data to extract features with high cost and hence require significant infrastructure. This Project proposes a PIR sensor based low cost security system in addition to IR, vibration and magnetic sensor for security application in which passive infrared (PIR) sensor has been implemented to sense the motion of human through the detection of infrared radiation from the human body. PIR sensor detects the presence of human in the home and generates pulse which is read by the micro-controller.

2 BACKGROUND:-

2.1 GSM MODEM

GSM is Global system for mobile communication. GSM network operate in four different frequency ranges. Most GSM network operates in 900 MHz or 1800 MHz frequency bands. The transmission power in the handset is limited to a maximum of 2 watts for GSM. And the longest distance of the GSM module supports in practical use is 35Km. In this proposed system, we use SIM900 based GSM modem to receive and send the message and call to owner.

Our system is Based on the IC 89C51 which provides a medium for transferring media files. However, it is high cost and high power consumption system. which include PIR security sensor and a GSM. It has the following features: low cost, low power consumption, simple installation. In general, GSM modem acts as the interface between the microcontroller and the max 232. There are 3 types of sensor nodes applied in the system which include the door security , infrared sensor, and fire alarm. This system used a wireless transceiver module to transfer data between system and sensor. Every

sensor node comprises a microprocessor and a wireless transceiver module. The function of the microprocessor is to signal from the sensors' node as well as the current status of the nodes.

The system is used to detect the intruder activity And give input to the microcontroller through max 232 and serially to GSM and then alarm will get on and sending SMS and call to owner. It is increasingly being used in other applications ranging from banking security management and protection. The owner will be get short messaging service (SMS) from the server via GSM module system as fast. The GSM terminal is used as the SMS interface to send messages. Similarly GSM module serially connected with a RS232 connector , and the Subscriber Identity Module (SIM) cardholder and the external connector.

2.2 PIR SENSOR

The PIR sensor is a piezoelectric device.That is detects motion by changes in the infrared level produce by moving objects. This motion can be detected the high signal on a signal I/O pin. PIR sensor is a piezoelectric devices. which is used in some security systems to detect any extra motion activity. All living those temperature is anything above only zero. .It emits infrared radiation. This radiation is not visible to the human eye but can be measure by electronic device designed for such a use. The passive infa_red sensor means the which does not emit any energy type but it accepting infrared energy through the window in its housing.

3. An Overview Security System

As shown in Figure 1,Security System compare the three main components. which are inputs, main control unit and outputs. Each component contains of its sub-components. The

inputs elements are formed by the sensor   will give response when the system is on. Table 1 summarizes the relationship of the inputs and output elements.
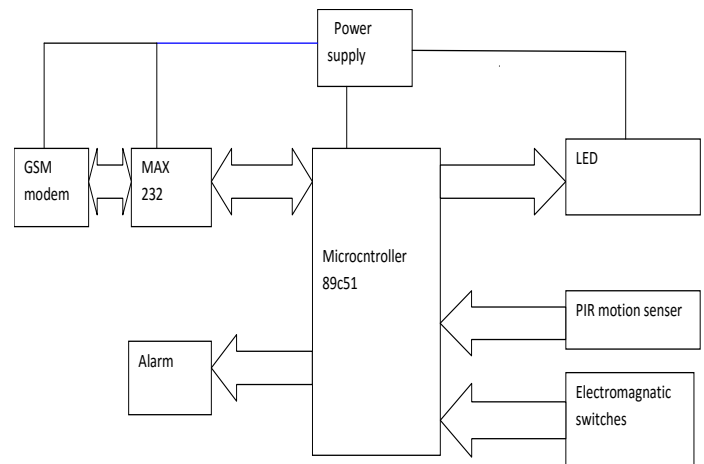

Fig.1 Block diagram for security system.

Table 1. The Outcome   of the Triggering from Input summarized as below

Input	Outputs
Laser sensing node	Light Bulbs
Presence detecting	Light Bulbs
Break-in node	Webcam, light bulbs and computer

4. System implementation

4.1.1. System sensor nodes:

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The 6v power source is applied to power up the system. The output of each level system is sent information to microcontroller that will on the following tasks such as turn on the light bulbs and switch on the camera and sending message. The output signal of each sensor is directed to microcontroller, and then the logic 1 or logic 0 signal will be delivered to the Processor and eventually read in a developed graphical user interface (GUI). A producing signal will sent to the output components such as light , alarm and webcam to perform the correct programmed functions.

4.1.2. Presence Detecting Node:

A passive infrared sensor (PIR) is implement at in side of the house portion and the main portion of the wall. It acts as the second level of Security System. The sensor output voltage is 0.3v, when there is no any motion detected by PIR senser. When the sensor senses the motion of a thief, its output range of 3.3 to 5v and it will be sent to the signal control unit.

4.2.2 Microcontroller

The microcontroller used in Security system is IC 89C51. This microcontroller is interfaced to a PC using the Universal Asynchronous Receiver/Transmitter (UART). UART will get data in group and transmits the individual bits in a sequential fashion. Since the microcontroller makes connection with the PC use serial port RS-232.

Nowadays, microcontrollers are so cheap and easily available that it is mostly use them as a simple logic circuits like counters for the only purpose of giving some design flexible and saving some space. Some peripheral and device will even rely on a lot of microcontrollers, every one define to a certain task. Now days microcontrollers are available in this ic is Programming can be modify the program being

executed, without removing the microcontroller from its place. In this propesd system a made 89c51 Microcontroller is used. Microcontroller have 8-bit data bus, 16-bit address bus, and 32 general purpose registers each of 8 bits, 16 bit timers, and it have 3 internal and 2 external interrupts. Microcontroller have four 8-bit ports, 16-bit program counter and data pointer, 64K memory and UART for serial communication. The microcontroller is programming is done by using Flash Magic software. In the microcontroller circuit, the PORT 0 is denoted as input of sensors; PORT 1 is denoted as display control, PORT 2 is denoted as electromagnetic relay control and PORT 3 UART is used to communicate with GSM modem.

5.1] CONCLUSION:

The aim of this has been to integrate modern technologies with a view to enhancing the current security system. This system presents design and implementation of a smart security system based on microcontroller along with GSM for user serially application. The system is smart enough to monitor the intruder surrounding activity. In advancly, the user is aleart about the security through GSM network that provides a special service. whenever the user stays at far away from home. However, Moreover, the system provides the reliable operation within low cost and removes the system complexity. In this work, traditional burglar alarm mode, LED lights and LCD are the accurate features used to ensure reliability.

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Author

1)Mrs. Manjusha N.Chavan is an Designation Assistant Professor Department of Electronics and Telecommunication Engineering college ashta.And area of intrest Communication Engineering, Image processing. And Research intrest in International Journals, International Conferences.

2)Miss.Bhusari Rajashri Suresh is an student in the department of Electronics & Telecommunications Engineering college,Ashta.And research interest are in field of Smart Home System Design and Applications

3) Miss.Khot Urmila Vijay is an student in the department of Electronics & Telecommunications Engineering College Ashta And research interest are in field of Communications Engineering.

4) Mr.Gavade Ajit Tukaram is an student in the department of Electronics & Telecommunications Engineering College of Ashta. And research interest are in field of Electronic Engineering.