



Joystick Controlled Wireless Robot

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ABSTRACT

There are many wireless mediums to control robotic the major ones being RF(radio frequency) and BT (Bluetooth).Developing different controller for each type of robotic system is a very tiresome task. So here we create a master robotics controller remote that consists of button controller as well as joystick controller. Robotics usually involves controlling robotics arms or vehiclesremotely.The controller is a wireless joystick that takes commands from user and allows remote control of robotics systems as per user commands. A receiver system also has rf as well as Bluetooth receivers and constantly displays commands from both the receivers on an LCD display. This allows the user to check the commands being transmitted by the transmitter joystick.

Keywords- Joystick, Bluetooth, Radio frequency, Controller.

I. INTRODUCTION

Two ATtiny13A microcontrollers (MCUs) for both transmitter and receiver circuits. The circuit uses a joystick to control a robot as compared to switches. A joystick is more comfortable to use than a keyboard or mouse. The circuit of the joystick-controlled robot comprises a transmitter and a receiver. The transmitter circuit is built around joystick module, fixed 5V voltage regulator LM1117-5.0 (IC1), ATtiny13A MCU (IC2) and 433MHz RF transmitter module (TX1). The joystick module provides x-axis and y-axis control through a switch. Status of joystick movement is read by ATtiny13A MCU, which transmits the status as serial data of eight bits wirelessly through TX1. The transmitter section gets 5V DC power supply from 9V battery through 5V regulator IC1. It is built around fixed 5V voltage regulator LM1117-5.0 (IC3), ATtiny13A MCU (IC4), 433MHz RF receiver module (RX1), motor driver IC L293D (IC5), two 5V – 7.4V battery-operated geared motors (M1 and M2) and a few other components. An eight-pin ATtiny13A MCU (IC4) receives eight-bit transmitted data through RX1. It contains an H-bridge to control motors of the robot. J1 is used to select 5V motor voltage or 7.4V battery voltage. IC5 sends parallel four-bit data (D3 to D0) to IC5.Data transmitted from the transmitter section contains eight bits of serial data; last four bits are a replica of the first four bits. ATtiny13A does not have serial data transmission pins, hence, a separate coding is developed for serially transmitting and receiving (like PWM) signals. Logic low (zero): Signal is one millisecond off with prefix one millisecond on.

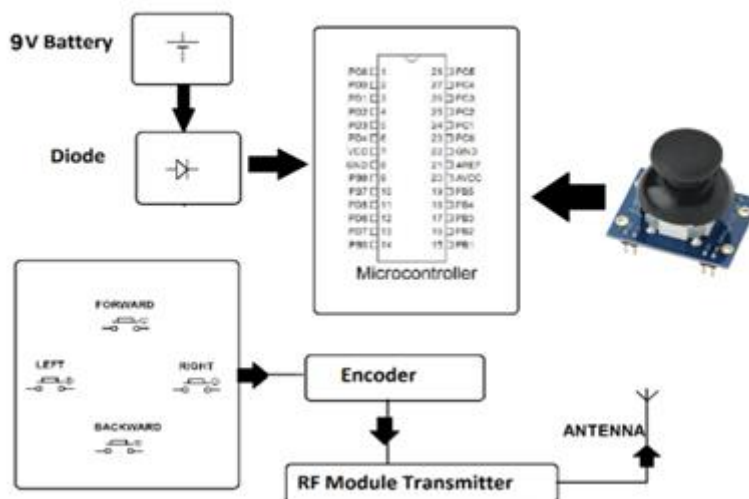
II. LITERATURE SURVEY

[1] Demonstrates mobile application utilizing Bluetooth technology to control a mobile robot using manual control was designed and realized for Android operating systems. [2] An Arduino-controlled rotary ultrasonic obstacle-avoidance system with WIFI control is presented in this paper. [3] Here they presented and described an in-house differential drive robot controlled by a joystick-based control mechanism. [4] An autonomous robot serving in dangerous and narrow areas for humans is described in this paper. An arm with a gripper is mounted on a 4dof robot platform. An interface program can be used to control this robotic system or a microprocessor driven module can operate independently. [5] demonstrates, the ROBOTS can be controlled by using mobile app with the help of BLUETOOTH through UART module. [6] demonstrates, an external localization sensor is used in this paper to remotely control a mobile robot using nonlinear trajectory tracking. [7] demonstrates, how the robots can be controlled through DTMF module.

1. ATMEGA 320

Since it is a major component of Arduino boards, the ATMEGA328P-PN is a popular microcontroller. Arduino Uno and Nano are powered by ATMEGA328P-PNs, which are 8-bit RISCs with a maximum clock speed of 20MHz, a FLASH memory of 32KB, and standard RAM of 2KB. In addition to UART, SPI, timers, ADC, comparators, and a watchdog, the ATMEGA328P-PN contains many on-board peripherals in a 28-DIP package that allows designers to easily prototype their products before committing to surface mount. A versatile, cost-effective microcontroller, the ATMEGA328 can withstand temperatures ranging from -40°C to 105°C and operate between 1.8V and 5.5V.

Transmitter



2. JOYSTICK STICK

Joysticks are input devices that consist of a stick attached to a base that pivots and provides angle and direction information to the device they are controlling. In many civilian and military aircraft, the joystick is the most

important control device in the cockpit, whether it is used as the center stick or as a side stick. There are frequently additional switches that control a variety of aspects of an aircraft's flight.

In video games, joysticks are commonly used to control movement, and they often come with some type of push-button whose state can also be read by the computer. The analog joystick is one of the most popular joysticks used with video games. Other machines can be controlled with joysticks, such as cranes, trucks, underwater unmanned vehicles, wheelchairs, surveillance cameras, and zero turn lawnmowers. For smaller electronics, such as mobile phones, miniature finger-operated joysticks are used.

3. BLUETOOTH MODULE

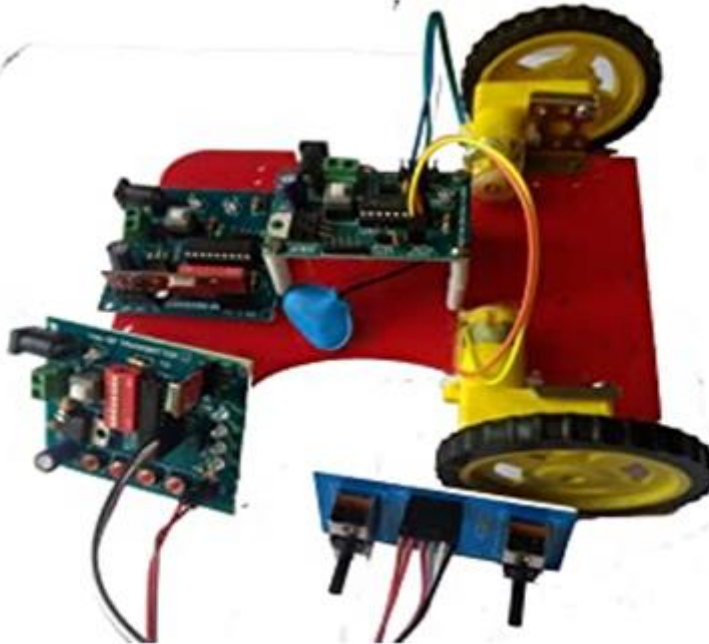
Wireless serial communication with the HC-06 Bluetooth module is possible through a slave Bluetooth module. The module is a slave device, meaning that it will receive serial data from a master Bluetooth device (device capable of sending data over the air, such as smart phones, PCs). When the module receives wireless data, it will output that data through the serial interface in the exact same way that it is received. The Arduino chip does not need any Bluetooth-specific source code. To send inputs to the Arduino, the app on your phone uses the module to receive inputs. Once this is done, the module transmits the inputs to the Arduino. According to the source code, the Arduino and actuators respond accordingly. As long as the module is not paired with the app on the phone, the LED on the module blinks rapidly, but as long as the module is paired with the app, the LED is a steady red.



4. DTMF RECEIVER

When a key on the handset is pressed, DTMF technology generates specific tones over the phone line and plays them over the phone line. Equipment at the other end of the phone line listens to the specific sounds and decodes them into commands. There are eight tones in DTMF. The high tones and the low tones are separated into two groups. Two tones are emitted by a single key press - hence the name dual tone - with one coming

from the high group and the other from the low. There are sixteen keys in all. Key presses can produce recognizable melodies using DTMF's use of audio frequencies. The two tones each button makes do not directly correspond to standard musical notes, however, so the relationship is not exactly perfect.



III. CONCLUSION

A distinct style was suggested in this composition, which broadens the conception of artificial robots. This product is going to be completely sound and has excellent request value. The product being developed is veritably stoner-friendly. First, all the systems are running effectively using the joystick; this is an apparent benefit, as consumers are more likely to perform it with them. Second, this design enables for advanced product development. The law is open source, and in several felicitations, it provides other people with openings for perpetration. This will give installation directions for setting up the job in specific. thus, there's no better product on the request

IV. REFERENCES

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