Arduino Based War Field Spying Robot Using Wireless Camera

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***Abstract*—A spy robot gives rise to the idea of creating a machine which is capable of performing tons of activities in place of human being more accurately and efficiently and consuming lesser time. In Today's day to day life robots are very essential because robots can work faster than humans and the cost required for working of robot is much less than human labour. Robot can do same work that human does more correctly. Human can change the job but robot's can't change because once a task is assigned to a robot then they have to do the same.**

Keywords- Arduino, Spy, Android, Robot, IP camera, Sensors, Bluetooth.

I. INTRODUCTION

Now a Day's the innovations in technology completely changes the domain of robotics and automations which helps in all fields from household to defence. In this project, we are developing a robot based on arduino using android applications. Also we are using Bluetooth technology for serial communication. Data can be shared between two devices using Bluetooth technology. We are using two DC motors for the movement of the robot. To handle the situations a internet protocol camera is mounted on the robot. [3]

II. LITERATURE SURVEY

- Mr. L. Mehta and Mr. P Sharma a spy robot can also be controlled by a computer system using its keyboard. They basically said that it will be used for the transmission of audio and video signals from the destinations to the source and also it can sense the darkness of its surroundings.

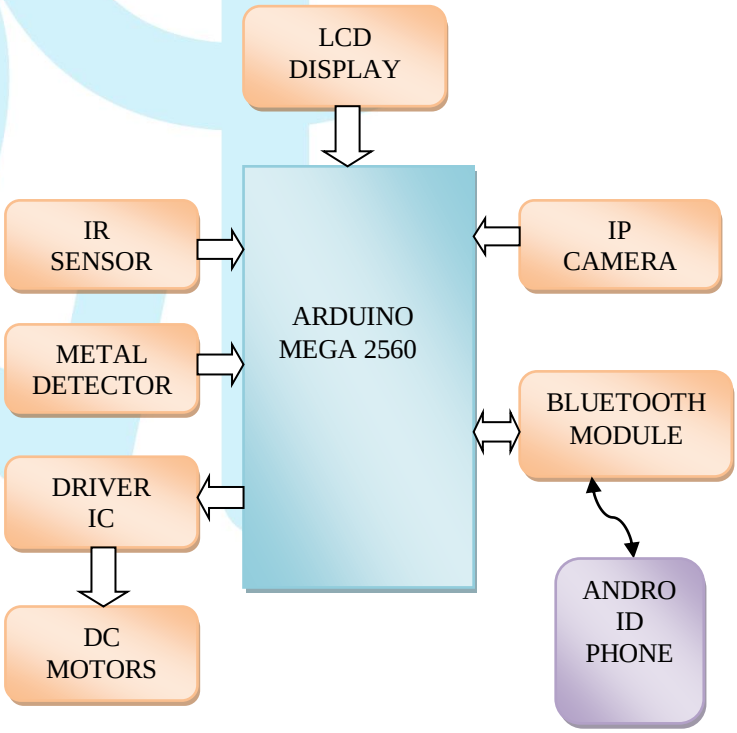
- Mr. D.S. Patel and his team spy robot can be used for the security purpose to avoid attacks like 9/11. They proposed a robot which can be controlled by a cell phone using its buttons to see the live telecast of the target place by a camera attached on the robot.

- K. Gudhka, A kadam and their team nowadays as there are technological advancements these advancements are used by military forces for shortening the risk of their death and to beat their opponent. With the development of technology, it mostly relies on the high as per Mr. L. Mehta and Mr. P. Sharma a spy robot can also be controlled by a computer system using its keyboard. Basically set that it will be used for the transmission of audio video signals from the destination to the source and also it can sense the darkness of its surroundings.

- W. M. MoKhaing and K. Thiha a spy robot is used to transmit video data to the intervention troop. They are made to easily move and transport. It is made up of wireless camera and antenna and wheels for movement to take action of enemies. Now, Nations are focusing on developing of robotics in all fields for the benefit of country and for maintaining peace in nation.

III. METHODOLOGY

A. BLOCK DIAGRAM



- *ARDUINO MEGA 2560*

Arduino mega board is used as a controlling board in war field robots. The important thing is the operating voltage of Arduino mega 2560 is 5v.This voltage never go higher in value than 5v no matter what. If you are giving high voltage to the Arduino mega but it receives only 5v.

- *IR SENSOR AND METAL DETECTOR*

The proposed robot will continuously monitor for land mine detection with help of metal detector. As soon as it detects the metal it will send this information to the web server design in the android phone via Bluetooth connectivity. The robot will run by analyzing the obstacles in the path with the help of IR sensor.

- *MOTOR DRIVER IC (L293D)*

The l293D is design to provide currents to two motors in both directions of up to 600 ma at voltages ranging from 5v to 36v. It has 16pin IC in which 4input pins 4 grounded pins and two motors are connecting between the 4output pins.[3]

- *BLUETOOTH MODULE HC - 05*

It has 6 pins but we can use only 4 pins that are power supply, ground, transmitter and receiver. There is a cross connection between the transmitter and receiver pin of Bluetooth and Arduino. [4]

- *IP CAMERA*

It is used for surveillance. It can send and receive data via a computer network and the internet. It has multi area motion detection.

- *ANDROID PHONE*

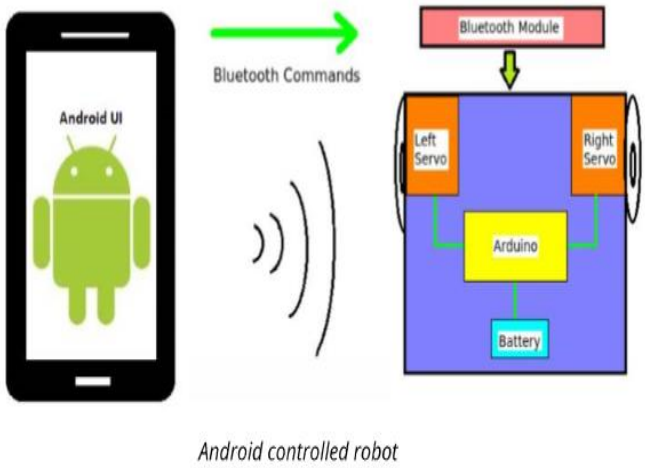
It can be used for live streaming, controlling the motion of the robot, for transmitting and receiving data.

- *LCD DISPLAY*

It is used to check the user command.

B. HOW DOES IT WORK?

- It moves according to commands delivered from android remote control app via Bluetooth.
- Remote control app has four buttons for the relevance forward, left, right and back movements as well as stop buttons.
- The remote control app also uses a web viewer component, which is used as recipient of the wifi video stream from the android phone mounted on the robot this video is streamed by a IP webcam app, which is installed on the android phone
- The robot can transmit video via Bluetooth through IP web cam app which is installed on the phone directly to the remote control app.
- Robot can detect the presence of an object or obstacles along the path and send signals to the receiver with the help of IR sensor and proximity sensor as metal detector.
- The command given by the receiver to the robot are displayed on the LCD which is mounted on the robot.



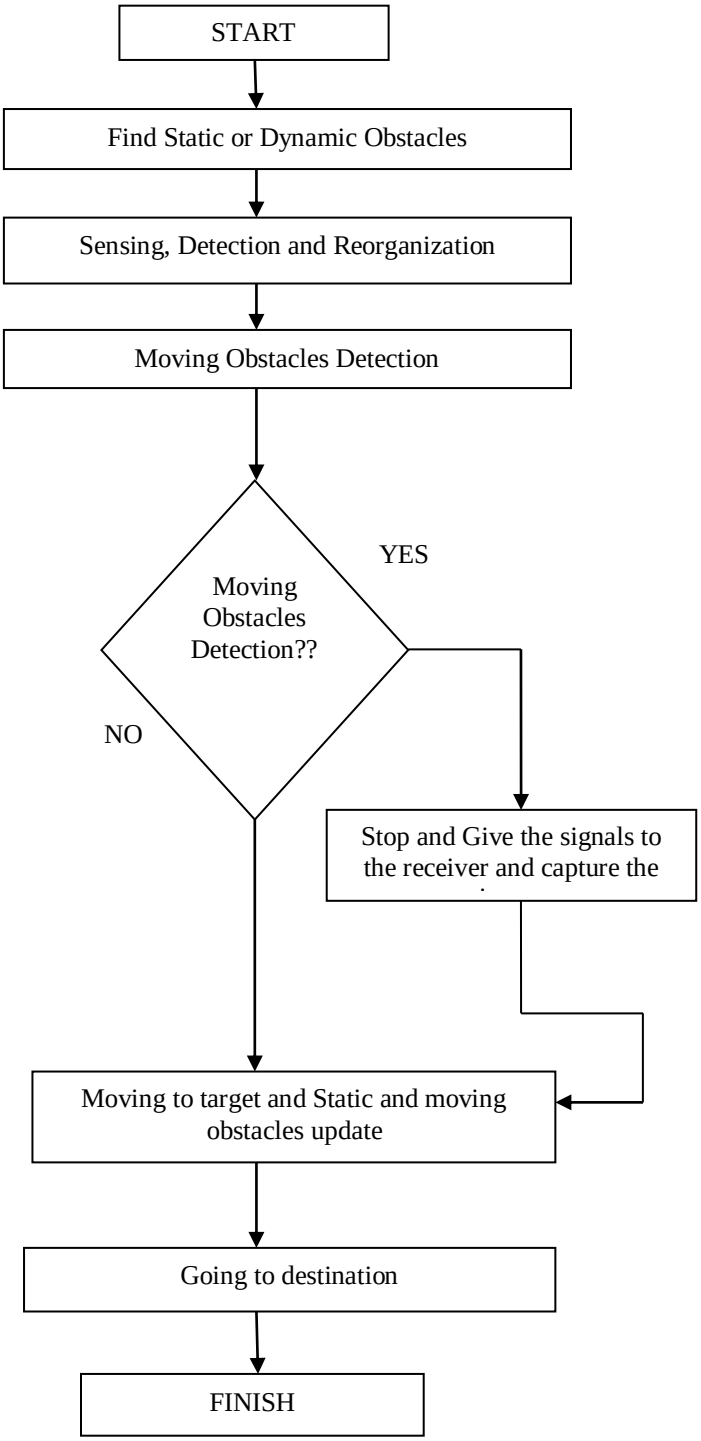
Android controlled robot

Fig. 1. Android Controlled Robot

Fig. 2. Remote Control via Bluetooth

C. *FLOWCHART*

Procedure Followed when a obstacle is detected:-



IV. DESIGN

A. *SOFTWARE*

- *ARDUINO IDE* – Arduino works good in terms of prototyping. It is easy to program and programming can be done using C-language.

B. *HARDWARE*

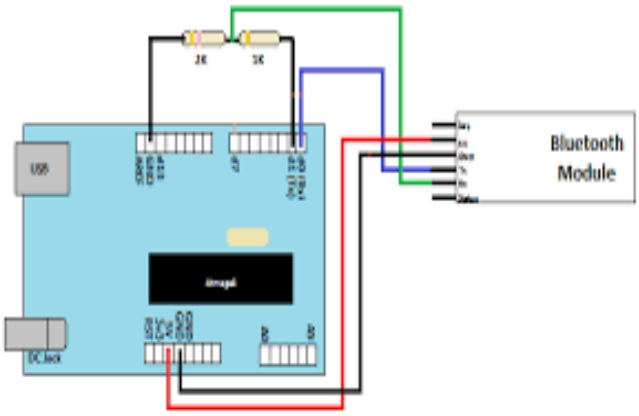


Fig. 3. Bluetooth connection with arduino

- The master and the slave are the devices of the Bluetooth module. The connection of the Bluetooth module with Arduino can be done in opposite manner.
- The device will ask to enter the password once the pairing is over between the two devices. The password can be anything that we set. For the connection between two devices entering password is must. [1,2]

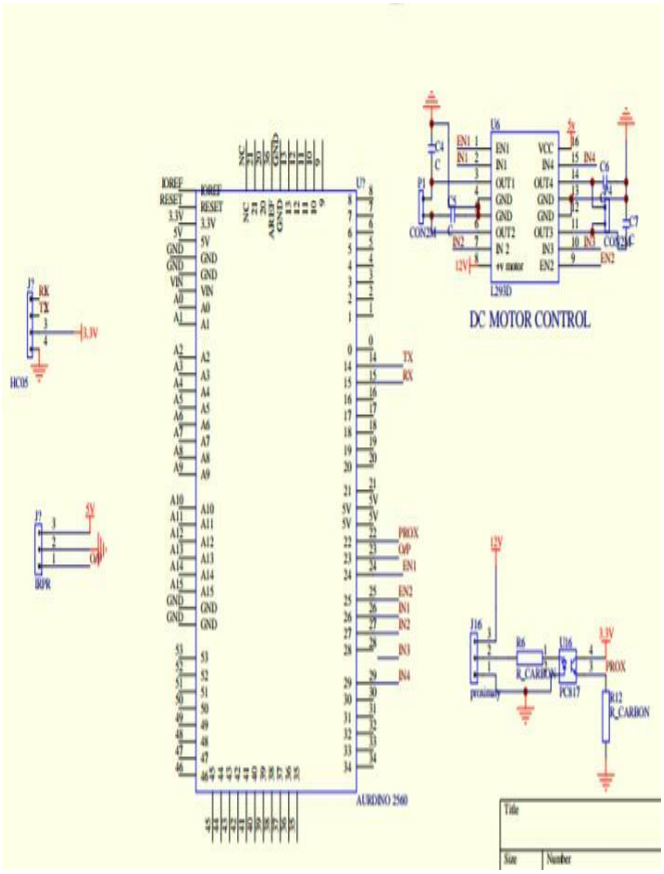


Fig. 4. Motor interfacing with arduino

- The L293D IC are interconnect with first motor through pins 3 & 6 and second motor through pins 11 and 14. The input pins of L293D IC are connected to controller board. A 12v supply is used to power the control.

V. ADVANTAGES

- Reduces human life risk.
- Perform several tasks in lesser time.
- Activity of robot is safe and easy.
- It saves a lot of time.
- It is safe and reduces the life threat.

VI. APPLICATIONS

- Military Scouting Mission.
- Wireless security and surveillance in hot spots.
- Search and rescue operations.

VII. CONCLUSION

In this project, the spying robot is build with IP camera run by remote control via bluetooth in order to handle the robot wirelessly. The motive behind developing a spy robot is to make it user friendly. The spy robot can easily move, capture images and wirelessly transmit them thus giving the soldiers an indication about the dangers and situations in war field.

VIII. FUTURE SCOPE

In future, the size of the robot can be reduced to small size. Using Wi-Fi and Zigbee the range of the robot can be increased. Also in future we can also add gas sensors to identify the presence of the toxic gases in the nature. A bomb discard equipment can be added in order to dispose bombs in the war field.

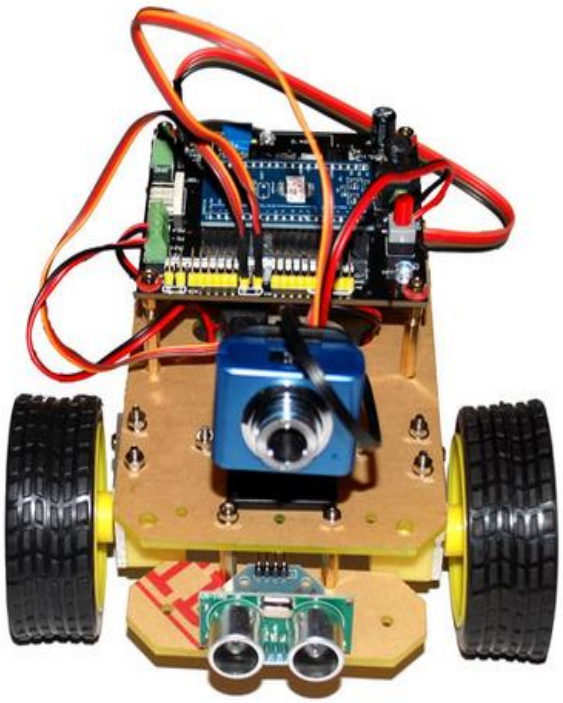


Fig. 5. Arduino Based War Field Spying Robot using Wireless Camera. [4]

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