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Camouflage Army Robot Using ATmega 2560

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ABSTRACT: Science is a field creating in a quick stage to make the innovation which can make human existence simpler. One such invention is Camouflage Robot that assumes an essential part in lessening the harms that happen during disasters. The principle objective of this paper is to implement a wireless multi-functional armed force robot comprising of different sensors. These Army robots are restricting with the camera, sensors, locator (GPS Module). The proposed framework comprises of a remote camera for live video web-based reconnaissance and a colour sensor is used as a part of camouflaging feature. In the proposed model cloud based IOT interface with Blynk application and Wi-Fi module are utilized for recovering, putting away and recovering information to increase the range of communication PIR sensor to follow the interlopers. Therefore, it will acquire significance inside the up-and-coming period. It can be controlled by smart phones using IOT.

KEYWORDS: Camouflage Technique, Internet Of Things, Arduino Mega, Blynk

I. INTRODUCTION

A robot is an automatic mechanical device often resembling a human or animal. Modern robots are usually guided by a computer program or electronic circuitry. Robots have replaced humans in performing repetitive and dangerous tasks continuously without getting tired. Basically, Army Robot is capable of performing tasks such as locomotion, sensing the harmful gas, sensing the humans beneath the surface, metal detection. Army Robot is an autonomous root comprising of wireless camera which can be used as a spy. This Army robot is more efficient and effective compared to the soldiers. The main intention behind the camouflage Robot is to minimize the number of human losses in military operations, terrorist attack and many such operations. Camouflaged Robot can act as a personified spy and can be sent into dangerous locations for observations and evidences because a naked human eye can't detect minute evidences very easily. The Aim of the project is to design, manufacture and operate via a Smart phone, used as remote-control device can reproduce the color accordingly with the ground surface where it will be moving on, hence being camouflaged to the outside world.

II. SIGNIFICANCE OF STUDY

The main motive behind Camouflaged Robot is to reduce human losses in the military operations or terrorist attacks. It acts as a virtual spy and can be sent into the strategic locations of military importance for observation and warfare purpose. Since we are using Camouflaged technology it's hard to detect by a naked eye, Camouflaged robot can also be used to test the various security systems. The idea of Camouflaged Robot is based on the chameleon's camouflage techniques. To achieve these goals, we used a LED matrix (RGB) which can diffuse uniform colors. Initially, the robot can camouflage itself red, green and blue color. Our project has GPS module where the location can be streamed.

III. RELATED WORK

Dipak Patil, Himali Patil , Abhijeet Patil , Sunil Kalal,(2019) conducted a study onperforming tasks such as locomotion, sensing the harmful gas, sensing the humans beneath the surface, metal detection. The main objective of our system is to get camouflaged including some additional parameters like blue-tooth module for real time data processed by the camera at the video screen and PIR sensor to trace the intruders. Thus, the proposed system using blue-tooth reduces errors at defense and keeps the nation secure from the foe.

Mayuri Sonkusare, Akshata Raut, Dhanashree Tamhane, Deepali Palase(2019) conducteda study on Surveillance Robot with Human Detection.This robot can operate flexibility in either manual input mode, automatic mode or

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stepping mode. During the manual mode, control commands are provided wirelessly. The automatic mode allows operation in areas beyond communication range. The sensors used in this project are easily available. This system is based on two level of human sensing in order to reduce power consumption and get higher efficiency in rescue missions. The first level is PIR and IR sensors and the second level is an IP camera to confirm the existence of human in disasters.

Hitesh Shinde ,KirtiSonawane, Pranit Rane, Atharva Pathak, SumitaChandak (2018) conducted a study on reducing human losses in military operations or terrorist attacks. They play major role in saving human lives. The proposed system consists of one-color sensor camera as part of camouflaging feature. Colour sensor camera senses the colour of surface and according to that robot will change its colour. Because of this feature this robot can't be easily detected by enemies. We have used Wireless transceiver for communication between transmitter and receiver. This robot can quietly enter into enemy area and send us the information via camera.

IV. OBJECTIVES OF THE STUDY

- Our main objective is to build a prototype of the surveillance robot that will have the feature of camouflage and will bind to the environment by changing its color.
- Therobot consists of various sensors (PIR SENSOR,GAS SENSOR,METAL DETECTOR,OBSTACLE DETECTOR).
- The robot collects all the information and sends it to the android application.
- Themainobjectiveoftheprojectis tominimize the number of human losses in military operations, terrorist attack and many such operations.
- The main aim of our project is to implement a multi-functional robot that can perform various tasks and sends the live location to the user through GPS.

V. METHODOLOGY

The main processor used in the proposed system is Arduino Mega, which is a microcontroller board based on the ATmega2560. The ATmega series is much more advanced since it has many more peripherals that can be easily programmed when compared to 8051 Microcontroller.

- PIR (passive infrared sensor) or PID (passive infrared detector) sensor is used to detect the movement/motion of living things.
- MQ2 Gas sensor is used which has fast response time and high sensitivity. Its sensitivity can be adjusted by using the potentiometer.

- A Metal detector is used for finding metal inclusions hidden within objects, metal objects buried underground and also for detecting the presence of nearby metallic devices such as bombs and guns.
- Obstacle detector send the notification to user if any object is in the path of the robot's movement.
- The color sensor employed detects the color of the ground, usually in the RGB scale.
- Node MCU ESP8266 is deployed as a Wi-Fi module which includes firmware that runs on the ESP8266 Wi-Fi SoC..
- For the software implementation, we have used Arduino IDE in the proposed system to program the Arduino mega board. An integrated development environment (IDE) is a software application that provides comprehensive facilities to computer programmers required for software development.
- The android application used in this system is BLYNK, which is an internet-based tool that helps in mapping the hardware circuitry onto android phones. Here the robot movement and other sensor data values are displayed in Blynk application.

VI. CONCLUSION AND FUTURE WORK

The Camouflaged Army Robot is favorable in circumstances where it is Dangerous or impossible for human beings to reach or monitor. The implementation of our system is purely driven by usage of PIR Sensor, Gas Sensor, Obstacle Sensor, Metal detector, DC Motors, GPS and Camera. Overall, this robot is a multifunctional device that reduces the strain on humans during calamities. The Camouflage Robot system provides a helping hand to our security forces in detection of intruders. The Camouflaged feature makes it difficult to detect the robot by naked eye. This feature

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justifies the title of our project, since the robot can help assess the real time conditions of the battle field for providing safer routes for the soldiers to breach the traps and Many lives can be saved by using this autonomous vehicle during the disaster in a short duration which becomes time consuming and unaffected if done manually.

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