How To Create Your Own Mini-Robot

1.Building the Robot:

Robot Items & Parts:

In order to create your very own mini robot you will need the following parts and pieces that are listed below:

- Wheels (x2)
- Robot Frame
- Batteries (x2)
- Battery Holder
- Motors (x2)
- Raspberry Pi
- Bread Board
- Motor Driver Controller Board
- Ultrasonic sensor
- Raspberry Pi camera V2
- Placeholder
- Placeholder

Getting Your Build On:

Now that you have acquired all of the items listed above (hopefully) you can now start building your robot. HOORAY! For starters you should attach the motors to the robot frame. Place one in each hole on both sides of robot. After you have managed to stick the motors on the frame you should next connect the wheels to the motors as well. One wheel for each side. Afterwards place your Raspberry Pi on the holder that should be located on top of the frame. If you have managed to do all of this then you will have created the main outline for your mini robot and you can now continue to begin wiring everything up.
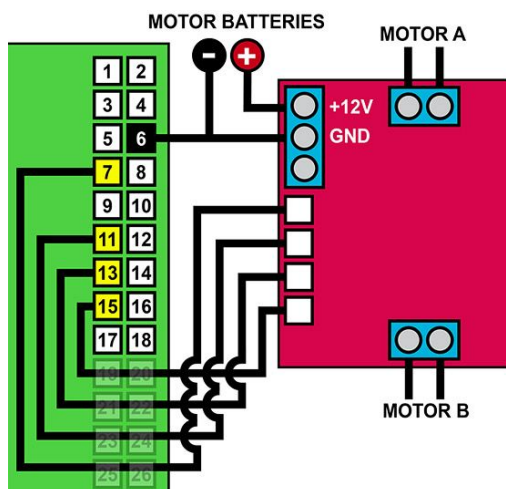
2. Wiring The Robot:

Wires:

    Now you may be thinking "Wow, I have all these pieces but how do they work together to move my robot?". Well, To answer your question we will have to use these magical items called wires. Wires can basically connect to anything (that is electronic of course) and help allow two different devices get....from each other. Knowing this you may have figured out that we will probably have to use a variety of wires in order to connect all these devices together. Don't get overwhelmed by the amount of different wires that are needed to attach all the devices together because we will explain them piece by piece.

Moving Motors:

    So to begin we will teach you how to wire the motors together using the Motor Driver Controller Board. You may use the diagram below as reference when wiring this. Anyway to start you will need to place two.... attached to the motors into the Motor A and Motor B outlet MDCB (Motor Driver Controller Board). Afterwards connect the red.... to the

3.Coding the Robot

Code:
 CODE

What lines DO

Line 1: Sets up the keyboard, GPIO, And time for later use in the code

Lines 3-4: defines values for Echo and Trig for sonar

Lines 5-10: sets up GPIO board to power the motors

Lines 11-18: sets up the Sonar Gpio slots

Lines 19-20: Shuts off GPIO so the motors don't start on

Lines 22-26: defines the camera ON function

Lines 28-30: defines the camera OFF function

Lines 32-47: defines sonar function

Lines 49-54: defines backwards functions

Lines 56-61: defines forwards function

Lines 63-74: Defines left turn function (Note that the turn has has two settings for higher and lower speeds)

Lines 76-87: Defines right turn function (Again note that the turn has has two settings for higher and lower speeds)

Lines 89-94: Defines stop function

Lines 96-97: Starts active code

Lines 98-99: Does a sort of emergency shutdown when Q is pressed

Lines 101-102: Activates sonar function

Lines 104-119: Takes output of sonar function and goes forward backwards or turns left depending on how close an obstacle is (Note this basically makes the robot go forward unless it sees a wall) when W is pressed

Lines 111-112: Starts the backwards function when S is pressed

Lines 114-115: Starts the right turn function when D is pressed

Lines 117-118: Starts the left turn function when A is pressed

Lines 120-124: Takes power from motors when no keys are pressed

Lines 126-127: Starts recording when V is pressed

Lines 129-130: Stops recording when C is pressed

Lines 132-160: Sets Motor power to a percentage when the corresponding key is pressed ex. Power set to 70% when 7 is pressed

162-163: Shuts down code and cuts power to GPIO