Bluetooth Remote Controlled Vehicle

Urmah Arte, Udu Ovraiti, Ramiro Vinan

Faculty Mentor: Dr. Puteri Megat Hamari

ECET Department, Minnesota State University, Mankato

Purpose

In todays world the need for human labor is decreasing at a very fast rate. For over two decades companies have grown well beyond the boarders of America, and so has technology. Technology has given companies the ability to transition from human labor to robotics. I bet your thinking “what does that have to do with our little remote controlled car”. It’s related because to understand robotics and self functioning systems one must understand the basics. This car gave us the ability to understand the coding process in such a way that allowed all the different components to run flawlessly together. Also with the help of the infrared sensor we were able to write a code program that allowed the car to drive and avoid all objects by itself without human intervention. As human being we cannot be easily programed like a computer, “we must learn”, we have to start from the basics then move our way to the more complex.

SYSTEM DESIGN

Infrared Sensor

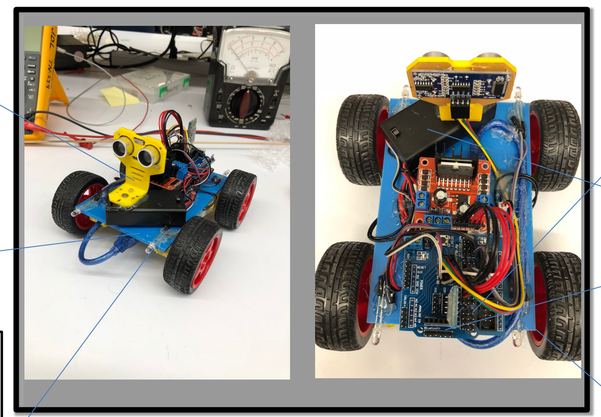
This component sends out an infrared beam that senses once an object gets within the allowable beam range.

Cars Frame

Frame was 3D printed using 123 design software

Led Lights

The car has a four LED lighting system. When the car is moving in either the forward/backwards direction the corresponding 2 LED lights in the front or back will turn on while the other 2 turn off



Arduino Uno Processor

Arduino provides a flexible source hardware configuration. It has an open source software system and its availability is widespread. The Arduino Board gives the ability for multiple devices to be connected together in such a way to not hamper performance or output.

Power System

Gear/motion system is operated a rechargeable battery pack and all other components are fueled by 9V battery.

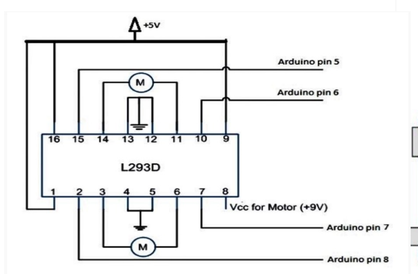
Under The Car

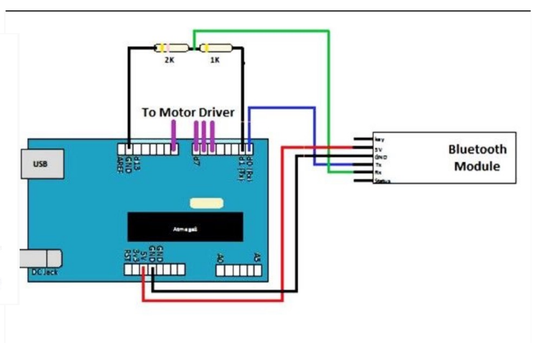
The components underneath the car are made up of 4 3v gear motors, on for each of the four wheels. Also the battery systems are connected to the bottom of the cars frame

Critical Component

The Arduino Uno Processor

The reason that we choose this to be our critical component is because this processor is the brain of our system. The figure below clearly shows how the different hardware components are connected to the Arduino board. Also the code with in the Arduino program is very detailed and long because each device has to be program flawlessly within the program to allow all the different components operate and function together.



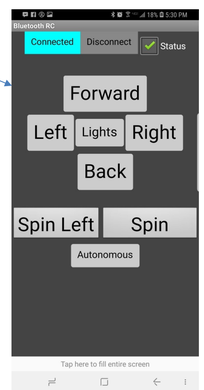


MIT App Inventor

App Inventor for Android is an open-source web application originally provided by Google, and now maintained by the Massachusetts Institute of Technology (MIT). It allows newcomers to computer programming to create software applications for the Android operating system (OS).

Phone APP

Once the code was finished within the MIT App Inventor program we were able to finalize our remote control in a easy to visualize and run phone application



Sample Code

This is a little sample code that is used within MIT App Inventor. This programs allowed us to visualize the code in a way that is easily understandable.