FIRE FIGHTING ROBOT

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ABSTRACT

The main aim of this project is to build a fire fighting robot using BLUETOOTH. The Robot can be moved in all the four directions (front, back, left and right) through predefined keys assigned in the android application. The controlling device of the robot system is arduino Microcontroller. Android mobile with blue tooth, Bluetooth module, water spray, DC motors are interfaced to arduino Micro controller. The controlling device for the robotic controlling in the project is a arduino Microcontroller. The data sent from Android mobile phone over blue tooth will be received by Bluetooth module connected to arduino Microcontroller. Microcontroller reads the data and decides the direction and operates the DC motors connected to it accordingly. The system also controls the fire extinguisher when the fire was detected. An embedded system is a combination of software and hardware to perform a dedicated task. Some of the main devices used in embedded products are Microprocessors and Microcontrollers.The project "**Fire fighting robot**" using arduino microcontroller is an exclusive project which is used to design a control the robot using wireless technology through Bluetooth.

I. INTRODUCTION

Our task is to design and build a prototype system that could autonomously detect and extinguish a fire. Also aims at minimizing air pollution. It is the Robot that can move through a model structure, find a lit candle and then extinguish it with help of a blowing technique. Our research paper describes the design of a small autonomous Fire Fighting Robot. We have worked on the same project at our college presenting a synopsis showing its basic construction and working. The Fire Fighting Robot is designed to search for a fire in a small floor plan of a house of the specific dimensions, extinguish the fire with the help of the front fan of a toy hovercraft, and then return to the front of the house. The fire detection to be put into use is relatively free of false alarms, it is anticipated that it will not overreact in non-fire simulations. This mission is divided into smaller tasks, and each task is implemented in the most efficient manner such as self autonomous start of the robot, navigation of the robot in every room step by step, finds the fire in a specific room, approaches the fire at a very fixed distance, extinguishes it and finally returning to the front of the house.

II. LITURATURE SURVEY

Fire Extinguishing Robot

Fire is like a double-edged sword. Discovery of fire stands as a milestone in the history of mankind. Fire fighters try their best to fight and extinguish fires when in need. But at the household level, it is observed that if the fire can be extinguished at an early stage, many major accidents can be averted. The aim here is to build a fire extinguishing robot that can help in-case fire breaks out.

Veselý, "Implementation of Micromouse Class Robot".

This article has probed an innovative conversion from micromouse competition to a systematic curriculum design that integrates practice with theory. Micromouse competition is an event where small robot mice are designed to solve a 16×16 maze. The process includes multi-disciplinary knowledge such as electrical and

computer engineering, mechanical engineering and algorithm design. Limited by the competition rules, micromouse is easy to learn but difficult to master, which provides a high suitability with the teaching processes of foundation courses of embedded system for undergraduate students.

Fire-Extinguishing Robot Design by Using Arduino Abdülkadir ÇAKIR1 , Nyan Farooq Ezzulddın EZZULDDIN2

The aim of this thesis is to contribute to the development of automation systems and to design an unmanned fire extinguisher robot. By this purpose, an attempt was made to develop a mobile robot in order to detect fires (simulated with fire, candle) that could occur In a closed environment. The robot can move on the specified route without being caught in the obstacles, and conducts a fire scan as it moves.

III.   METHODOLOGY

REGULATED POWER SUPPLY:

Power supply is a supply of electrical power. A device or system that supplies electrical or other types of energy to an output load or group of loads is called a power supply unit or PSU.

AURDINO MICRO CONTROLLER:

We use the Arduino UNO to bootload the ATmega328 that is sitting on the Arduino-on-a-Breadboard. This is fairly straightforward having an ATmega328P-PU, but needs an extra step for an ATmega328-PU.

BLUETOOTH MODULE:

The Bluetooth module HC-05 is a MASTER/SLAVE module. By default the factory setting is SLAVE. The Role of the module (Master or Slave) can be configured only by AT COMMANDS.

CRYSTAL OSCILLATOR:

It gives the lowest power consumption, but is not capable of driving other clock inputs, and may be more susceptible to noise in noisy environments. C1 and C2 should always be equal for both crystals and resonators.

FIRE SENSOR:

FIRE SENSOR Module is sensitive to the flame, but also can detect ordinary light. Usually used as a flame alarm.
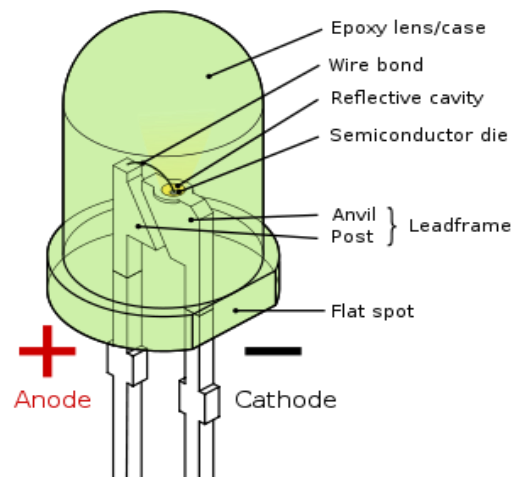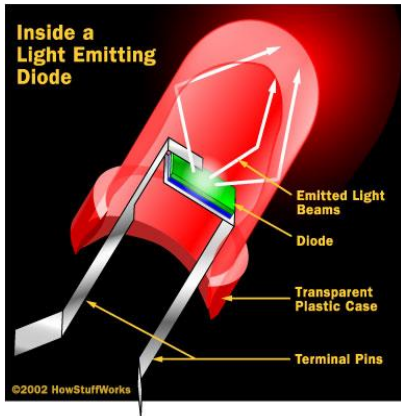
DC MOTORS:

A dc   motor uses electrical   energy to produce mechanical energy, very typically through the   interaction   of magnetic   fields and current-carrying conductors.
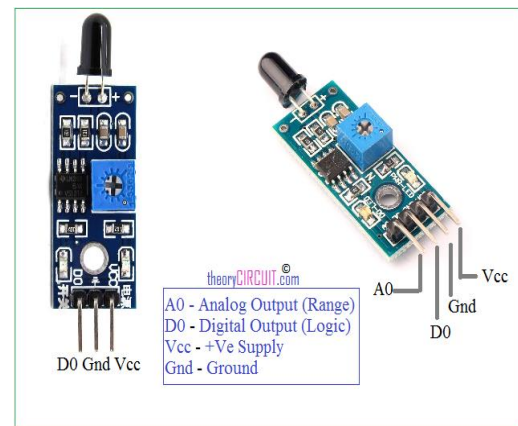
LED:

A light-emitting diode (LED) is a semiconductor light source. LEDs are used as indicator lamps in many devices, and are increasingly used for lighting.
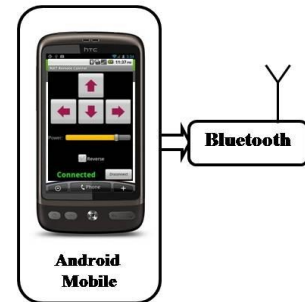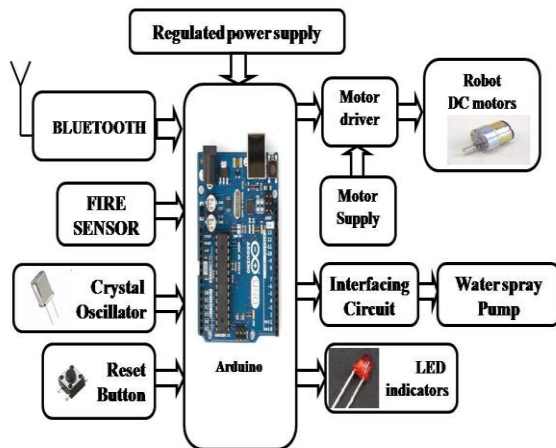
Parts of a LED Inside a LED

accessed from a remote location using an IoT server. To enable the communication between the all the component and the IoT server programming is required. Necessary programming has done to realize this research

Block diagram of transmitter section of FIRE FIGHTINH ROBOT
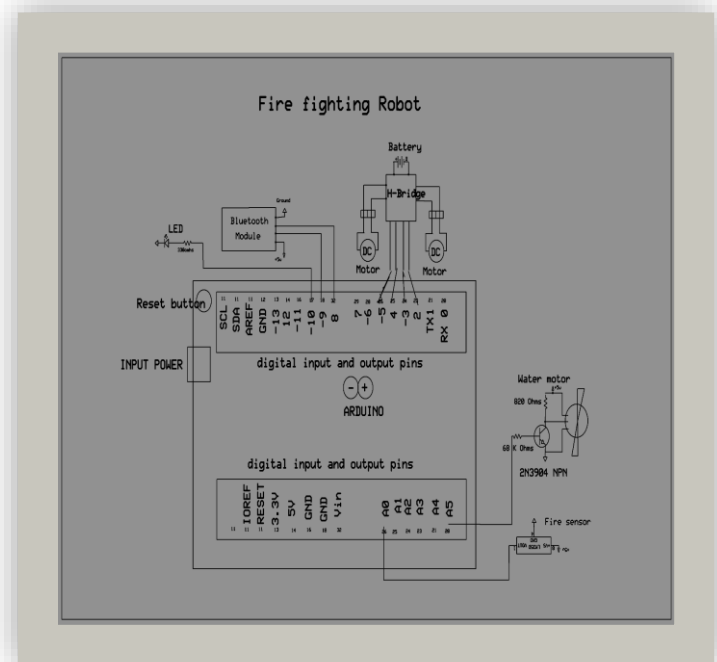

BLOCK DIAGRAM OF FIRE FIGHTING ROBOT

IV.   RESULTS AND DISCUSSION

The project "**FIRE FIGHTING ROBOT**" was to design Robot which was controlled through Android phone over BLUETOOTH technology. The Robot can be moved in all the four directions (front, back, left and right) through predefined keys assigned in the android application. The ROBOT can be moved towards the required direction. When the fire was detected by fire sensor the arduino controller gets on the water sprinkler through relay driver.

IoT based firefighting robot designed to detect fire or harmful gas in a certain area and send a signal to the operator. To implement this function, we need to integrate different sensors and systems together. Design and construction of this robot involve usage and integration of Arduino, GSM modem, MQ6 gas sensor, LM35 temp sensor, IR sensor, L293D motor driver and DC motors. All these components are mounted on a motor chassis. This robot is

V.   CONCLUSION

The unique vision of the concepts which are used in this particular field. It aims to promote technology innovation to achieve a reliable and efficient outcome from the various instruments. Experimental work has been carried out carefully.

The result shows that higher efficiency is indeed achieved using the embedded system. With a common digitalized platform, these latest instruments will enable increased flexibility in control, operation, and expansion; allow for embedded intelligence, essentially foster the resilience of the instruments; and eventually benefit the customers with improved services, reliability and increased convenience. The day is not far when this technology will push its way into your house hold, making you more lazy. This paper presents the major features and functions of the various concepts that could be used in this field in detail through various categories. Since this initial work cannot address everything within the proposed framework and vision, more research and development efforts are needed to fully implement the proposed framework through a joint effort of various entities.

VI.   REFERENCES

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