

Figure 1: Assembled System [1]

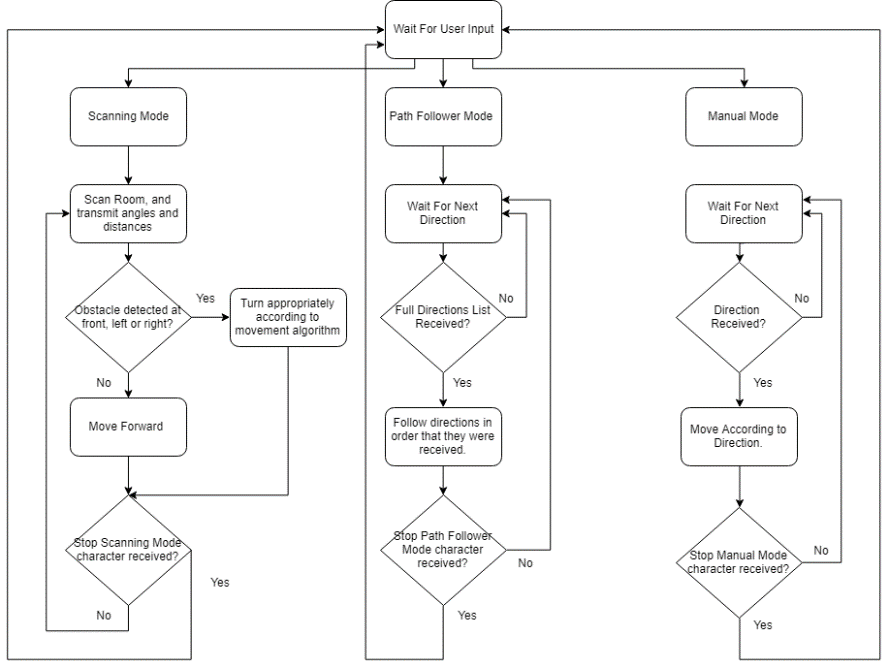
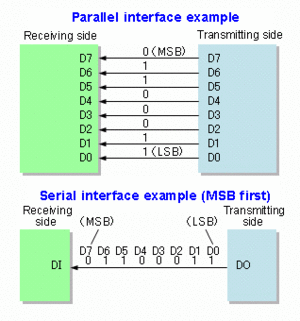


Figure 2: Overall Code Flowchart [2]



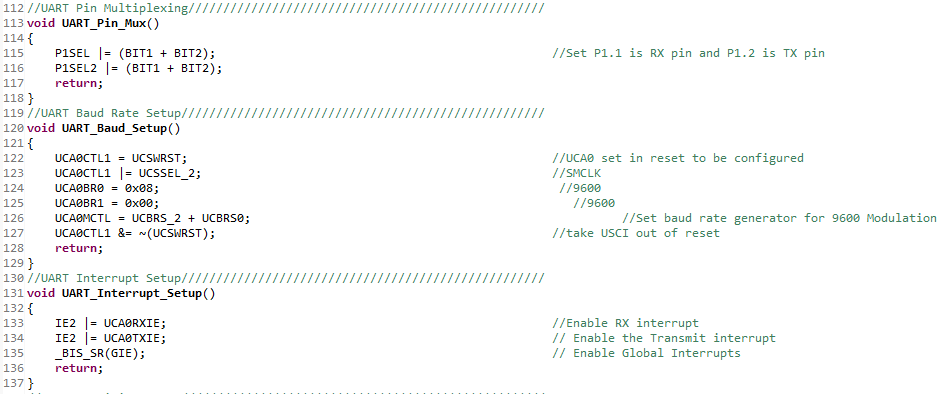
Figure 3: Serial Communication Diagram [3]

Figure 4: UART Code [4]

1. LIDAR Sensor Interfacing

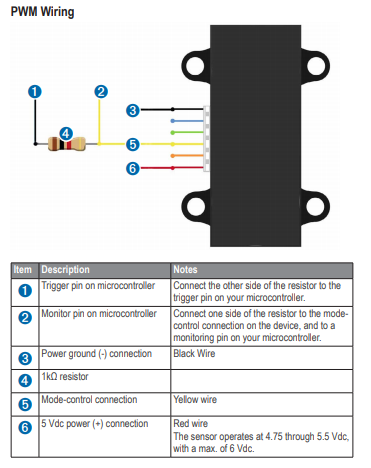


Figure 5: LIDAR Wiring Diagram [5]

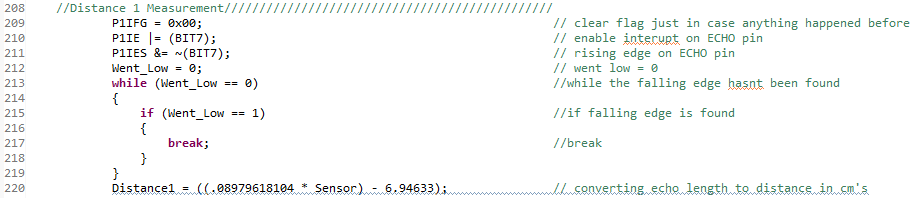


Figure 6: LIDAR Distance Code [6]

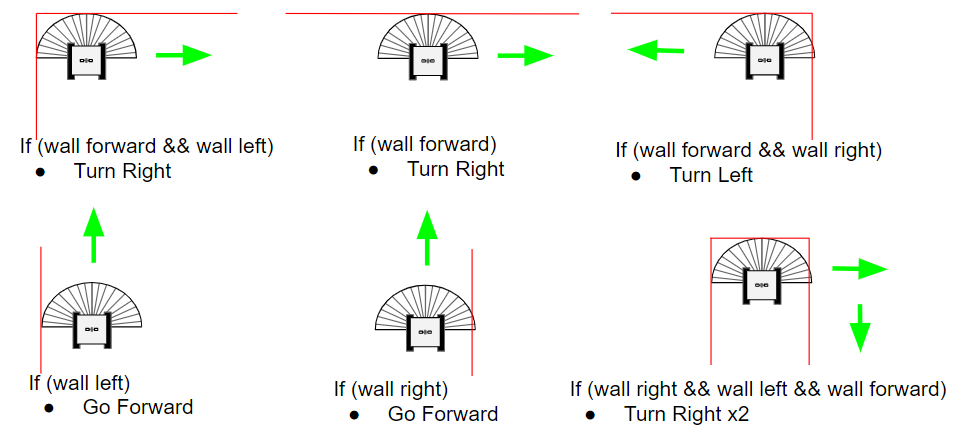
4. Rover Movement Code

Figure 7: Movement Algorithm [7]

1. Scanning Mode

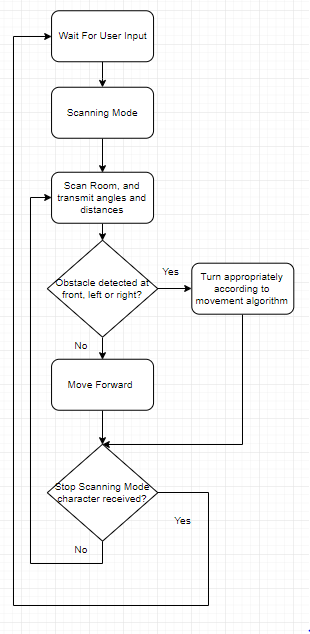


Figure 8: Scanning Mode Flow Chart [8]

1. Path Follower Mode

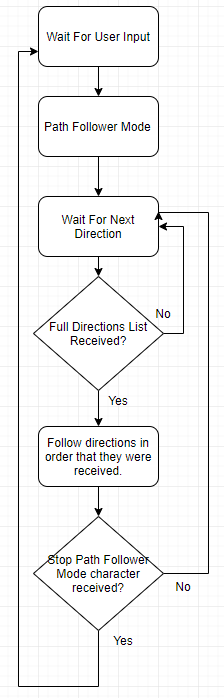


Figure 9: Path-Follower Mode Flow Chart [9]

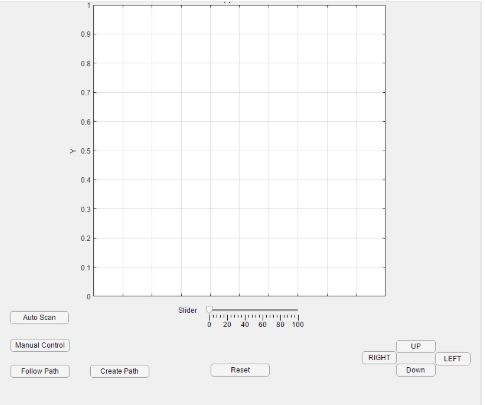
1. GUI Design

Figure 10: GUI Prototype [10]

8. Hardware Setup

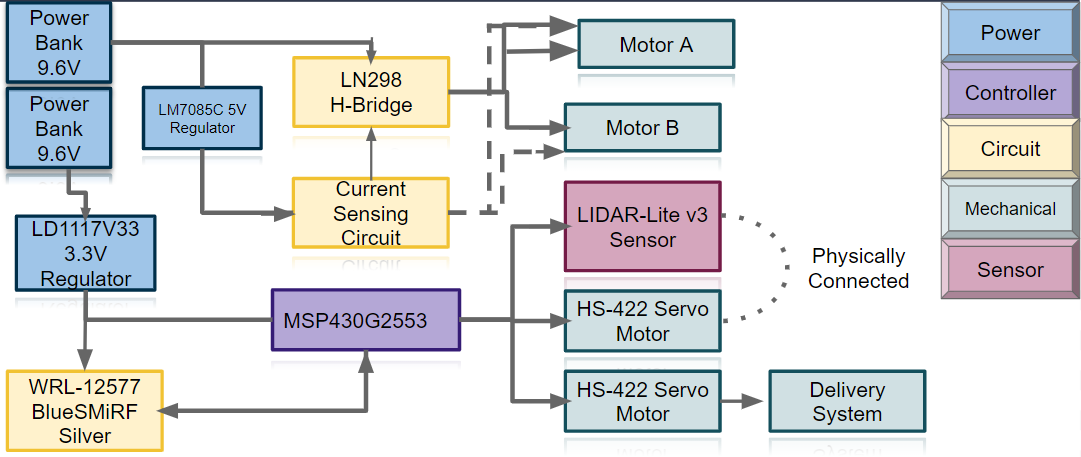


Figure 11: Hardware Flow Chart [11]

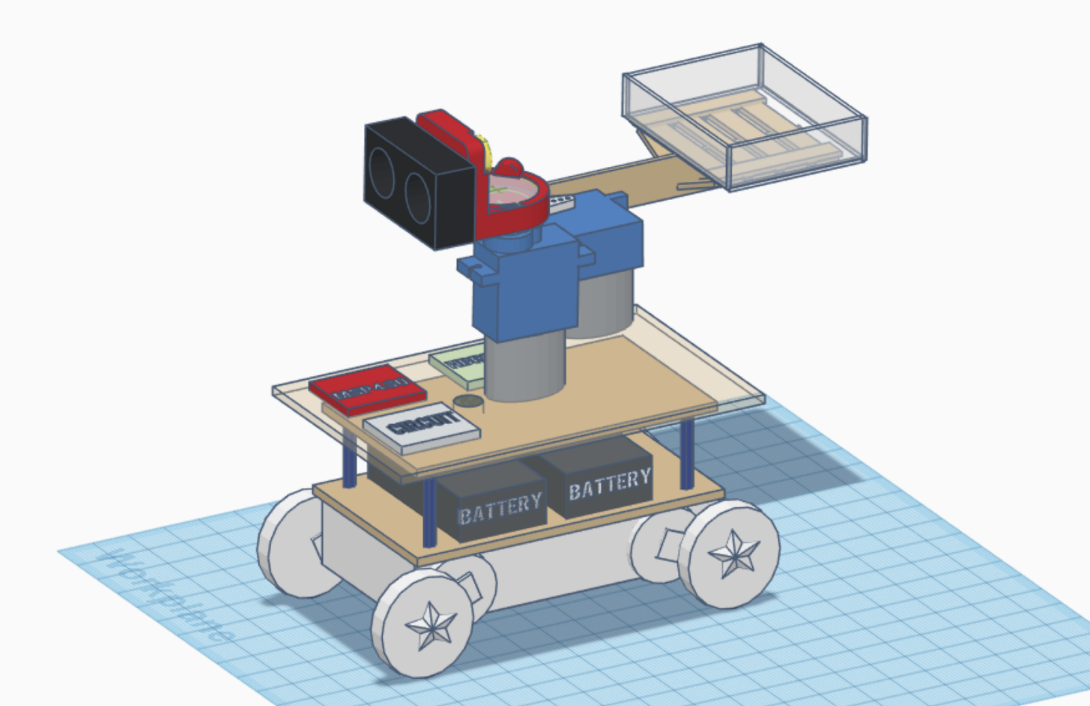


Figure 12: 3D Model Final Design [12]

1. Tzapin, Cindy. Laboratory Notes, 21 October 2018.
2. Salinas, Weston. Self-Made, 21 October 2018.
3. "Serial communication", *En.wikipedia.org*, 2018. [Online]. Available: https://en.wikipedia.org/wiki/Serial\_communication. [Accessed: 21- Oct- 2018].
4. Salinas, Weston. Self-Made, 21 October 2018.
5. *Static.garmin.com*, 2018. [Online]. Available: https://static.garmin.com/pumac/LIDAR\_Lite\_v3\_Operation\_Manual\_and\_Technical\_Specifications.pdf. [Accessed: 21- Oct- 2018].
6. Salinas, Weston. Self-Made, 21 October 2018.
7. Salinas, Weston. Self-Made, 21 October 2018.
8. Salinas, Weston. Self-Made, 21 October 2018.
9. Salinas, Weston. Self-Made, 21 October 2018.
10. Martinez, Mario. Previous Presentation, 21 October 2018.
11. Gajadhar, Kirina. Previous Presentation, 21 October 2018.
12. Tzapin, Cindy. Previous Presentation, 21 October 2018.