



# International Journal of Advanced Research in Arts, Science, Engineering & Management

Volume 10, Issue 3, May 2023



INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA

**Impact Factor: 6.551**



# Camouflage-Military Robot

Mr. Sudhakara Reddy G M<sup>1</sup>, Nikitha N<sup>2</sup>, Sai Madhav H<sup>3</sup>, Shresta S Shetty<sup>4</sup>, Shreyas Akash Rao<sup>5</sup>  
Guide, Associate Professor, Dept. of CSE, Nagarjuna College of Engineering and Technology, Bengaluru, India<sup>1</sup>  
U.G. Student, Dept. of CSE, Nagarjuna College of Engineering and Technology, Bengaluru, India<sup>2,3,4,5</sup>

**ABSTRACT:** Nowadays, many expenses are made in the field of defense in adopting primitive security measures to protect the border from the trespassers. Some military organizations take the help of robot in the risk prone areas which are not that effective when done by army men. These Army robots are confining with the camera, sensors, metal detector and video screen. 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.

## 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. Basically, Camouflage 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 robot comprising of wireless camera which can be used as a spy. This Army robot is more efficient compared to the soldiers. The main aim of the paper is to implement a Camouflaged technology based Wireless multifunctional Army Robot which can be controlled through smart phone using WIFI.

### 1.1 IoT

IoT stands for "Internet of Things". In 2013 the Global Standards Initiative on Internet of Things (IoT-GSI) defined the IoT as "the infrastructure of the information society". IoT allows objects to be sensed or controlled remotely across existing network infrastructure, creating opportunities for more direct integration of the physical world into computer-based systems, and resulting in improved efficiency, accuracy and economic benefit in addition to reduced human intervention.

### 1.2 Wi-Fi technology

The IEEE 802.11 (ISO/CEI 8802-11) is an international standard describing the characteristics of a wireless local network (WLAN). The name Wi-Fi (short for Wireless Fidelity) is originally the name given to the certification granted by the WECA (Wireless Ethernet Compatibility Alliance), the institution responsible for maintaining interoperability between devices under the 802.11 standard. By abuse of language (and for marketing reasons) the name of the standard is the same as the name of the certification. De facto a Wi-Fi network is actually a network operating under the 802.11 standard.

Wi-Fi allows us to create wireless local area networks at high speed. In practice, the Wi-Fi can connect laptops, desktops, PDAs or other devices (printers, game consoles) to a broadband connection (300 Mbps) over a radius of several meters indoors (usually between 20 and 50 meters). In an open environment, the range can reach over several hundred of meters in optimal conditions. ISPs are starting to equip areas with high concentrations of internet users (stations, airports, hotels, trains, etc.) with wireless internet access. These access areas are called "hotspots".

### 1.3 Purpose

The main motive behind Camouflage Robot is to reduce human losses in military operations or terrorist attacks. Camouflage Robot acts as a virtual spy and can be sent into the strategic locations of military importance for observation and warfare purpose. Since it's very hard to detect it by a naked human eye, the Camouflage robot can be also used to test the various security systems developed in the market and act as a measure to evaluate its efficiency. The idea of the Camouflage Robot is based on the chameleon's camouflage techniques. The aim of the project is to design, manufacture and operate a robot via PC, used as remote control device, a small mobile robot which can duplicate the colors where it moves on, hence being camouflaged to the outside world. To achieve these



goals, we used a LED matrix (RGB) which can diffuse uniform colors. Initially, the robot can camouflage itself in red, green and blue color.

## **II. RELATED WORK**

Design Of Military Robot.Ajinkya Subash Jadhav(2020).

The authors suggest that the developed robot can be further modified with use of various ultra-sonic sensors, artificial intelligence, accurate GPS system and high-definition cameras. The use of hardware like Arduino can be implemented to reduce the cost of control circuit. Selection of material for capacity to work in all temperature ranges.

Camouflage Surveillance Robot.Mr. M N Ravikumar, Mr. Thejaswi A (2020).

Their work shows that the Robot analyzes the surrounding area and provides the live footage to the observer or the user using the wireless camera. These camouflage surveillance robots are the virtual spy and can be sent into the planned or repetitive locations of military importance for warfare purpose.

Camouflage Technique Based Multifunctional Army Robot.Nuthan M R, Pavan Kumar(2020).

The Robot is evacuated by getting a GSM module that gives robot working status. By adding remote camera to the robot, just utilizing GPRS and GPS would one be able to see the outside world from our PC.

These related works collectively demonstrate the active research efforts in the field of robotics using technologies like camouflage with the help of various sensors and components to help in different fields depending upon various needs.

## **III. METHODOLOGY**

- It consists of Arduino controller, LED matrix, Sensors and DC motor etc.
- The PIR sensor is a pyro electric device which generates the electric charge when exposed to the infrared radiation changes from the movement of surrounding object, and Fresnel lens is used to focus the infrared radiation onto the object.
- The photodiode used in the colour sensor will generate signal after reacting with colour filter on receiving light reflected by ground.
- The generated signal is analysed in terms of frequencies and then it gives the colour of ground.
- The metal detector will detect the nearest metal object between 1cm to 7cm by the eddy current losses produced by the high frequency and accordingly output signal changes.
- Similarly, obstacle sensor will detect the obstacles in the surroundings and produces the output signal.
- Wireless Camera is used for the real time interpretation of data.
- Arm processor will guide the output devices by taking the input signals from the sensors.
- The colour that is sensed by the colour sensor, the RGB LED matrix will glow with suitable intensity and match with ground colour.

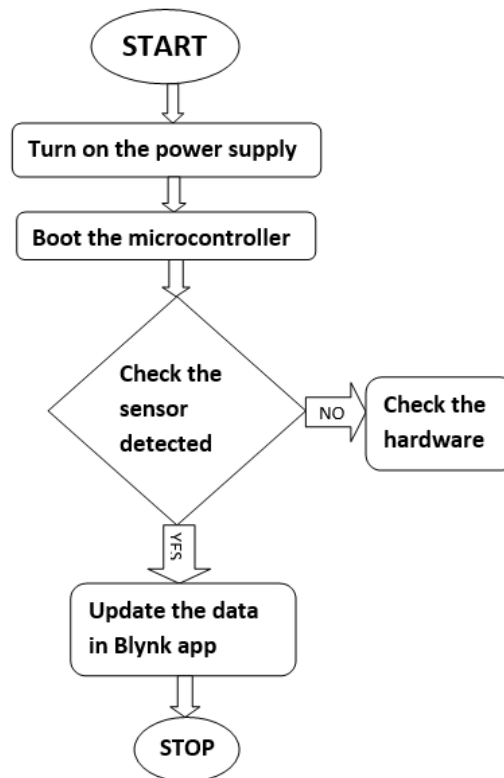


Fig.1.Flow chart

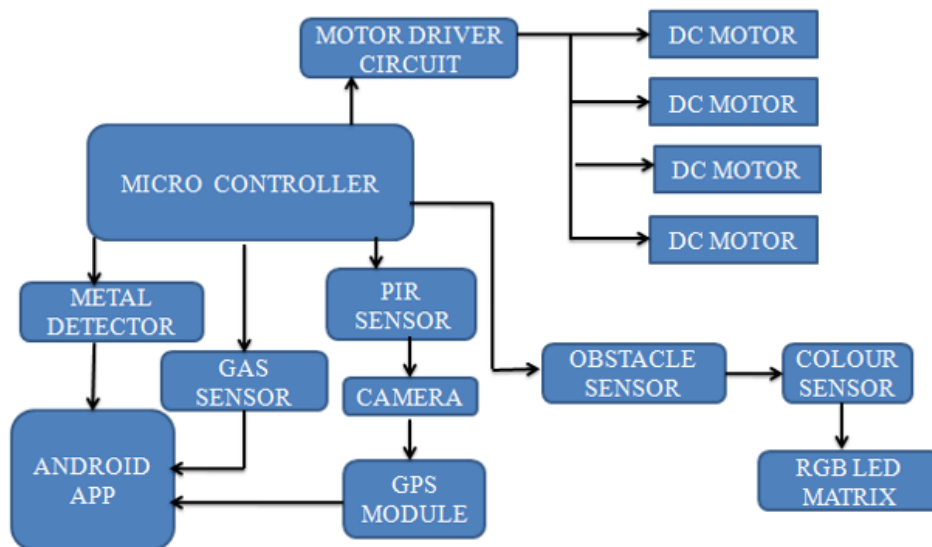
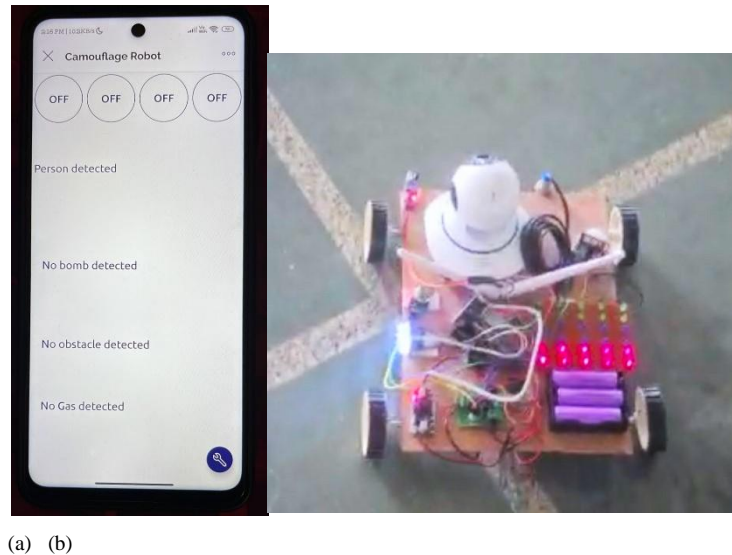


Figure 2: Architectural diagram of Camouflage Army Robot



#### IV. EXPERIMENTAL RESULTS

Figures shows the results of the camouflage robot.



(a) (b)

#### VI. CONCLUSION

- The Camouflage Army Robot is highly favorable in circumstances where it is impossible for human beings to reach or monitor. The implementation of our system is purely driven by usage of PIR sensors, Ultrasonic sensors, DC motors and camera etc.
- Overall, this robot is a multi-functional 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 and trespassers.
- Moreover, the camouflaging feature makes it difficult to detect the robot by naked human eye. Anyways always there is scope to improve the system.

#### REFERENCES

- [1] Tejashiwini, Krutika Chidambaram, "Multifunctional Robot for Military Application Using Camouflage Technique.", (2020).
- [2] Supreeth B K, Syed Shahbaz Ali, "Iot Based War Robot", (2020).
- [3] Ajinkya Subash Jadhav, "Design of Military Robot", (2020).
- [4] Mr. M N Ravikumar, Mr. Thejaswi A, "Camouflage Surveillance Robot", (2020).
- [5] Nuthan M R, Pavan Kumar, "Camouflage Technique Based Multifunctional Army Robot", (2020).
- [6] P. Kavipriya, G. Jegan, "Design of Iot Based Multifunctional Camouflage Military Robot", (2021).
- [7] Zhipeng Qu, Houdi Xiao, "Fast Self-Adaptive Digital Camouflage Design Method Based On Deep Learning", (2020).
- [8] Kiran Kumar K, Krithika P, "Camouflage Based Multifunctionality Army Robot", (2020).
- [9] Anshika Manral, Monika Murthy, "A Survey On Camouflage Surveillance Robots", (2021)
- [10] Yadnika Warang, Tejali Mahadik, "Camouflage Bot", (2021).



INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA



# International Journal of Advanced Research in Arts, Science, Engineering & Management (IJARASEM)

| Mobile No: +91-9940572462 | Whatsapp: +91-9940572462 | [ijarasem@gmail.com](mailto:ijarasem@gmail.com) |

[www.ijarasem.com](http://www.ijarasem.com)