Android Controlled Fire Fighting Robot

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Abstract- *The objective of the project is to make fire fighting robot that will ease the work of fireman in case of violent fires. At places where it is difficult for humans to enter due to fire, the robot can be used to extinguish fire. The process of fire extinguishing is automated at low cost and using an easy to operate system. The robot is equipped with water tank, automatic sprinkler, camera, and bluetooth module.*

Keywords- Arduino, Ultrasonic Sensor, Temperature sensor, Bluetooth module, Auto sprinkler, Camera Movable pipes
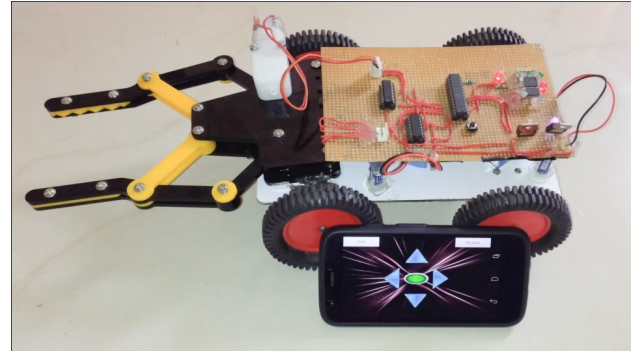
I. INTRODUCTION

Our proposed project aims to develop an android controlled fire fighter robot that can be used to extinguish fires through remote handling. The vehicle consists of a water tank along with a pump which can throw water when needed. The system uses an 8051 microcontroller for this purpose.

The android device is used as a transmitter to send over controlling commands to the vehicle. The android device provides a good touch based gui for controlling the robotic vehicle.

The Bluetooth receiver on the vehicle is used to receive those commands sent by the android device. These are then fed to the motors responsible for controlling the vehicle movements in front, back, left and right directions.

The Bluetooth receiver is interfaced with an 8051 microcontroller for this purpose. The microcontroller after receiving input commands, operates the motors through a driver IC for vehicle movements.

The use of android has one more advantage in addition to improved GUI. It allows use of Bluetooth technology for communication allowing the vehicle to operate in a good range from the device. The system can also be later enhanced through the use of a wireless camera to be used for monitoring purposes.

Fig:Fire Fighting Robot

II. RELATED WORK

A **gas detector** is a device that detects the presence of gases in an area, often as part of a safety system This type of equipment is used to detect a gas leak or other emissions and can interface with a control system so a process can be automatically shut down. A gas detector can sound an alarm to operators in the area where the leak is occurring, giving them the opportunity to leave. This type of device is important because there are many gases that can be harmful to organic life, such as humans or animals.

Gas detectors can be used to detect combustible, flammable and toxic gases, and oxygen depletion. This type of device is used widely in industry and can be found in locations, such as on oil rigs, to monitor manufacture processes and emerging technologies such as photovoltaic They may be used in firefighting

Arduino Board:

Arduino is a computer hardware ,software company, project, and user community that manufactures microcontroller kits for building digital devices and interactive objects that can sense and control objects in the physical world. Arduino boards are accessible commercially in preassembled. The Arduino project provides an IDE (integrated development environment) based on the Processing language project.

Ultrasonic sensor:

ultrasonic sensor provides an easy method of distance measurement. This sensor is perfect for any number of applications that require you to perform measurements between moving or stationary objects.

Interfacing to a microcontroller is a snap. A single I/O pin is used to trigger an ultrasonic burst (well above human hearing) and then "listen" for the echo return pulse. The sensor measures the time required for the echo return, and returns this value to the microcontroller as a variable-width pulse via the same I/O pin.

III. HARDWARE IMPLEMENTATION

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IV. CONNECTIVITY

Bluetooth :

Bluetooth is for the wireless communication between Android mobile and Robot. The Bluetooth is for the GPS receiver.for using Bluetooth controlling the robot for the various action.

V. PROPOSED SYSTEM

The robot will enter the room where there is fire and will detect the fire in the room.It will move automatically in the room and look for fire. The robot will automatically avoid

the obstacles in the way. When fire will be detected the sprinkler will turn on and fire will be put off. The water tank will be present with the robot. The pipe can turn through 90 degree so that it can be used efficiently for fire extinguishing. The camera on the robot will help fireman to guide the robot through the room.The robot can also be controlled by fireman through android phone externally.In the application Obstacle detection Module for the Check whether there is obstacle in front of the robot. If obstacle is within the certain range then stop the robot.When the Fire detection Module is for the robot will move in the room and detect the fire.If the temperature at certain place is more than the threshold set then start the water sprinkler..Else detect the fire inside the room.the Fireman Module When the robot will be moving inside the room it can be controlled by the fireman using android phone.When obstacle detected the robot will be guided by the fireman where to move.The camera on the robot will allow fireman to analyze the situation and turn the pipe of water sprinkler.
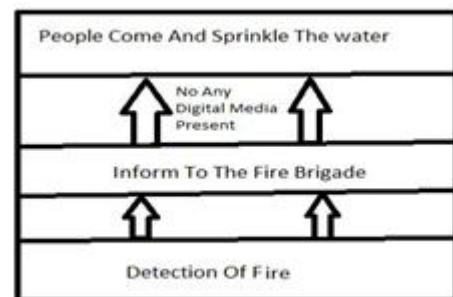

Fig:Proposed system

VI. CONCLUSION

Thus we will be developing a robot which will be used for fire-fighting purpose. This proposes a great chance for automation and will be useful at places where human cannot reach or is dangerous.

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