Research Paper

Voice Operated Intelligent Fire Extinguisher Vehicle Using Smart Phone

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ABSTRACT: *Voice Operated Intelligent Fire Extinguishing Robotic Vehicle can be controlled by Bluetooth communication. This Project demonstrates the research and implementation of Voice Controlled Intelligent Fire Extinguishing Robotic Vehicle. The vehicle is controlled through User Voice Command. The voice input allows a user to interact with the robot which is familiar to most of the people. It can also sense the temperature which has self-defensive ability so that there will be no more harm to the robot. The advantages of speech activated robots are hands-free and fast data input operations. The voice commands navigate the robot in the required direction and the outlet of the water pump can be controlled. The medium of interaction between humans and Robotic Vehicle is through the Bluetooth App Software.*
KEYWORDS: *Fire source detection ,Voice Navigation, Sensors, Fire extinguishing, Bluetooth ,Robot.*

I. INTRODUCTION

Putting out fires and save is perceived as a dangerous mission. Fire contenders confront hazardous circumstances when quenching fires and safeguarding casualties, it is an unavoidable part of being a fire warrior. Interestingly, a robot can work independent from anyone else or be controlled from a separation, which implies that putting out fires and protect exercises could be executed without putting fire warriors at hazard by utilizing robot innovation. At the end of the day, robots diminish the requirement for flame contenders to get into unsafe circumstances.

So if a robot is used instead, which can be controlled from a distance or which can perform actions intelligently by itself, which will reduce the risk of this task of fire fighting. Robot is a mechanical device that is used for performing tasks that includes high risk like fire fighting. There are many types of robots like fixed base robot, mobile robot, underwater robot, humanoid robot, space robot, medicines robot etc.

Fixed base robot has limited workspace due to their structure. Workspace of the robot can be increased by using a mobile platform. These type of robots are called mobile robots. Mobile robots are used in mining, military, forestry, security etc. Mobile robots can also be used for extinguishing fire in tunnels, industries, hospitals, laboratory and in homes A fire fighting robot will decrease the need of fire fighters to get into dangerous situations. Further the robot will reduce the load of fire fighters. It is impossible to extinguish fire and rescue many victims at a time of huge disaster. Robot technology can be very efficiently used in such cases to rescue much more victims. Thus robotics makes human life easier and safe as well as save a lot of time.

The rapid development in technology improves the tools and equipment used in firefighting. These advance tools and equipment can be more effective and efficient. Moreover, it reduces minimum risk level. This will also reduce the damages caused due to an fire incident. Android is based on Java programming language and is platform independent. Therefore it can be used in student projects. Android application is a program that can run on Android operating system and provide the required functionality to the user. The Android platform includes support for Wifi communication. Using the Wifi APIs, an Android application can scan for Wifi devices, connect to other devices, transfer data to and from other

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II.   II.EXISTING APPROACH

In Existing System, the robot was made to the following

To detect fire.

Remote controller.

Unidirectional movement.

Buzzer

[1]. In the first system it was purely dedicated towards detecting fire using sensor like LM35 and, Arduino Flame Sensors were used to detect the fire.

[2]. It gave an advanced feature of using remote controlled fire operated robot to check the fire area but this had some disadvantages

[3]. This robot was designed only to move in certain direction

III.   PROPOSED METHODOLOGY

S.NO	Hardware Names	Specifications
1	Raspberry Pi	Raspberry Pi 3 Model B+ is a quad -core, 64-bit processor and it is based on BCM2837B0,system-on-chip(SoC).
2	Bluetooth module	This is designed for wireless communication, it allows serial enabled devices to communicate with each other. It has 6 pins.
3	Fire sensor	The flame Sensor detect the presence of fire or flame based on the infrared (IR) wavelength emitted by the flame.The sensor detects the flame within the range of 760nm-1100nm.
4	Motor driver	L293D is a 16 pin IC which can control a set of two Dc motors simultaneously in any direction.
5	Web camera	Resolution: 480 pixels Frame Rate: 30 frames per second
6	DC Gear motor	Motor type: DC with Gear Box, Metal Gears. Shaft Type: Circular 6mm Diameter with internal hole for coupling, 23mm shaft length. Maximum Torque: 3Kg-cm at 12V.
7	Relay	Break down Voltage: 300V peak Carry Current : 1.0 Amps Switch speed: 1ms
8	12v Battery	Voltage: 12V Initial Current :0.88A
9	DC Water pump	Operating Current : 130 to 220 mA Operating Voltage : 12v Flow Rate : 80 to 120(L/H)

In this project we are using Bluetooth App to give voice commands so that the robot will move according to the commands given. Power supply is given through 12V battery.   The Motor driver will trig and make DC Motors to run according to the commands given. If it finds any fire then the camera will capture the video and send to the mail and start water
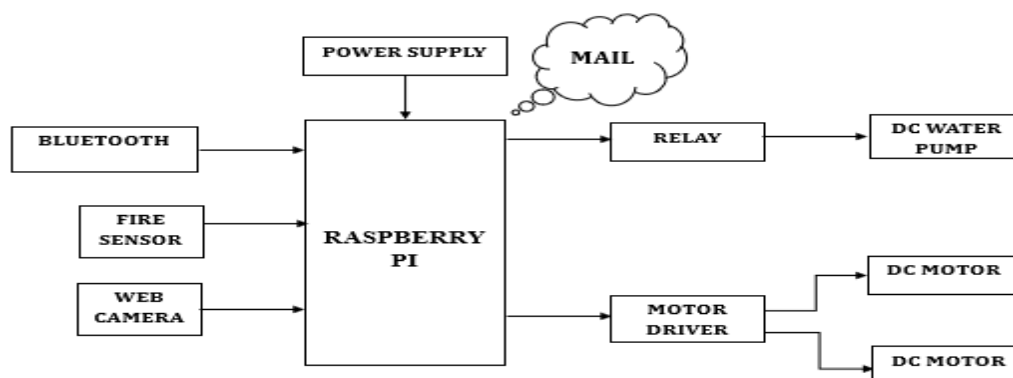

Figure 1. Block Diagram of proposed system

In Figure 1, Power supply is given through 12V battery. The Motor driver will trig and make DC Motors to run according to the commands given. If it finds any fire then the camera will capture the video and send to the mail and start water pump in that place. This concept helps to generate interest as well as innovation in field of robotics while working towards a practical and obtainable solution to save lives and mitigate the risk of property damage.
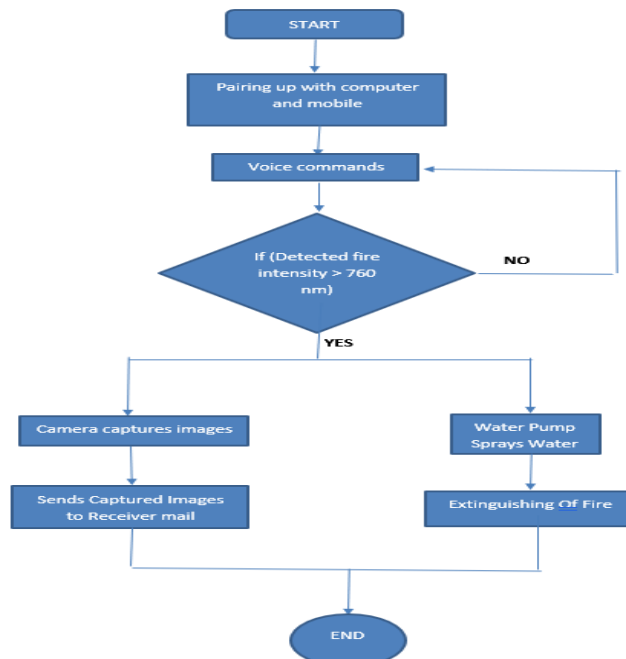
Figure 2. Flow chart of proposed system

IV.   ADVANTAGES

This particular system has following advantages
1. It is used in hazardous places at.
2. Live image of the incident can be seen through camera.
3. Can be used in record maintaining rooms where fire can cause loss of valuable data.
4. Can be used in server rooms for immediate action in case of fire.
5. Useful in controlling fire at extreme places where human being cannot reach

V.   FUTURE SCOPE

The project has been motivated by the desire to design a system that can detect fires and take appropriate action, without any human intervention. The development of sensor networks and the maturity of robotics suggests that we can use mobile agents for tasks that involve perception of an external stimulus and reacting to the stimulus Even when the reaction involves a significant amount of mechanical actions.

This provides us the opportunity to pass on to robots tasks that traditionally humans had to do but were inherently life-threatening. Fire-fighting is an obvious candidate for such automation. Given the number of lives lost regularly in fire- fighting, the system we envision is crying for adoption. Our experience suggests that designing a fire-fighting system with sensors and robots is within the reach of the current sensor network and mobile agent technologies. Of course, this project has only scratched the surface.

As in the design simplifications and the implementation constraints in suggest, our project is very much a proof-of-concept. In particular, a practical autonomous fire-fighting system must include a collection of robots, communicating and cooperating in the mission; furthermore, such a system requires facilities for going through obstacles in the presence of fire, and ability to receive instructions on-the fly during an operation. All such concerns were outside the scope of this project
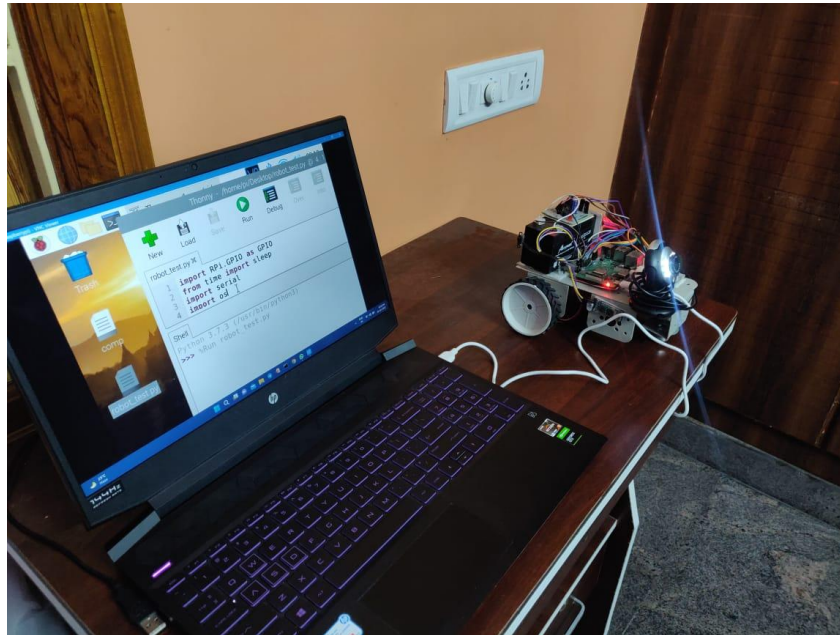
VI. RESULTS

Figure. setup of the system

Figure. Working of project

VII. CONSLUSION

We have proposed and executed Voice Controlled Intelligent Fire Extinguishing Robotic Vehicle. A fire extinguisher vehicle is a device which is used to extinguish or control fires often on critical situations. Based on the design principles and requirement, a prototype of the system for Voice Controlled Intelligent Fire Extinguishing Robotic Vehicle has been developed and implemented.

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