Cell Phone Controlled Robot With Fire Detection &Fire Fighting

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Abstract

Spy robot is used for spying on the specific target. It comes in automatic and manual control obstacle detection, is one of the feature of this robot including temperature detection. As it's a spy robot the size of the robot is smaller than other robots but it is not the smallest robot. We have used android phone as a camera and another android phone as a monitor to watch and control robotautomatically.

The robotic vehicle can be easily operated from any android device. It provides a good user interface for handling the vehicle. The android device can operate the vehicle at a good Bluetooth communication range. The Bluetooth receiver at the vehicle is used to transmit control movement data from app to vehicle.. We also provide temperature sensor to senses real time temperature and provide output in application. Such type of application mostly used in military system or any high temperature system to detect there situation.

Keywords

Atmega 328 , Blue-tooth module HC- 05, Firefighting Robot, Android studio.

1.INTRODUCTION

These days machines have turned out to be fundamental parts of human life and robots are composed so as to limit the inconveniences in this manner making life simple. Robots are utilized as a part of assortment of fields keeping in mind the end goal to limit the challenges like medicinal, space investigation, submerged investigation, protection and humanoid robots. The Fire extinguishing robots are one of them which were intended to supplant people from any sort of dangers. PDAs are cell phone based on a portable processing stage, with cuttingedge figuring and network highlights. These are substantially more moderate and viable to use in nowadays thus there are greater headway in cellphone innovation. Step by step people are investigating better approaches to convey and control machine since their dominant part of day by day life manages machines. Current advanced mobile phones are implanted withdifferent sorts of sensor like accelerometer, whirligig, vicinity sensor, light sensor and so on and fueled by different working framework likeapple IOS, Blackberry OS, Windows OS, BADA, Symbian, Android, Web-OS and so forth. Among them Android utilization is exceptionally basic nowadays in versatile world. For association advanced mobile phones have Wi-Fi module, Bluetooth modules. We are focusing on this correspondence module keeping in mind the end goal to convey and control our portable robot most especially bluetooth. Here information are exchanged serially to our putting out fires versatile robot by means of bluetooth correspondence module which is now introduced on advanced mobile phones utilizing an android application. In view of

the got information the controller plays out a specific activity suitable to the information got.

Our inspiration to chip away at this task originated from war fields where human can't go in remote territory and keep an eye on adversary or else some perilous circumstance, for example, fire. There can likewise be where human can't go where temperature is greatly low(- 600c) or high(107.9F).So we need to outline a government operative robot which can spy in remote territories and sense temperature and transmit ongoing video by utilizing Wi-Fi or bluetooth innovation.

2.RELATED WORK

The main motive of the war spying robot was to make it user friendly. The spy robot can easily move, capture images and wirelesslytransmit them, thus giving the People intimation about the dangers and situations in the field. The robot is used for short distance surveillance thus ensuring the security of the region. This helps the forces to view the things accurately that are currently happening in the surrounding area and to plan ahead accordingly.

[1] A smart spy robot charged and controlled by wireless systems by M.Balakrishnan ,S. Gowthaman , S.P.Jaya Kumaran

Robot has some sensors like Humidity, Temperature, Ultrasonic and PIR. Humidity sensor senses the Humidity around the robot.While Temperature sensor senses the climate changes based on the numerical temperature value. The wireless charging system charges the battery in the robot and it gives the power to all the other modules. [1]

[2] Defence Surveillance Robot Based On RFand DTMF Technology by Gaurav Vashisht1 ,Rahul Dhod2

The project is to detect an object that is locatedat some distance within the range of RFtransmitter with wireless camera. This paperpresents Defense Surveillance robot (DSR) fordefense purpose that has metal and magnetic field detection sensor, LDR sensor for nightvision, fire detection sensor with pump motorto extinguish fire, IR sensors for path findingand obstacle avoidance, moisture sensor.[2]

War Field Spying Robot and Fire Extinguisher with Wireless Night Vision Camera by Rajshree Nikhare, Prof. S. Raut,Prof. Raman Bondare This robot can enter into enemy area and send us the information via night vision wireless camera in nights also. Fire sensor senses the firein rival attacks in the war field and quickly sends the signal to the fire extinguisher and water pump will turn on when required. [3]

3.PROPOSED SYSTEM

The robot and the android application are connected using Bluetooth. In the application there is Bluetooth connectivity option and in the robot it is bluetooth module which allows the robot to work.

4. BLOCK DIAGRAM AND WORKING

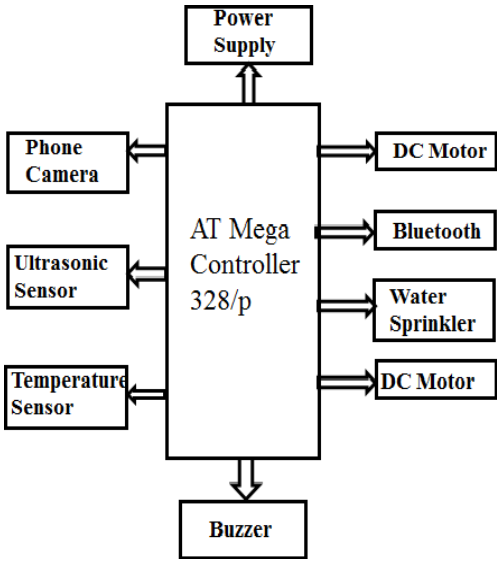

Fig 4. BLOCK DIAGRAM

A cell phone controlled robot with fire detection and fire fighting capabilities can be a very useful tool for both personal and commercial applications. Here is a basic working principle of how such a robot could operate:

Cell phone control: The robot can be controlled using a mobile app or a web-based interface. The user can remotely control the robot's movements and actions from their smartphone or computer.

Fire detection: The robot can be equipped with sensors such as temperature and smoke detectors to detect fires in the surrounding environment. These sensors can be used to identify the location and intensity of the fire.

Fire fighting: The robot can be equipped with a water tank and a spray nozzle that can be used to extinguish the fire. The robot can also be fitted with a fan that can be used to blow out the fire, depending on the situation.

Navigation: The robot can use its sensors and mapping technology to navigate through the environment and locate the fire.

Alerts: The robot can send alerts to the user's cell phone if it detects a fire, and provide real-time updates on the status of the fire.

Overall, a cell phone controlled robot with fire detection and fire fighting capabilities can be a very valuable tool for protecting homes and businesses from fires. It can provide an early warning system for detecting fires, and can be used to quickly extinguish the flames before they can cause serious damage.

4.1 MicrocontrollerATmega

Microcontroller ATmega 328\p – Microcontroller is an open-source electronicsprototyping platform based on flexible,easy-to- usehardware and software. In this system microcontrollers are used to control all the operations of the robot.

Fig4.1 MicrocontrollerATmega

4.2 Ultrasonic Sensor

Used for obstacle detection, when obstacle is detected it give this information to the controller and then robot goes back. Ultrasonic sensors measures distance without damage and are

easy to use and reliable.

Fig 4.2Ultrasonic Sensor

4.3Temperature Sensor

The robot's fire detection system comprises of a temperature sensor LM35. Here, the temperature sensor detects the temperature when there is fire, if the detected fire goes above the set temperature then the sensor analyzes that there is fire.

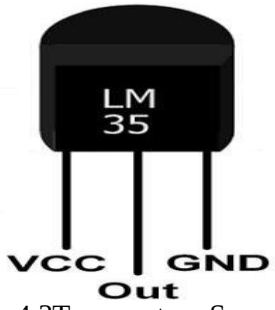

Fig 4.3Temperature Sensor

4.4 Blue-tooth module HC-05

It is based on serial port protocol which was designed for transparent wireless serial communication. Here we design a smart phone controlled LED using HC-05 Bluetooth module.

Fig 4.4 Blue-tooth module HC-05

4.5 Buzzer

It is used in coordination with temperature sensor. When the temperature sensor detects that the temperature has risen above the set level then the buzzer is activated. The buzzer makes a sound which informs that there is fire.

Fig 4.5 Buzzer

4.6 Stepper Motor

A stepper motor or step motor or stepping motor is a brushless DC electric motor that divides a full rotation into a number of equalsteps.

Fig 4.6 Stepper Motor

4.7 DC Motor

It is 12 volt .It converts direct current electrical energy into mechanical energy. It helps the wheels of the robot to move.A pump motor is used to pumpwater. It allows the water from the tank to travel through pipe and to extinguish fire.

Fig 4.7 DC Motor

4.8 Mobile Phone

To monitor what is happening inside the location where there is fire we plot a mobile phone on the robot which shows us the environment inside the field.

Fig 4.8 Mobile Phone

4.6 Software Module

Android Applications are generally created using JAVA language. There are different IDE's which have been utilized to develop the applications. Here we are utilizing Android Studio for making android based application. To help user manufacture some common features it enables grade based build system design, multiple .apk file generation, inbuilt code template of an applications. Debugging process of the android studio has improved a lot it incorporates methods like virtual.

Android AVD chief gives us the different versatile stages as an emulator keeping in mind the end goal to troubleshoot the code on different device configuration , screen size andresoultion for your application previews. These AVD administrators have Nexus 6 and Nexus 9 Emulators which has distinctive skins in light of different hardwares accessible in the market so it gives us an extensive variety of troubleshooting facilities.

It is used to create an application through which we can control the robot by givinginstructions.

The android IDE software is used to act as an interface between the robot and the application. It provides a connectivity using the Bluetooth.

Here, in the system we have used an already existing application 'Bluetooth Electronics'. This application controls an electronic project with an Android Device using Bluetooth HC-05. It has a large selection of controls available. A developer only has to use drag and drop properties and bring those controls to the panel grid.

5. CONCLUSION

At first you can switch on the robot button. Open the application on the mobile phone and connect its Bluetooth to robot (Bluetooth module HC 05).Place the camera on robot then we can connect the camera to handset through IP address and used it to see the situation in the fire field. It sense the temperature, if the temperature raised the limited temperature value then robot detects there is fire then robot take the action and sprinkles the water to extinguish the fire. When the robot detects as obstacle then robot take action and goes back.

5. REFERENCES

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