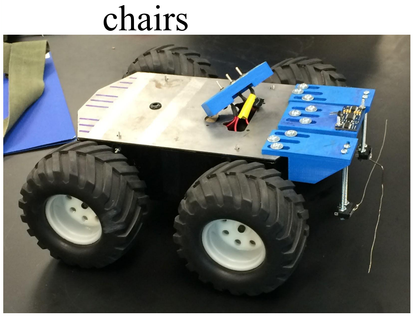
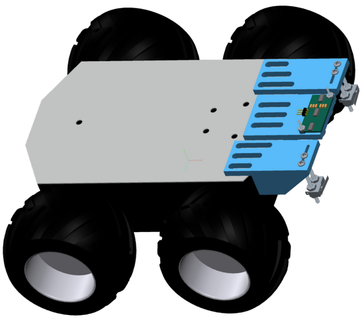
Results

- Can navigate in a room with tables and chairs





Errors

- Bump sensors can sometimes get damaged by surrounding objects and tires
- The ultrasonic could detect bump sensors instead of the ground

Conclusion:

The robot has become a base for which many sensors and programming can be incorporated. Much like the LAZARUS project, this Mousebot has become a building block for which we can program better code so that it may become a more advanced maze-solving, beacon-following rover. What our team contributed was the use of our designs to better the robot's performance in an obstacle course. The electronics were improved so that the robot could accommodate a variety of new sensors. We also documented every mount in a 3D CAD model so others may know exactly what was done. Also, both the ultrasonic and the limit switch mounts were built onto the Mousebot so that others may use them for future projects. The purpose of the project was to complete the challenge and to further move the robotics program at UNC and it has been achieved.

Acknowledgements

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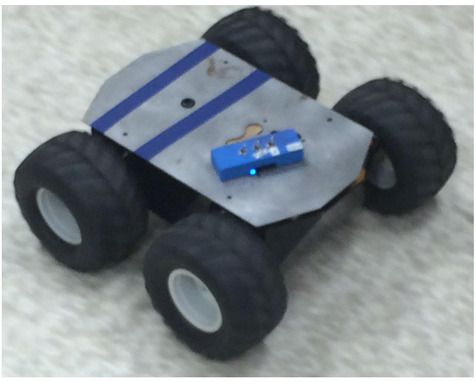
Materials

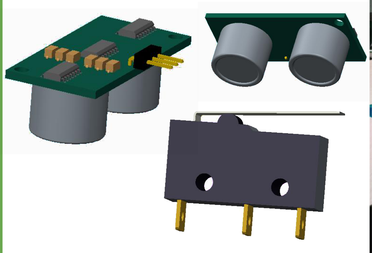
- Mousebot Chassis
- Motor Controllers with Motors
- Arduino Uno
- Jumper Wires
- Limit Switches
- Parallax Ping Sensor
- Two 11.1 V 2200 mAh Lithium Polymer Batteries
- Makerbot Replicator 2
- Creo 2.0 CAD software

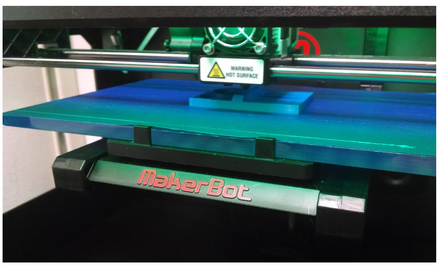
Procedure

- Identify problem: No way of detecting obstacles

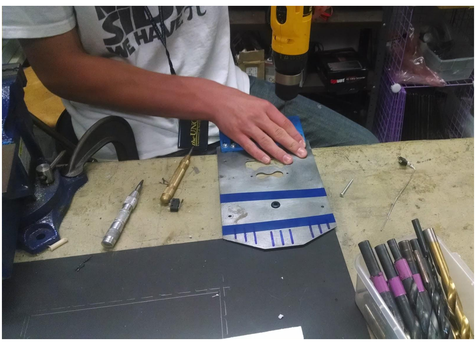


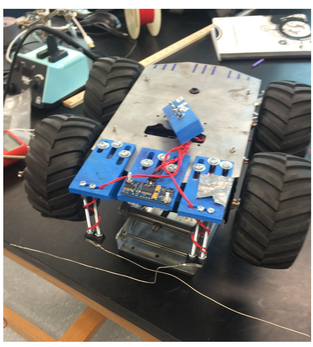
- Find sensors to help the robot detect obstacles
- Design and 3D print the mounts for the sensors





- Drill the holes in the top plate of the Mousebot





- File or drill the mounts that have any imperfections
- Bolt the mounts onto the top plate
- Fit and bolt sensors specifically to their own mounts
- Solder connecting wires to the sensors
- Feed the wires through the top plate to the inside of the robot, ensuring that they are long enough to reach the Arduino
- Replace the top plate back and test sensors to ensure they operate correctly