

Future Work

For this project, we build two differential drive frames with a complete set of sensors. The first robot definitely needs some work in order to make it match the final design. A lot of the 3D printed parts have already been printed for it since we printed them as back up parts. The first robot is intended to be a platform that can be modified by other SPARC members outside the team. As a summer project, Matthew will look into enhancing the design in order to create a robot that can both accomplish the task for the competition as well as use the same frame for other applications. For instance, some other applications could involve simultaneous location and mapping (SLAM) of hallways. The camera could be used to follow QR codes. The 8020 frame allows new manipulators to be easily attached.

One of the key issues with the competition robot is the lack of computational power. After doing some research on different alternatives to a Raspberry Pi, we have concluded that an Intel NUC would be a relatively affordable option to obtain a higher amount of processing power in a small form factor. In order to use an Intel NUC, the auxiliary battery will have to be replaced from the 7.2V battery to one that exceeds 19V. The Raspberry Pi camera must also be replaced with a USB webcam. A USB hub may also be needed due to the limited USB ports and lack of accessible GPIO on the NUC. Most other aspects of the design should be able to remain constant.