

## Investigation of Wired Commands from Raspberry Pi to DeepRacer

Our original plan for controlling the deep racer was to run all of our custom code on a laptop and send the correct commands to the deep racer using the deep racer API. This means that the commands would be sent over the WiFi. Due to the nature of the project, this isn't ideal. Not only would the latency of sending commands over wifi be dangerous for operating a machine like a golf cart. We would also have to use a hotspot to provide an internet connection when on the golf course, which isn't the most reliable. Over this sprint, we spent time looking for solutions that wouldn't involve sending commands using the deep racer API. The solution that we have come to is to send commands directly to the deep racer using ROS 2.0 on multiple machines. Currently, we use ROS 2.0 to communicate with the different modules of the golf cart. We managed to figure out that the deep racer uses an outdated ROS 1.0 distribution as well as Ubuntu 16.1, while our machines are using a ROS 2.0 distribution on Ubuntu 20.4. Assuming we can update the deep racer to match our machines, we should be able to ping/ssh between the machines and communicate the different raspberry pi over ethernet. There may be a little latency with this method, but not nearly as much as the WiFi hotspot setup.