RADIO FREQUENCY CONTROLLED GADGET CARRYING ROBOT

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Abstract – *Gadget carrying robot is designed to support soldiers in the war field by carrying their requirements. This is operated manually from the base station. Two DC motors are used for the motion of this robot. It is controlled through radio frequency and data is transferred from the base station to the war field using Zigbee CC2500 transceiver module. The robot is designed for handling multiple weather conditions. Special features of the robot include - its ability to cross obstacles on the way with the help of chain wheel; camera which records live video of the war field; locker to store hidden gadgets and ensure its safety. Body of the robot is completely closed so the circuits inside the robot will not get damage. Weight of the body is about 1 kg and the speed of the motor is about 500rpm, it can carry weighting nearly up to 5kg.*

1. INTRODUCTION

Situations like terrorist attack and World wars, human soldier plays a major role, even though they are well trained and intelligent, they are humans after all, and they do have certain potential and capability to do something but robots on the other hand which are created by humans are capable of doing what humans cannot do. The robots used nowadays are used in various industries such as Automobile, Medical, Science and defence.

In war-field,in-addition to self-defence purpose, for treating causalities and to fulfil the requirements of soldiers, gadget carrying robots are used. This robot is controlled wirelessly using radio frequency which is operated over a wider range (more than 100m) compared to conventional Bluetooth control (within 50m). In base station side, this robot is controlled by a well-trained professional who gives various commands for the operation of the robot through joystick control which is interfaced with Arduino microcontroller which sends these commands via transceiver a module used to transmit the signal. In addition to this; there is a view-finder for viewing the live footage. In the receiver side, the commands are received by a transceiver which is then decoded by a decoder and feed these commands to the Arduino microcontroller which directs the robot. For the movements of the robot, dc motors are interfaced with the help of motor driver for using it in desired directions. For working of dc motor Pulse-Width Modulation (PWM) is used to get a fast rate of action. For controlling the direction of dc motor, we want to reverse the direction of flow of current; the most commonly used method is using an H-Bridge.

2. WORKING

In olden days the gadgets were carried by humans to the war zone using military trucks which later was inefficient. Earlier the tanks were not having enough space for carrying the gadgets, the trucks used were easily taken by the enemy. In the transmitter side, the control signal is given by dual-axis joystick which is connected to Arduino Uno. The Arduino Uno is a microcontroller which controls all the components. To transmit the control signal, the ZigBee cc2500 transceiver module is used which can transmit and receive the control signal one at a time (either transmit or receive). All the components are powered by 9V general purpose battery in the transmitter side. In the receiver side, the control signal is received by ZigBee transceiver and it is given to Arduino Uno. The motion of the robot wheels can be driven in the desired direction using l298n motor driver which is interfaced with two dc motors to provide the necessary thrust to move the robot. To broadcast the live footage we have used the ov7670 camera module which is interfaced with the Hc-05 Bluetooth module to transmit the live footage to the base station.
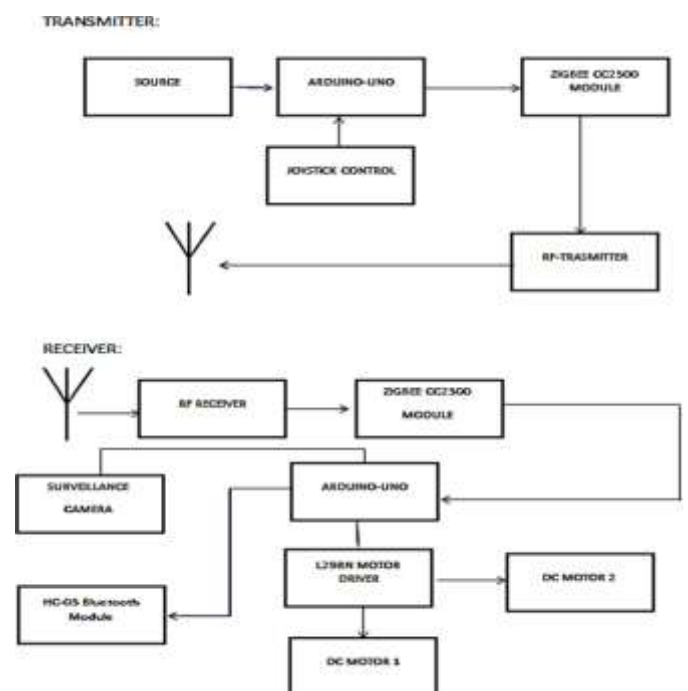

Figure1:-Flow Diagram

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3. FUTURE SCOPE

This project can be implemented on the vehicles that run on land. With further improvement of this project, the robot can be implemented to run on both land and water which further allows the robot to cross borders beyond boundaries of the countries.

4. CONCLUSION

The robot is used to perform the gadget lifting. It is highly useful in the surveillance of the war zone. The robot is using a ZigBee control for its transmission of signal, will reduce the security threats. This robot will be highly supportive in the war and will protect the borders and further enhance the safety of the country.

5. REFERENCES

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