Design and Implementation of Bluetooth Based Industrial Automation

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ABSTRACT

The paper Design and Implementation of Bluetooth Based Industrial Automation is used to control the circuit from a short distance during fire accidents .In this project we are using microcontroller, LDR ,flame sensor, Bluetooth sensor. Microcontroller is used to control the entire device by giving the commands. The project presents the design and implementation of low cost but a flexible and secure Bluetooth based industrial automation system. The communication between the cell phone and Arduino Bluetooth board is wireless.

KEYWORDS: *microcontroller, LDR, flame sensor, Bluetooth sensor, Arduino Bluetooth board is wireless*

INTRODUCTION

Automation is a technique, method, or system of operating or controlling a process by electronic devices with reducing human involvement to a minimum. The fundamental of building an automation system for an office or home is increasing day-by-day with numerous benefits. Industrialist and researchers are working to build efficient and affordability automatic systems to monitor and control different machines like lights, fans, AC based on the requirement. Automation makes not only an efficient but also an economical use of the electricity and water and reduces much of the wastage. Automation is another important application of wireless technologies like Bluetooth. It is the monitoring of the energy consumption and the Controlling the environment in buildings, schools, offices and museums by using different types of sensors that control lights, temperature. To make it more operative and efficient, cost is reduced by low cost communication technology like Bluetooth. Bluetooth is nice technology to use in home automation. This technology allows to the users instantaneous connections of voice and information between several devices in real time. The way of transmission used assures protection against interferences and safety in the sending of information in arrange up to 100 meters. Building upon this theme; we propose a home. Automation system based on Bluetooth technology available in Android smart phones. Implemented design are considering few issues for smart home automation.

They are: Easy setup, Easy to control and monitor, Low cost and efficient communication. Our paper presents Bluetooth based centrally controlled home automation system using smart phones and Arduino Uno board. Such a system will enable users to have control over lights, fan in his home with Bluetooth. All that the user needs is an Android smart phone even then the structures are claimed to withstand speeds of up to 110 mph.

These provide additional energy which are stored to charge the batteries connected to lightening system.

A. PAPER OVERVIEW

The objective of this project is to create an industrial automation that will helps This system is designed to be low cost and scalable allowing variety of devices to be controlled with minimum changes to its core. Password protection is being used to only allow authorized users from accessing the appliances at home.

B. PROJECT FEATURES

All sensor are connected to the microcontroller. Microcontroller will receive the inputs from the LDR sensor

and flame sensor and it gives the command to the Bluetooth sensor. The device which is connected to the Bluetooth will receive these commands and we give the instructions to the microcontroller to perform the specific duty.

The LDR sensor and flame sensor are only receives the input and transfer to the microcontroller and these sensor cannot perform any task. The main task of these sensor is to receive the input. But Bluetooth sensor will perform both input and output task. They will receive the input from the microcontroller and transfer these commands to the device which is connected and receive the commands from the device and send these commands to the microcontroller.

Microcontroller is the heart of the device because it receives the inputs from the LDR sensor and flame sensor and gives the commands to the Bluetooth sensor. Then it receives the inputs flame sensor and gives the commands to the Bluetooth sensor. Then it receives the input.

Lights which are connected to the microcontroller will receive the power when light rays falling on the LDR sensor are less or dark and it will be turned off when light are sufficient. Security system will be activated when it receives the signal from microcontroller. Microcontroller gives the signal only when the flame sensor detects the fire. All these commands can be controlled through Bluetooth from short range.

Technology is a never ending process. To be able to design a product using the current technology that will be beneficial to the lives of others is a huge contribution to the community. This paper presents the design and implementation of a low cost but yet flexible and secure cell phone based home automation system. The design is based on a standalone Arduino BT board and the home appliances are connected to the input/ output ports of this board via relays. The communication between the cell phone and the Arduino BT board is wireless.

WORKING PRINCIPLE
The flame sensor used in the project has one flame detecting light placed at the front of the sensor. Initially the temperature of the sensor is at low but when it detects the flames the temperature of the sensor is increased and it sends a signal to the microcontroller and activated the security system. The other sensor used in the project was LDR when the intensity of the light is sufficient it will not be activated. When the intensity is low then LDR is activated and turns on the lights. It automatically turns off the lights when the intensity of the light is high. The flame sensor and LDR sensors are used in the project. The working of the flame sensor is the light placed at the front of the sensor is used to detect the flames. When the fire is placed front of the sensor then flame sensor detects the flame and it sends the signal to the microcontroller. The LDR is used to detect the intensity of the light
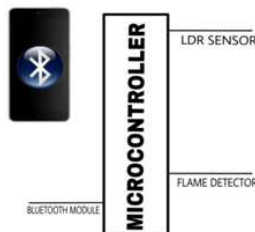
A. Block Diagram:

Fig.1. Block diagram of proposed system

First supply is given to the circuit and then connect the circuit to phone through Bluetooth

B. WORKING OF DIFFERENT SENSORS
Working of Bluetooth:
The Bluetooth sensor used in the project is HC-Bluetooth MODULE. The purpose of the Bluetooth is to send and receive the commands from the phone and microcontroller. It receives C the commands from the microcontroller and sends to the phone, and receives the commands from the phone and sends to the microcontroller.

C. Working of Flame Sensor:
This sensor is connected to the microcontroller. The flame sensor is used to detect the fire flames any occur in the building or industry etc. If flame sensor detects the any flames then it sends signals to the microcontroller to activate fire security system.

D. Working of LDR SENSOR:
The LDR is connected to the microcontroller. The main components of this sensor is to detect the intensity of the light and turn OFF/ON the lights. If the intensity of the light is high the lights will be turned off 0.

E. Working of Microcontroller:
A microcontroller is a compact integrated circuit d to govern a specific operation in an embedded system. A typical microcontroller includes a processor, memory and input/output (I/O) peripherals. Sometimes referred to as an embedded controller or microcontroller unit (MCU), microcontrollers are found in vehicles, robots, office machines, medical devices, mobile radio transceivers, vending machines and home appliances among other devices.
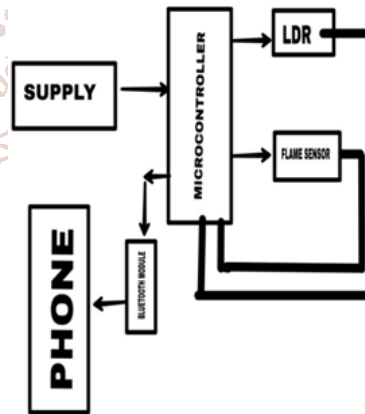
HARDWARE IMPLEMENTATION

Fig.2. Schematic Diagram

Overall view of the Kit

Fig.3. showing the result controlling the Automation With phone using Bluetooth

Conclusion:

The paper acknowledged and came to know that we can control the industrial security system and lights But in this paper we use Bluetooth modem. We can control the circuit from a short range. This feature is adopted in many industries and various places. We can avoid the damage to the people in case of fire accidents by Bluetooth or GSM modem.

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