

War Field Spy Robot Using Night Vision Wireless Camera and Android Application

Akhilesh J ¹, Akhil Krishnan G ², Gokul R Sekhar ³, Sujith S ⁴, Jesna K A ⁵

B.Tech, Department of Electronics and Communication Engineering, College of Engineering Perumon,
Kerala, India^{1,2,3,4}

Assistant Professor, Department of Electronics and Communication Engineering, College of Engineering Perumon,
Kerala, India⁵

ABSTRACT: The main objective behind developing this robot is for the surveillance of human activities in the war field or border regions in order to reduce infiltrations from the enemy side. The robot consists of night vision wireless camera which can transmit videos of the war field in order to prevent any damage and loss to human life. Military people have a huge risk on their lives while entering an unknown territory. The robot will serve as an appropriate machine for the defence sector to reduce the loss of human life and will also prevent illegal activities. It will help all the military people and armed forces to know the condition of the territory before entering it. The robot has the aptitude to detect the buried mines and lets user control it wirelessly to avoid human casualties. The robot can even act as a path guider in normal case and as a fire extinguisher in emergency. Robots designed to find a fire, before it rages out of control, can one day work with fire-fighters greatly reducing the risk of injury to victims.

KEYWORDS: wireless camera, Android OS, Fire detection sensor, mine detection sensor, arduino uno microcontroller

I. INTRODUCTION

General

The advent of technology has brought a revolutionary change in the field of robotics and automation which ranges in all the sectors from household domestic works to the defence sector. Today in the global market, smart phones also have brought a revolution in changing people's lifestyle and providing numerous applications on different operating systems. Android operating system is one of these systems build on open source which has made a huge impact providing many applications for robotics to help people in their day to day life.



Fig.1: Robotic vehicle used in military

The main technology used here for serial communication with the robot is the Bluetooth technology. Bluetooth technology can be used to share data between two devices considering the range between two devices. The Bluetooth module HC-05 will be connected with the robot and the commands to the robot will be given through the android application.

The war field robot consists of arduino uno board as a controller board. It has L293D motor driver IC's along with a HC-05 Bluetooth module. Two DC motors are also used for the motion of the robot. The night vision wireless camera is attached with the robot in order to monitor the situation and the camera can be rotated 360 degrees via the android application through motor. Mine detection sensor and fire detection sensor are used. Metal detector sensor is used to detect bigger size metallic objects.

Objectives of the work

The main objective behind developing this robot is for the surveillance of human activities in the war field or border regions in order to reduce infiltrations from the enemy side. The robot consists of night vision wireless camera which can transmit videos of the war field in order to prevent any damage and loss to human life. Military people have a huge risk on their lives while entering an unknown territory. The robot will serve as an appropriate machine for the defence sector to reduce the loss of human life and will also prevent illegal activities. It will help all the military people and armed forces to know the condition of the territory before entering it. Mine detector sensor is used to detect metallic objects. Fire detector is used to detect exact direction of fire source.

II.PROPOSED SYSTEM

Arduino board is used for the robot. A Bluetooth module is connected to the board. The android application establishes a connection with the Bluetooth module on the board. Once connection is successfully established, the user can send controlling commands through the GUI of the android application. The command sent from the mobile application is received by the Bluetooth module which transmits it through serial communication to the controller.

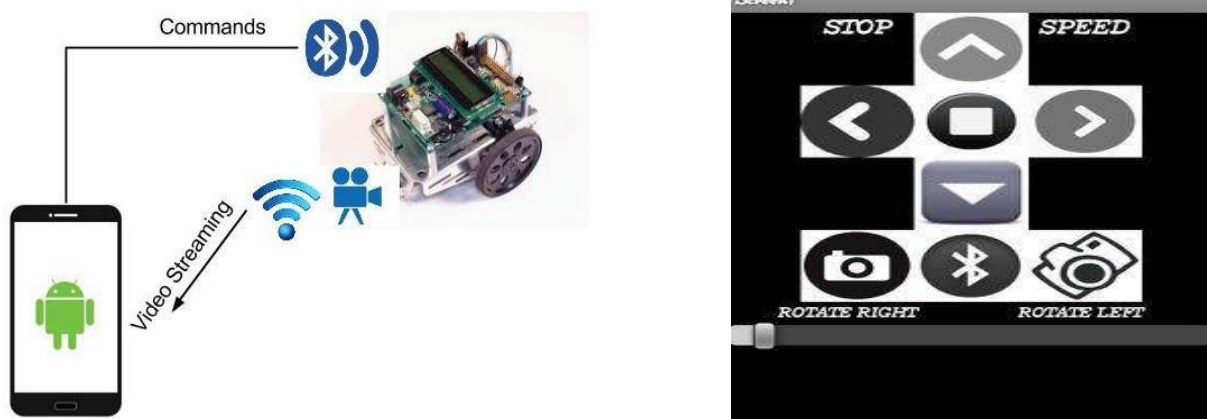


Fig.2: System Architecture

It consists of following blocks

- Blue-tooth module-
- Micro-Controller –arduino uno
- DC motors
- Motor Driver H-Bridge
- 12v Dc battery
- Mine detector sensor
- Fire detector sensor

The robot in the project is made to move in all the four directions using the Android phone.

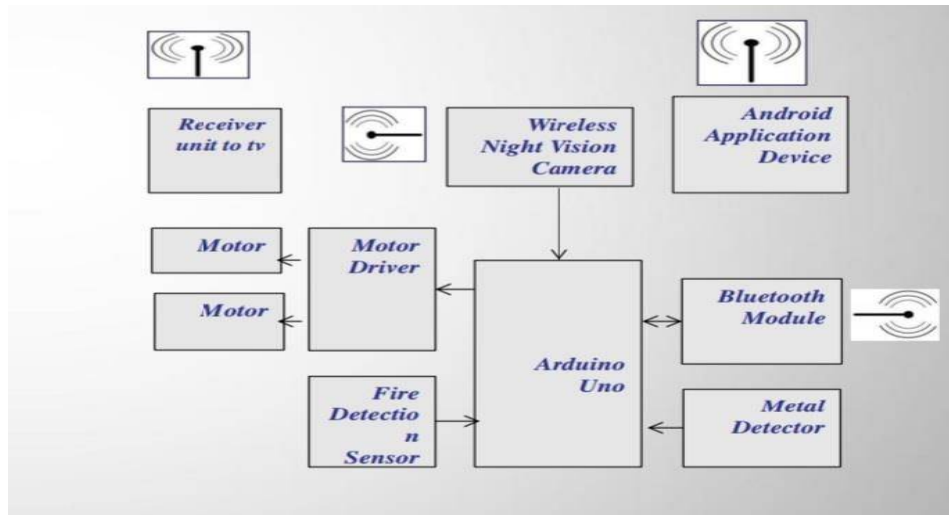


Fig.3: block diagram

III.ADVANTAGES ANDDISADVANTAGES

Advantages

In various areas there is a need of constant surveillance. The current surveillance system includes monitoring by using CCTV cameras and other monitoring system. Mostly these systems are stationary and they can cover a limited area. These systems are mostly control manually or through a computer. They cannot be used to cover a larger area as well as they cannot be controlled using any mobile device. In short we can say that these systems are dynamic enough much which gives the need for the development of a surveillance system which is more dynamic and can be controlled remotely.

This project is aimed at developing a surveillance system which can be controlled remotely by using an Android App. It includes a robot with a Wireless Camera attach to it. This robot captures the high resolution video feed and transmits it to the connected Android device which is used to control the robot.

Disadvantages

- Limited distance of operation(50ft)
- Video is Streaming not recording

IV.APPLICATIONS AND FUTURE SCOPE

Applications

- Military operations.
- Surveillance along border.
- Search and Rescue Operation.
- Manoeuvring in hazardous environment

Future Scope

The robot can be made more miniature in size. One of the limitations of this robot is the range of the robot. The Bluetooth module used here has a limited range and thus this robot cannot be operated over far distances. To increase the range many other modules such as Wi-Fi and Zigbee can be used.

In future, the robot may also consist of gas sensors to detect the poisonous gases in the environment. The robot may also include a bomb disposal kit in order to diffuse bombs in the war field. We can also include face recognition technology in future.



FIG. 4: FACE RECOGNITION

V.CONCLUSION

In this project, the model of robot can be described to build a robot using night vision wireless camera run by android application and the people can learn about developing android application in order to control the robot through wireless application using the platform of MIT app inventor. Mine detector and fire detector sensor are used in this system. The robot has reduced the human effort. The robot is designed with high accuracy in movement section. All the objectives of the project were accomplished with high accuracy, camera result was complimentary in that respect is always a way for betterment in any task. More features can be summed in the robot to make it useful. The robot can be made more enhanced by adding features like gas sensors and bomb defuse kit.

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