

Fire Fighting Robot

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Abstract: The purpose of this these is to contribute to the development of automation systems and to design an automatic fire Fighting robot. By this purpose, an attempt was made to develop a mobile robot in order to detect fires that could occur in a closed environment. Designing robot able to move by using the motor drivers, find the flame, and extinguish the fire, and it progresses in conjunction with the search for the fire to control, when it founds the fire and all of this is controlled by the microcontroller (Arduino). The robot can move on the specified and conducts a fire scan as it moves. By using the microcontroller module on it evaluates the data in the direction of the software and performs flame detection, actuation, and extinguishing processes.

Keywords: Fire-Fighter, Robot, Microcontroller, Automatic

INTRODUCTION

According to National Crime Records Bureau (NCRB), it is estimated that more than 1.2 lakh deaths have been caused because of fire accidents in India from 2010-2014. Even though there are a lot of precautions taken for Fire accidents, these natural/man-made disasters do occur now and then. In the event of a fire breakout, to rescue people and to put out the fire we are forced to use human resources which are not safe. With the advancement of technology especially in Robotics it is very much possible to replace humans with robots for fighting the fire. This would improve the efficiency of firefighters and would also prevent them from risking human lives. Today we are going to build a Fire Fighting Robot using Arduino, which will automatically sense the fire and start the water pump. In this project, we will learn how to build a simple robot using Arduino that could move towards the fire and pump out.

II. RELATED WORK

Fire fighting is the act of extinguishing destructive fires. A fire fighter must be able to stop fire quickly and safely extinguish the fire, preventing further damage and rescue victims to a safer location from the hazard Technology has finally bridged the gap between fire fighting and machines allowing for a more efficient and effective method of fire fighting Robots were developed .In real life, destructive burnt area often happens without our realization. Therefore, this type of robot will require a high demands in the market because of its usefulness to the human as well as the environment. To find a fire, before it rages out of control. The robots could one day work with fire fighters in reducing the risk of injury to victims. To simulate the dangerous fire fighting works. Arduino is an open-source platform used for building electronics projects. Arduino consists of both a physical programmable circuit board and a piece of software, or IDE (Integrated Development Environment) that runs on your computer, used to write and upload computer code to the physical board. The arduino platform has become quite popular with people just starting out with electronics, and for good reason. Unlike most previous programmable circuit boards, the arduino does not need a separate piece of hardware (called a programmer) in order to load new code onto the board – you can simply use a USB cable. Additionally, the arduino IDE uses a simplified version of C++, making it easier to learn to program. Finally, arduino provides a standard form factor that breaks out the functions of the micro-controller into a more accessible package. The infrared flame sensor can detect flame or wavelength of light source within 760nm 1100nm. Lighter flame can be detected from the distance of 80cm, greater the flame, further the test distance. Relay's driver is used to switch ON or OFF the RELAY. Arduino will send data to the base of transistor. If base of transistor is at zero volts then transistor is off and relay is in de-energized condition. Therefore NO contact remains NO. If base of transistor is at +5 volts then transistor is ON and current flows through transistor as well as relay. Therefore relay is in energized condition. Therefore NO contact will become NC. We are using transistor BC547 as relay driver as well as buzzer driver.

I. Existing System

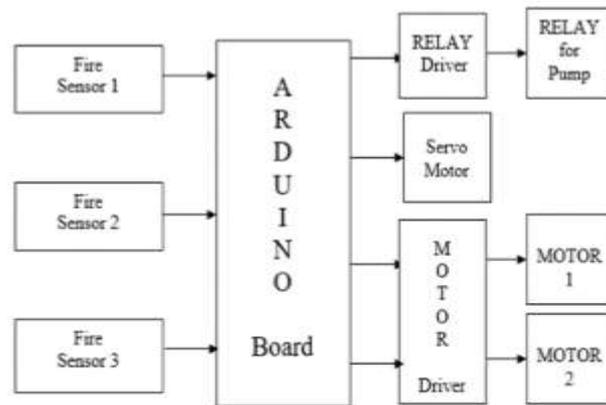
. The current fire extinguisher robots are basically human dependent system. One has to take the control of robot. The process of taking control and giving instructions to robot is time consuming and not safe for the person controlling it. In case the fire gets out of control and is no more controllable by robot it could put the life of the person who is controlling robot in danger. The existing systems either uses fans or depend upon an external source to extinguish fire and they uses smoke detectors which are useful but not highly reliable. This project implement a smart firefighting robot system (LAHEEB) which designed to detect the source of fire, extinguish it and increase the knowledge about fire behaviour from the incident area. The whole system is programmed using an Arduino UNO board (ATmega328P microcontroller) which forms the brain of the system. It has term that has since been or undesirable.

II. Proposed system

* The purpose of this project is to design, build, and test a robot capable of extinguishing building and basement fires and effectively replacing a fire fighter in highly dangerous situations.

- * The implementation of this robot will increase the safety of fire fighters and therefore help mitigate deaths from unsafe conditions.
- * The whole and sole purpose behind making this robot is to ease the human workload.
- * This will help people to easily prevent the fire without any problems. The whole and sole purpose behind making this robot is to ease the human workload.
- * This will help people to easily prevent the fire without any problems. Our robot can be integrated with a smart phone application (Bluetooth), where you can keep the track of the robot in your smart phone itself.

I. Proposed System



III. Conclusion

This project presents a fire fighting robot using RF communication and it is designed and implemented with AT Mel 89S52 MCU in embedded system domain. The aim was develop a system that can detect and extinguishes the fire. In this project, resources used are micro controller and motor control with reductive motor, flame detection using infrared flame sensor. Experimental work has been carried out carefully. This project is been implemented by using android application and web server. The water container is placed on the robot when the fire is detected, it sprays the water on the fire and extinguish it. This project presents the design and the implementation of a fire fighting robot that moves towards the fire and pump out water to extinguish the fire. A memory can be used as to maintain logs of the fire incident. The sensors have a limited field of detection, this can affect the capability of the system. he robot can operate in the environment which is out of human reach in very short time, the delay employed is very minimal. The robot accurately and efficiently finds the fire and within minimum time after the fire is detected it is extinguish. This system"fire Fighting robot" is capable of being used in everyday life with little study and adaptation. This can be easily used in closed parking lots, supermarkets, stores, shop

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