Transceiver Controlled Spy Robot

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Abstract: Our project proposes a robotic vehicle that can be controlled via wireless system of transceiver using radio frequency(RF) and Infrared frequency (IF) .The robotic vehicle may then be operated as desired as commanded through the receiver end of transceiver.This robot is designed with the best optimized architecture consisting of open source hardware ,, colour sensor which is used as a part of camouflaging feature of robot, ESP32 camera module and transceiver module.The transmitter part is connected to the robot and the receiver is with the user by which the person can control the robotic vehicle.Thus in this project our robot will be performing an important application of spying intruders by getting disguised in surrounding and detecting any proximity near it and sending the data to the user.
The proposed system consists of a wireless camera for live video streaming surveillance and it will also guard the area from any foreign access using proximity sensor.
Keywords: Transceiver, Sensors, Micro-controller, Colour sensor for Camouflage feature of robot, motor driver, motors.

I.   INTRODUCTION

IOT and Robotics is trending in today's world, taking technology to an entirely different level. The concept of the internet of robotics thing, where intelligent devices can monitor events, collect sensor data from a variety of sources, use the received data and artificial intelligence to determine the best course of action, and then act accordingly to take real action in the physical world. In the modern combat technique employed for various militant forces across the globe,stealth and ability to maneuver in inaccessible areas plays a key role.The idea of the proposed system is to use robots which are capable of disguising itself in order to infiltrate the enemy campsite.

The proposed robot can unobtrusively go into foe zone and send data through camera to the controller. one among the striking highlights of this robot is covering for example the camera catches the picture and along these lines the shade of the incorporating will be distinguished at the back end and predictable with that robot will change its shading. Because of this component the robot can't be handily distinguished by adversaries.

II.   LITERATURE REVIEW

International Journal of Research in Engineering, Science and Management , September-2020 .
As per our study, the explored frameworks utilized shading identification sensor which have an issue of distinguishing shading because of which had constraints over a specific range. Metal indicator and gas sensors were utilized which made the framework progressively perplexing. Those indicators and sensors are evacuated to diminish the heaviness of the robot. Additionally, the framework comprises TV tuner card which made the framework complex. So as to lessen the expense and unpredictability it is expelled. The point of designing cover is to make the identification and acknowledgment target trouble in the machine helped eye looking through objective in the large expansiveness foundation around. [3] The sensor switches every essential shading RGB, individually and checks what power of shading is reflected by the outside of location. This reflected power is changed over to 8-piece esteem. For instance, a RED surface will firmly reflect RED. While a Yellow surface will reflect RED and GREEN both. As per the enlistment rule of the three essential hues which make different hues in nature, when the estimation of three essential hues is affirmed, the shade of the tried article is known. Knowing the estimation of RGB assists individuals with picking up the shade of the light which is anticipated onto the sensor since each shading compare to just one estimation of RGB. [2] The proposed framework gives some assistance to our security powers in identification of gatecrashers. The robot can likewise be utilized in high elevation regions where human can't endure. Besides, the disguising highlight makes it hard to identify the robot by exposed natural eye. There is extension to improve the framework by arranging it with multicolor covering.

Outcome: Robot has of these input devices like color sensing camera, video feeding camera and obstacle sensor to gather all the specified data for processing. This data is then transmitted wirelessly to PC via Wi-Fi trans-receiver. Computer then does the processing of the received data using various algorithms for image processing. It determines the colour of background and transmits this data to robot. Through PC the user also can provide the movement commands to the robot. One among the important functions of PC is to display the live video feed received from the robot. All the transmission is completed serially using Wi-Fi trans- receiver. Robot can output the received color by changing the colour of LEDs covering the chasse. this is often done by turning on one among the three relays present on the robot. The PC using which we'll be ready
to handle the movement of the robot.

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 9 Issue VI June 2021- Available at www.ijraset.com

Yadnika Warang1 , Tejali Mahadik2 , Supriya Ojha3 , Asha Rawat4.Camouflage robot, Dec-16

Complete autonomous robot which can perform varieties of tasks is still under development. Therefore researches all over the world work towards the design and development of such robot, so as to simplify our work in various fields. A Robot based on RF technology used for spying in war field is developed. The new innovation added here that is color sensor. The color sensor senses the color according to surrounding environment and changes its color. So the robot easily changes its color and because of this feature the enemy can't easily predict the robot. Principle of Color Sensor: The color sensor has three primary colors i.e. RED, GREEN and BLUE. It senses the surface color and according to this changes its color that produces shade with combination of three primary colors RGB. The color sensor checks the reflection of color and produces that much intensity. Then reflected intensity is converted into 8-bit value. So by using color sensor surface color observed and change its color with help of combination of three primary color i.e. RED, GREEN and BLUE etc. so robot having new added property of changing color.

Outcome: Human life is always valuable, this robot can be the substitution of soldiers in war areas. The Camouflage robot can also be used in star hotels, shopping malls, jewelry showrooms, etc. where there can be threat from intruders or terrorists.

Tasneem Mohammed Yousif Wael Elmedany, Smart Mobile Robot Design with Real Time Applications, Research Gate, May 2017

This paper presents a software design and hardware implementation of smart mobile robot with real time applications. The presented mobile robot has several features; it has indoor and outdoor tracking systems, and smart detecting system that can detect different types of explosive gases. Besides that, the robot can analyze and display the percentage of the temperature, humanity and gases results in order to identify the danger points. The robot has an alarming system by sending instant notifications and reports to users. The robot can be controlled indoors using Bluetooth application or outdoors using GPRS and TCP/IP Protocol. Also, it provides a live video streaming using high resolution IP Camera. The prototype has been tested experimentally and the results are analyzed and discussed.

Outcome: In this paper smart mobile robot with real time applications has been presented and results are discussed. The Smart detector mobile robot is having the scope to protect the environment from danger situation and improve safety in business matters and see such organizations internationally as our entry point to our target market because in today's competitive marketplace, maintaining a high level of process and plant safety is a critical concern. Manufacturers can reduce costs by minimizing damage to equipment and eliminating incidents that impact people and the environment. At the same time, they can maintain a positive image as a company that is aware of its corporate responsibility and acts accordingly.

Tasneem M. Yousif, Aysha K. Alharam, ROBODEM Remote Monitoring System Using Web/Mobile Applications, WOTBD 2015.

This paper presents a remote monitoring system using website and mobile application for detecting explosive gases. The ROBODEM (ROBOT Detection Explosive Materials) system aims to develop a remotely controlled explosive gas detection system handled by a LEGO Mindstrom NXT robot. The main controller has been designed using Arduino UNO microcontroller. This robot comes with an IP camera for live video streaming, Gas detection system using MQ6 and MQ5 sensors, as well as GPS receiver for live tracking. This robot can be controlled either indoor using Bluetooth or outdoor using the Internet. The system provides information regarding ROBODEM such as sensors results, current location of the robot, current time and date. This system produces an alarm and a popup window appears in the website if there is leakage of explosive gases. ROBODEM has a live tracking of the robot's path that shown in Google map. The prototype has been tested experimentally and the results are analyzed and discussed.

Outcome: Robot can be controlled by android mobile, or through websites, it can go through areas not accessible to humans, live tracking, video streaming can be done, which make it useful in extreme conditions.

III.   PROPOSED SYSTEM

The main principle of the circuit is to detect the texture of the surroundings and adapt to the condition. The wireless robot is operated via a transceiver for the control of the robotic vehicle. Using the received data, robot is operated in the manual mode of operation.

In this project, control of robotic unit is from remote end and also we are able to get the videos from the robot end for the purpose of surveillance. Camera will send real time video and snapshots after a particular time interval, which could be seen on a remote monitor, and action can be taken accordingly. DC motors are being used for the movement of robotic wheels for camera movement i.e. upward and downward movement . The robot is surrounded by relay of LED's which turns ON when a color is detected and camouflages the robot.

IV. METHODOLOGY

In this project, control of robotic unit is from remote end and also we are able to get the videos from the robot end for the purpose of surveillance. Camera will send real time video and snapshots after a particular time interval, which could be seen on a remote monitor, and action can be taken accordingly. DC motors are being used for the movement of robotic wheels for camera movement i.e. upward and downward movement [2]. The robot is surrounded by relay of LED's which turns ON when a color is detected and camouflages the robot. Heart of our robot is NODEMCU ESP8266 module.

Here in our project we are using ESP8266 which has camera module through which we can perform live streaming and also process the sensors data.Robot has   of these input devices like color sensing camera, video feeding camera and obstacle sensor to gather all the specified data for processing. This data is then transmitted to PC via Wireless trans-receiver. It determines the colour of background and transmits this data to robot. Through PC the user also can provide the movement commands to the robot. One among the important functions of PC is to display the live video feed received from the robot. All the transmission is completed serially using Wireless trans- receiver. Robot can output the received color by changing the colour of LEDs covering the chasse. this is often done by turning on one among the three   relays present on the robot. The PC using which we'll be ready to handle the movement of the robot.
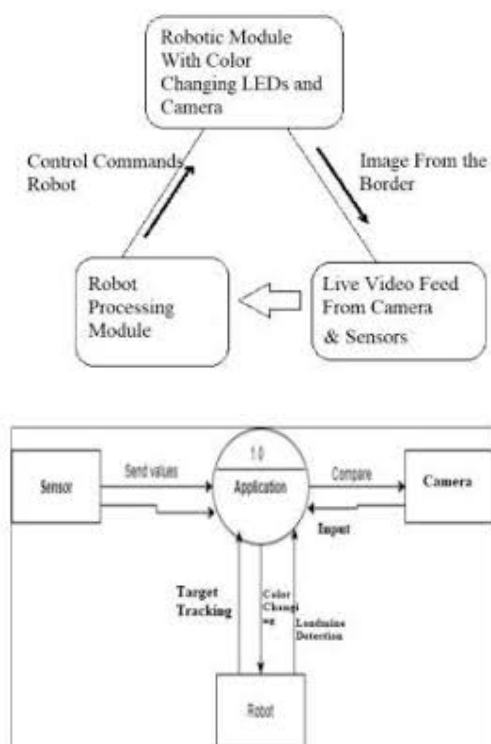
Block Diagram of the proposed system

Fig. 6 Camouflage technique

In defense areas, Robot are usually miniature in size so they are enough capable to enter in tunnels, mines and small holes in building and also have capability to survive in harsh and difficult climatic conditions for life long time without causing any

harm. Military robots were designed from last few decades. But still there are some problems in earlier developed military robots.

Vss of l293d is supplied +5 volts. Vs of l293d is supplied the motor operating voltage +12 volts in our case. Both the l293d and NODEMCU grounds must be common in order for circuit to work properly.

Sensor Module:

The Sensor module consist of various sensors helps in the detection of metals, fire, harmful gases at remote areas.NODEMCU is an open source firmware for the ESP32 and esp8266 Wi-Fi SOC and uses an on-module flash based SPIFFS file system. The firmware uses the Lua scripting language.

V.   RESULT

Finally this system achieved following features as output:

A.   The movement of the robot is controlled wirelessly from Pc side. On detection of a color, the robot camouflages itself into that color. The color of the robot can also be changed manually.

B.   It can go to areas with critical condition and environment.

C.   Receive and transmit data using RF signal through transceiver.

VI.   CONCLUSION

A.   The proposed system provides a helping hand to our security forces in detection of intruders. The robot can alsBy this proposed project we can satisfy the main task of the spy robot that to do the surveillance process without the knowledge of the enemies. We can modify the robot for doing different

B.   It can be used in high altitude areas where human cannot survive. Moreover, the camouflaging feature makes it difficult to detect the robot by naked human eye. There is scope to improve the system by configuring it with multi-colour camouflaging.

VII.   FURTHER MODIFICATION

A.   Adding more sensors to enhance application.

B.   We can switch to motors that can provide multi-directional movement.

C.   In future we can add anti- jamming technique to control the robot efficiently.

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