Team F: FALCON EYE

Individual Lab Report 3

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Progress Review 2

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Team

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1 Individual Progress

Last week, I Primarily contributed in tele-op control of Husky through commands from remote computer and the control of Husky using Logitech Gamepad. I also worked on building the CAD model for our system by creating several parts and using some parts available online in coherence with Rahul.

1.1 Husky control using Joystick

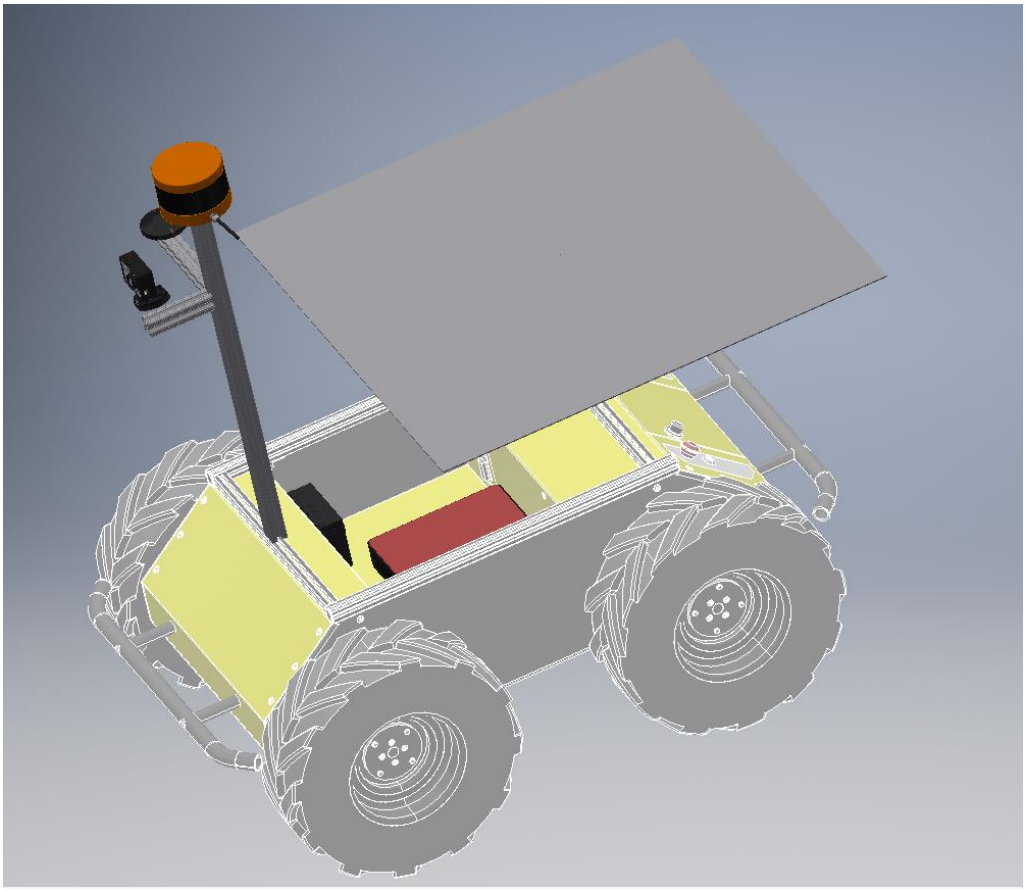
Working with Husky has been the most challenging part of our project as it had a lot of uncertainty associated with it in terms of both hardware and software parameters. I took up the role of controlling the husky using commands from remote PC. I initially figured out the node that primarily sends the commands to the motor drivers. There were several parallelly working nodes and hence the commands had to go through several nodes to reach the driver in the format it perceives. This required modification of several nodes of Husky which I implemented successfully. The input from the joystick had to be published as a topic and read by several nodes to perform the desired action. This task took a while, but I figured it out and could control the husky using the joystick in accordance to the direction input given from joystick. I also customized two buttons of the husky (A and X) to be able to switch the husky speed between two modes – slow and fast.

1.2 Husky tele-op

For this task, I was backed up by Pratibha. We created a node that receives data from the user through terminal and uses that as the control inputs for the Husky. We had to make this node function such that it subscribes to data from the terminal and publishes the same. Meanwhile, all other nodes such as cmd_vel, husky_teleop etc. was made to subscribe to that topic. This worked as expected after some initial glitches. Now we can control the husky using commands from remote PC.

2 CAD modelling

I, along with Rahul developed a CAD model for our entire system which includes Husky, Velodyne Puck, GPS, Camera, Battery and Mini PC. I created the model of Mini PC as we couldn't find the model we required and creating the aluminum profile. I worked on integrating all the parts together and constructing the final system.



3 Teamwork

Pratibha worked on development of PCB for our system along with Danendra. She also worked with me in tele-op control of Husky. Rahul worked on building the Velodyne driver necessary for visualizing any given LiDAR data on Rviz and got that working perfectly. Yuchi worked on tele-op control of Bebop using joystick. He was assisted by Danendra. Danendra also worked on PCD design.

4 Future plans

Pratibha and I will work on acquiring pose estimate of Husky using encoders and check for GPS accuracy. Rahul will work on Velodyne to detect obstacles from given LiDAR data. Danendra will further work on flight of Bebop given a GPS location. Yuchi will further work on GPS and integrating the localization of husky, Bebop and april tags.