ARDUINO BASED HOME SECURITY SYSTEM USING PIR SENSOR

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ABSTRACT

Home security is a term referring to both the security hardware in place on a property as well as personal security practices. Security includes doors ,locks, alarm systems, lightening, motion detectors, camera systems, etc. that are installed on the property . Personal involves practices such as ensuring doors are locked, alarms activated, windows closed, extra keys not hidden outside etc...

According to an FBI report, 58.3 percent of burglaries in the united involved forcible entry. A typical burglary lasts for about 8 to 12 and, on average a burglar will break into a home within 60 seconds.

The device uses a PIR motion sensor, buzzer, led .

PIR motion sensor is used to detect the human motion and this information is passed through the PIR sensor to give some sort of alarm. A buzzer or beeper is an audio signalling device which may be or piezoelectric, electro mechanical , typical uses of buzzers and include alarm devices, timers, and confirmation of user input such as click or keystroke.

A light_ emitting diode (led) is a two_ lead semiconductor light source.

I. INTRODUCTION

Automated security systems are useful in addition to today's life where safety is an important issue. Vision based security systems have advantage of being easy to setup, in expensive and non_ Obtrusive. security system for detecting an intrusion into a monitored area by

a password based entrance and temperature sensor. A security system is a free_ Standing intrusion detector. The free standing intrusion detector is a transmitter coupled with a portable receiver to alert a home owner if there are is some risk of fire inside the house.

In today's age of digital technology and intelligent systems, home automation has become one of the fastest developing application-based technologies in the world. The idea of comfortable living in home has changed for the past decade as digital, vision and wireless technologies integrated into it. Intelligent homes, in simple terms, can be described as that are fully automated in terms of carrying out a pre determined task, feedback to the users, and responding accordingly to situations. In other words, it simply allows many aspects of the home system such as lighting control, network and communications, system, emergency response and security monitoring systems to be controlled, both near and at a far distance.

 Many security systems are based on only a single system. In an event ofintrusion of the user authentication, there is no backup system . This shortcoming can be dealt with using multiple security(or multi-layered security systems). However, multi-system will definitely be more demanding in terms of computational cost and organization.

Home security systems are an important feature of modern residential office setups. Home security systems

must be affordable , reliable and Effective. The project is based on arduino, PIR motion detection sensor .

II. RELATED WORK

The future implications of the project are very great considering the time and resources it saves .The project we have undertaken can be as a reference or as a base for realizing a scheme to be implemented in projects of greater level such as weather forecasting ,temperature device synchronization, etc .The project itself can be modified to a complete Home security System which will then create a user friendly interface between himself and his household.

III. PROPOSED WORK

Generally, in security systems, infrared or laser transmitters and receivers are used. But these methods are cost effective. This article is about PIRbased security system in which PIR sensor is used instead of transmitter or receiver.

This saves the power consumption and it is of low cost. PIR sensor is the form of Passive Infrared Sensor. The main principle of the circuit is to security. This is based on PIR sensor .The PIR sensor detects the IR emitted from the humans and it produces a digital output. Thus it produces the sound when any human is detected.

3.3 THE HARDWARE SETUP

Arduino is an open-source electronics prototyping platform based on flexible, easy-to-use as hardware and

software. It's intended for artists, designers, hobbyists, and anyone interested in creating interactive objects or

environments. Arduino can sense the environment by receiving input from a variety of sensors and Can affect its

surroundings by controlling lights, motors, and other actuators.

The microcontroller board is programmed using the Arduino

programming language and the Arduino development environment. Arduino projects can be stand-alone or they

can communicate with software running on a computer (e.g. Flash, Processing,).The Arduino Uno is a

microcontroller board based on theTmega328 (datasheet). It has14 digital input/output pins (of which 6 can be

used as PWM outputs), 6 analog inputs, a16 MHz crystal oscillator, a USB connection, a power jack, an ICSP

header, and a reset button. It contains

Everything that is needed to support the microcontroller; simply connect it to a computer with a USB cable or

power it with a AC-to-DC adapter or battery to get started.

Features:-

Microcontroller:

ATmega328Operating Voltage: 5VInput Voltage (recommended): 7

-12VInput Voltage (limits): 6_20VDigital I/O Pins: 14 (of which 6 provide

PWM output)Analog Input Pins: 6DC Current per I/O Pin: 40 mADC Current

for 3.3V Pin: 50 Ma Flash Memory: 32 KB of which 0.5 KB used by

Boot loader SRAM: 2 KB (ATmega328)EEPROM: 1 KB (ATmega328)Clock

Speed: 16 MHz.

Power

The Arduino Uno can be powered via the USB connection or with an external power supply. The power source is selected automatically

Memory

The ATmega328 has 32 KB (with 0.5 KB used for the boot loader). It also has 2 KB of SRAM and 1 KB of EEPROM.

Input and Output Each of the 14 digital pins on the Uno can be used as an input or output, using pin mode, digital write, digital read functions. They operate at 5 volts. Each pin can provide or receive a maximum of 40 mA and has an internal pull-up resistor (disconnected by default) of 20-50 k Ohms. In addition, some pins have specialized functions.

IV. HARDWARE AND SOFTWARE REQUIREMENTS

Table:4.1 Hardware and Software requirements

HARDWARE REQUIREMENT	SOFTWARE REQUIREMENT
Arduino Uno. **PIR Sensors.** **Buzzer.** **Bread Board.** **Header Connectors.** **Led.**	**Arduino Uno IDE**

VI. CONCLUSION

The future implications of the project are very great considering theof time and resources it saves. The project we have undertaken can beas a or as a base for realizing a scheme to be implemented inprojects greater level such as weather forecasting, temperature ,device synchronization, etc. The project itself can be modified to

a complete Home security System which will then create a platform foruser to interface between himself and his household.

After reviewing the possible solutions, my team decided to useto make this project. According to the advantage of ARDUINO over other methods, we made this decision.

The project we have undertaken has helped us gain better perspective various aspects related to our course of study as well as practicalof electronic equipment and communication, we became familiar with analysis, designing implementation, testing and maintaining concerned our project.

The extensive capabilities of the system or what make it so from the convenience of a PIR sensor, A user is able to control and virtually any electrical devices. This makes it possible for user to rest that their belongings are secured and that television and other appliances was not left running when they left the house to just list a of the many uses of the systems.

Thus, we have designed a home security alarm system using Arduino PIR motion sensor, which is handy, portable, cost-effective and highly as well. Such alarm systems are hugely in demand for security purposes, thus the given system can be proved useful and effective in view of above features.

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