

# BT Bot Project

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**Abstract-** This paper surveys the current research and application of Bluetooth based in the fields of robotics that is used as a safety device. Bluetooth is a radio frequency protocol under IEEE that is used for communication between two devices ie the transmitter and the receiver . Here its use in the field of robotics ie a multipurpose wireless mechanical robot that can be used for a wide variety of application.

## I. INTRODUCTION

Bluetooth technology is used for transferring data between the transmitter and a receiver at a distance. It is used for its application in the field of identification of a person or object. Thanks to the dropping cost of technology that a single RFID tag costs only around 20 INR. RFID is the future of identification with an edge over almost all the other technologies existing in the market in terms of size and price.

An RFID tag is basically a small microchip as small as 0.4 millimeter sq. An RFID basically transmits data over the air and this data is decrypted by an RFID reader. Our objective is to install such RFID devices in schools, offices etc in order to make the identification, security, attendance etc a very automated task that will hopefully be better than the other existing RFID technologies as we will be using a counter especially for attendance systems where the attendance will only be marked if the number of entries are correspondent to the number of card entries otherwise it would states the card as intrusion.

This system will indeed cut down the human efforts involved in attendance marking especially in school and colleges where this becomes a time consuming task.

## II. APPLICATION

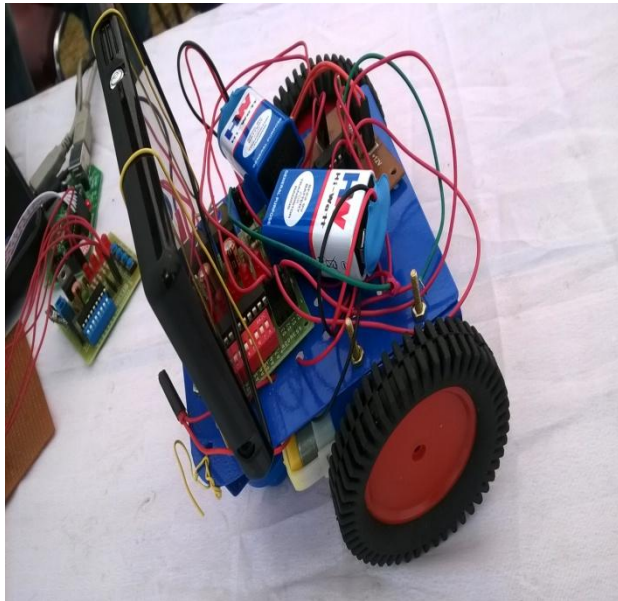
1. Defense:-
  - a. To navigate using GPS and acquire information of the enemy territory
  - b. During wars the robot can act as a drone to fight enemies with minimum human loss.
  - c. Using the robotic arm, bomb diffusion processes can take place.
  - d. Detecting the land mines sites and cautioning the soldiers.

- e. During network shutdowns the robot can change the transceiver mode to direct Radio Frequency communication.
2. Disaster Management:-
  - a. Small sized robot can fit through almost any hole and obtain surveillance of the external world situation.
  - b. Robotic arm can be used to lift and pick up heavy concrete in a disaster struck area.
  - c. Live video streaming can act as mode of communication between disaster victims and the control room personals.

## III. PRACTICAL IMPLEMENTATION

The current version of the robot consists of the following features:

1. The robot is wirelessly controlled with a PC and is interfaced using a serial communication for the most basic computer systems, however it can also be controlled using a high end Matlab GUI as well.
2. More precisely the GUI consists of the locomotive commands, live video streaming ability and if required certain operations of image processing can also be carried out.
3. While accessing the non-GUI version of the serial communication one can still have access to the live video streaming on to the private internet server.
4. While the video is streaming all the video data is simultaneously stored on a cloud of that same private server, only authorized personnel can have access to the logs.
5. The feasible part of this robot is that any smartphone(android base) can be utilized as a video streaming transmit media.
6. The best part is, this machine is comparatively low cost than other GUI controlled automations.



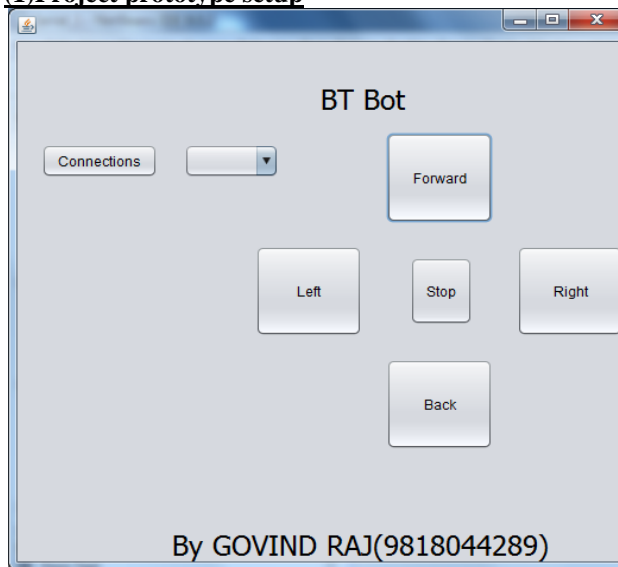
#### IV. WORKING

Microcontroller is coded in such a way that every time a command is received from the Bluetooth device it tally's with the microcontroller data for existing records. In case the entry is detected it check with the database and executes the entry as present in the microcontroller. In case of a non existing command the controller responds it to as null and beeps up .

**The prototype working of the model is as follows**

As in figure (2) the Bluetooth application used is shown .

#### **(1)Project prototype setup**



#### **(2)Communication with computer**

##### **Components required**

Bluetooth receiver module (HC05)

A prototype robot

Microcontroller at mega16

16 MHz crystal

Connecting wires

DB9 (USART communication)

USART cable

Programmer

Components are as shown in the figure (1).