Ahsanullah University of Science and Technology
Department of Computer Science and Engineering
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CSE 3118

Microprocessors & Microcontrollers

Project proposal

Project name: Mr. Unstoppable

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Objective

In our day to day life we need to keep our walking surface and house clean to avoid dirt and maintain hygiene. We might have babies who play on the floor and get infected from the dirt lying on the floor. To avoid this type of circumstances we need to keep our floor clean all the time. This is an automatic vacuum cleaner so we will not need to put much effort while using it as it will work on its own. It will be cost friendly so people will be able to afford it easily.

Social Values

This smart robot will reduce the time and energy of us and that will create the chance to relax as we will not need to worry about the dirt. It is very suitable to maintain our hygiene with minimum maintenance. It is also very easy to customize the size and shape as per need.

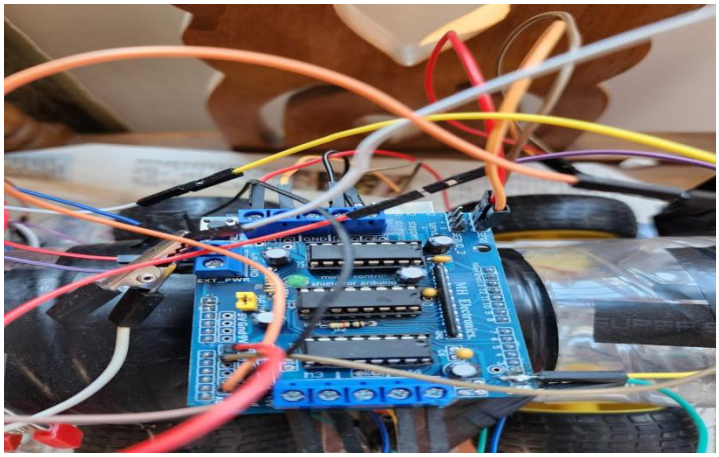
Required Components

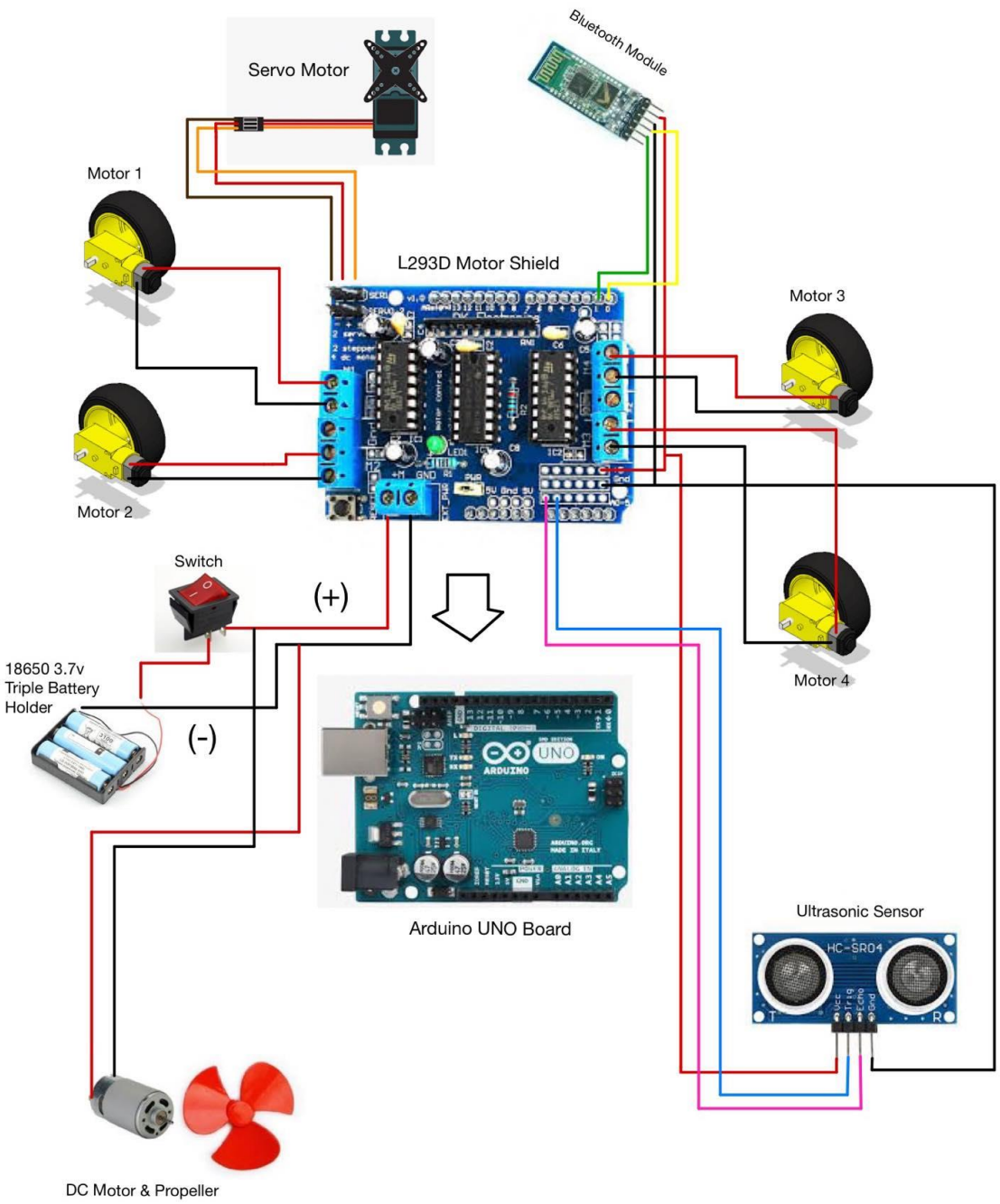
- Motor gears and wheels
- Arduino uno
- Lithium ion battery (18650)
- Arduino motor shield (L-293)
- Servo motor (SG90)
- Ultrasonic sensor (HC- SR04)
- Battery holder
- connecting wires
- Bluetooth module (HC-05)

- Motor and Propellar
- DPDT switch

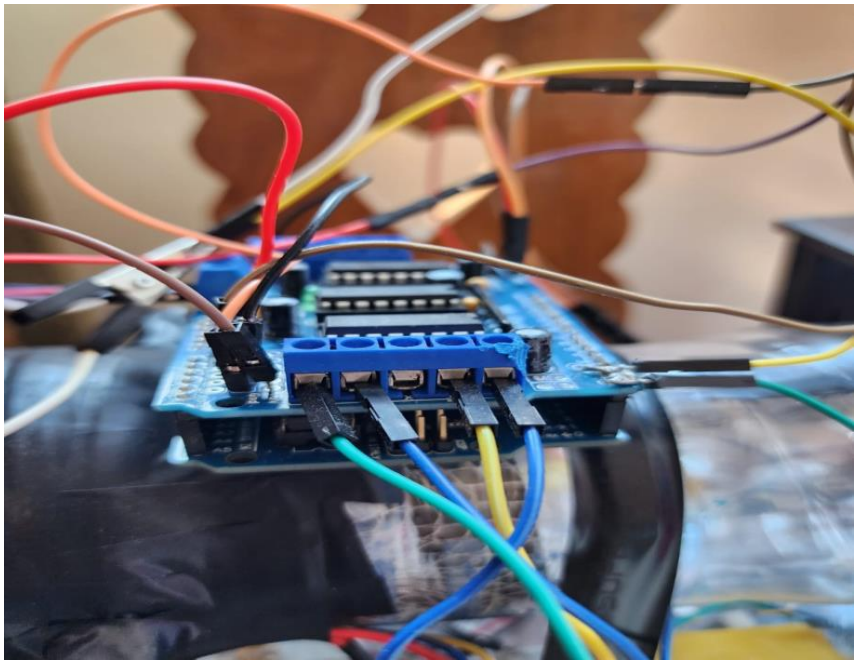
Working Procedure

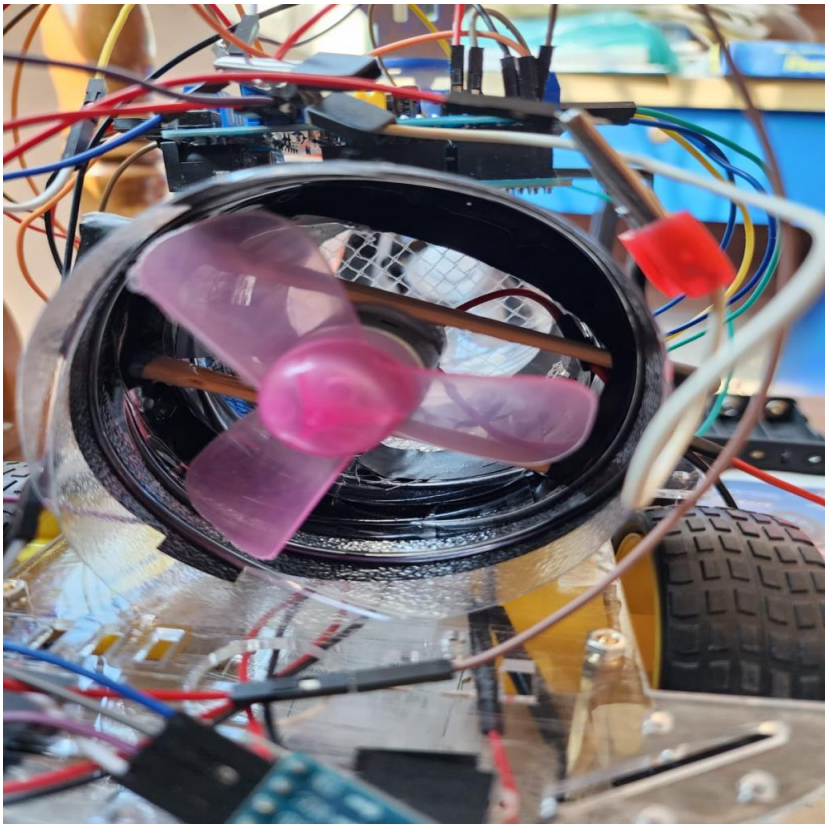
Arduino motor shield connected with the arduino board allowing the wheels to move. The ultrasonic sensor will take the input and avoid obstacles for the movement of the robot. Ultrasonic sensor is attached with the servo motor which expands the functionality of the robot to identify more obstacles and avoid them. The lithium ion battery works as the power source of the robot. The propellar is attached with the motor and turning the propellar creates an upward pressure and by creating some boundaries for the pressure to go in a certain way the pressure is creating suction. Using the suction we can capture dirt in the dirt panel. This is the way where the robot will collect dirt simultaneously. A 1-0 will help to turn on the device. We can control this robot using several voice commands. This also requires a Bluetooth module and mobile app (arduino bluetooth control).

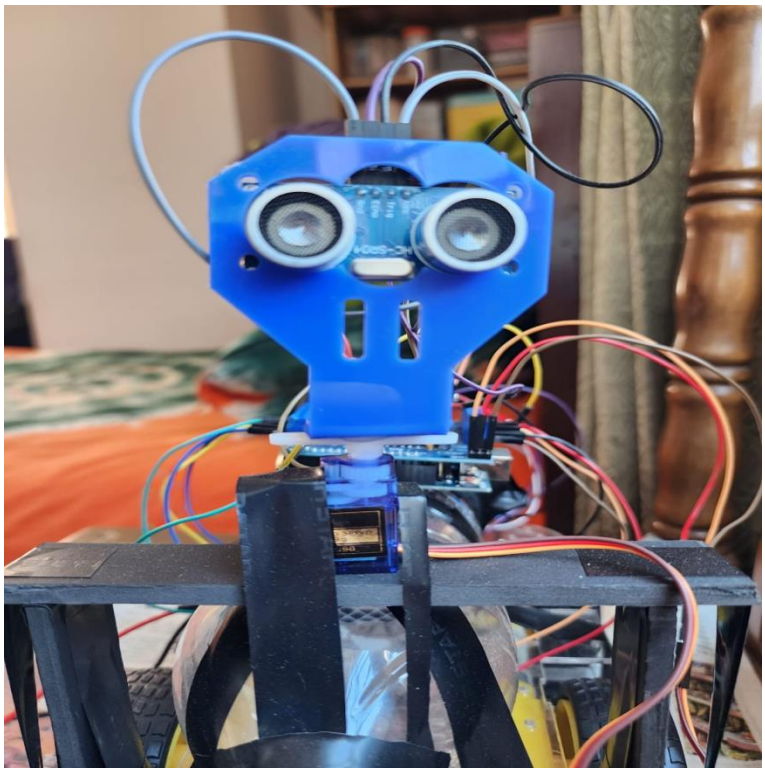




Circuit Diagram







Budget Comparison

Previous estimated budget: (2580 Tk)

VS

Final Expenditure:

Equipment	**Quantity**	**Cost(Taka)**
Arduino Uno	1	900
SG90 servo motor	1	140
4 wheel car chase	1	800

Arduino motor shield (L-293)	1	200
switch	1	10
Bluetooth module (HC-05)	1	300
Lithium ion battery (18650)	5	450
Battery holder	2	100
Motor and Propellar	1	80
glue stick	1	20
connecting wires	--	100
		Total : 3100

Challenges of the Project

While making this project we had to be very careful while soldering. Soldering was very difficult for us because we never did it before and a couple of our components got burnt because of our lack of experience. Then we had to buy those components again.
Our idea was to make an automatic vacuum cleaner but later we also implemented voice control as well. While implementing voice control we had some trouble with the code of bluetooth module and using the app.

Conclusion

As remaining cleaned is an important part of hygiene , there is a gap where we always can't take a look at our floor and unable to keep it clean, all the time. This vacuum cleaner can be great thing to cover up that gap. So we all should have vacuum cleaners in our household.

References

1. https://www.flyrobo.in/blog/obstacle-avoiding-car#:~:text=The%20main%20component%20in%20the,fast%20and%20economical%20distance%20measurement
2. https://www.google.com/amp/s/rootsaid.com/arduino-voice-controlled-car/