Camouflage Surveillance Robot

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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 executed by army men. These Arm robots are confining with the camera, sensors, metal detector and video recording, and the main objective of our system is to get camouflaged including some additional parameters like ZigBee wireless module for real time data processed by the camera at the video, audio and PIR sensor to trace the intruders. Here, we are coming up with new technology to overcome connectivity range when the arm robots are out of range through ZigBee modules.

Keywords—camouflaged, connectivity, security, detection, identification, ZigBee-wireless

I. INTRODUCTION

Robot is an electro mechanical device which is controlled by program. The arm robot is designed for dangerous job, commercial job, home based job and many other purposes. We are designing Camouflage Surveillance Robot army robot which is surrounded by multiple functionality which include sensors, audio, video recording, wireless connectivity and the main objective of camouflage is to change its colors using RGB color sensor concept when the robot move according to the surface color. We are using ZigBee technology for strong connectivity purpose, we are using multiple robots to overcome connectivity range when one robot passes the information to another robot until it reaches workstation.

Instead of human army, we can send Arm robots to the dangerous place to complete the task. Like, hijack environment. The sensors are used to sense the body temperature, metal detection, gas detection, RGB colors.

If Arm robots is not only used for the defense purpose it can also be for wild photography to capture the wild animals. However, the robot is containing the sensors and camera which sense the body and capture the image. Further implementation is about Arm copter to spy and cover the intruder's area.

II. LITERATURE SURVEY

According to our survey on camouflage robot the Author [1] 2017 says that the camouflage robot which has functionality like robot movement, camera mechanism, and RGB sensor to obtain surface color. For connectivity purpose CC2500 transistor module used for packet handling, data buffering, it can used in the range 2400-2483.5MHz ISM/SRD band system. Dc motors are used for movement of robot.

Author [2] 2015 input devices connecting to the connected to the computer and controlled by MATLAB software with high quality video recording and color changing the robot.

Author [3] 2015 sept the color sensor will switch one by one and detect the surface color according to surface color the robot adopts the color of surface.

Author [4] march 2017 in this there is no more functionality because overload. they are using only RGB concept yellow surface will reflect red and green will reflect both the color.
Author [5] 2014 they concrete on live screaming and PIR sensor for human detection and information of live body.

Remaining papers match able information. Are their which has limitation. The main concept of our project is to overcome the connectivity problem by presenting two robots with same functionality one robot pass the information to other robot from second robot the information will go to the workstation.

III. METHODOLOGY

We are using multiple Arm robots with ZigBee module to overcome connectivity issue along with camouflage RGB concept and PIR sensor with raspberry pi 3 controller. We allowed multiple Arm robots to go to the intruder area one robot passes the information to the other and vice-versa only when one or another robot goes out of range, Once the information reached/ received to arm robot which is within the range share the information to the workstation. In this way

cover the broad area, If the intruder found the Arm robot it will automatically set to "SELF DESTRUCTION"
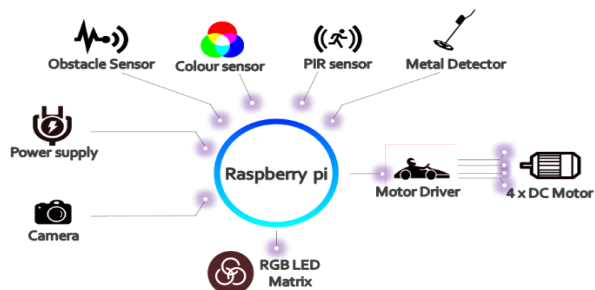
IV.   BLOCK DIAGRAMS

Figure 1.   ROBOT 1 This robot contain all function and it is also called as major robot with color sensor, PIR sensor, ZigBee.
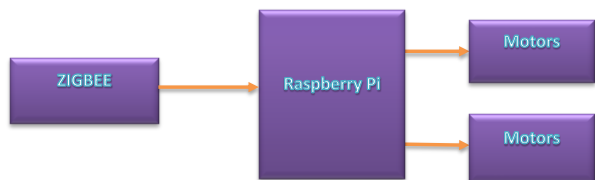

Figure 2.   ROBOT 2 This robot contains only ZigBee module for Inter-Communication.
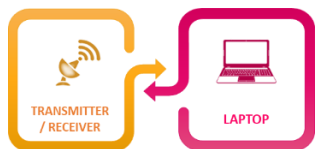

Figure 3.   BASE STATION

V.   SYSTEM REQUIREMENTS

A. Raspberry Pi

B. RGB color sensor
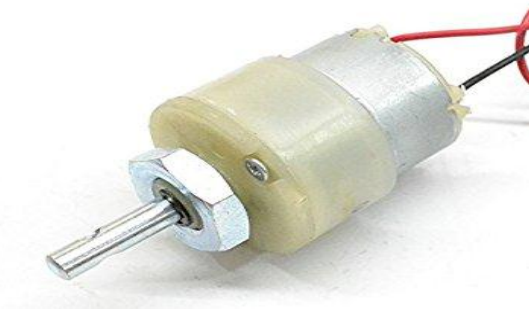

C. PIR sensor
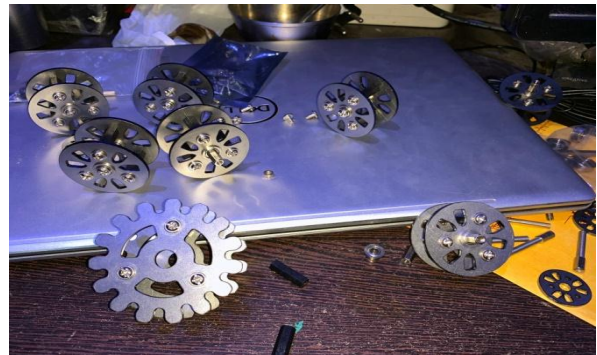

D. Obstacle sensor

E. ZigBee module

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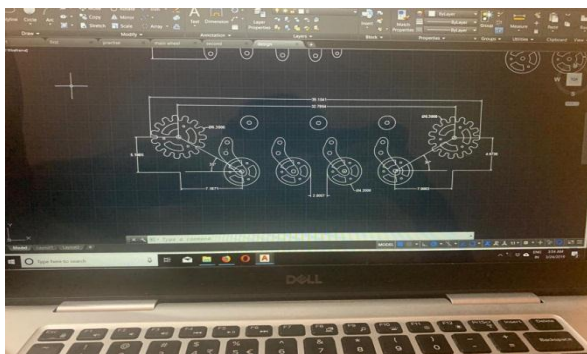
F. Metal Detector

G. DC gear motors

VI. APPLICATIONS

1. These robots are more capable of withstanding damages than humans.
2. System uses Wi-Fi and this makes the system both accurate and reliable.
3. Anonymous surveillance.
4. Multi connectivity over a network through Zigbee module.
5. Camouflaging technique is to change its color using RGB color sensing concept when the robot moves according to the surface color.
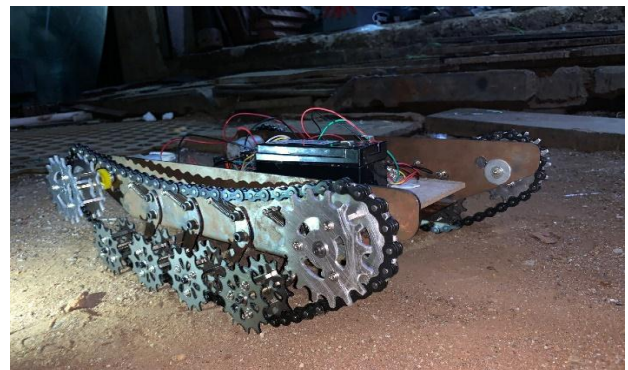
VII. IMPLEMENTION

Body Designed in CAD

Leaser cutting after designed

Fitting the miner parts

Assembling the body
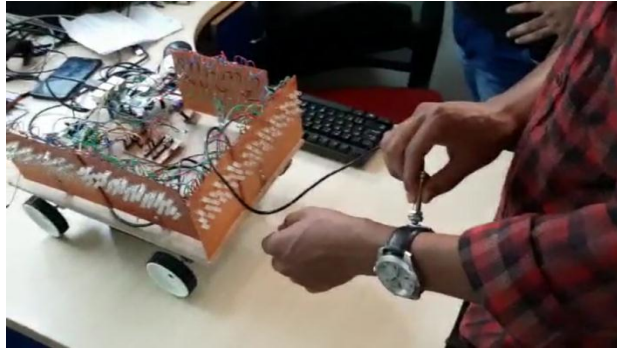
VIII. EXPERIMENTAL RESULTS

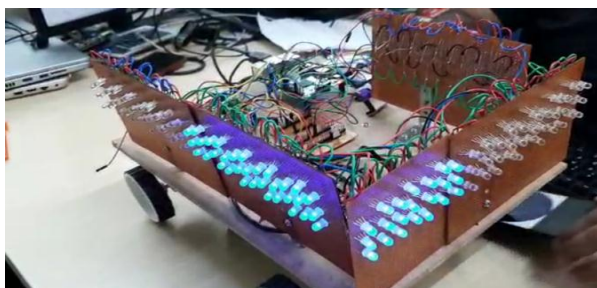The picture shows the actual design and activity in war field

This picture shows theMetal detection

This picture shows the outcome of Red color

This picture shows the outcome of Green color

This picture shows the outcome of Blue color.

IX. CONCLUSION

As Human life is always more prioritize this Arm robot helps to act as a security system and also a life saviour. The main objective of our project is for Border security by using camouflage, Multi-connectivity and many sensing technologies.This has been successfully accomplished wireless using ZigBee Wireless module. We use PIR sensor principle to detect warm body direction and distance of

obstacle, and through transmitter receiver we can detect the obstacle coming in path.

Gas sensor are used for sensing the toxic gases and metal detector are used for sensing metal weapons, land mines, etc. In this system we used camera to transmit the data from border to the official area or headquarters even when the Arm robot is out of network coverage area using multi-connectivity. In the scanning path if any obstacle or enemy is detected and found the Arm robot then Self destruction is programmed. Thus, in defence application it is possible to provide 24-hour monitoring with camouflage surveillance.

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