

Homework 4 - Lidar

Vehicle Team 1 (Gaither):

- Yovany Molina
- Dewayne Roxborough
- Jett Su

How to Run Node:

- Package Name: lidar
- Executable: lidar_pointcloud

Mapping for LaserScan to PointCloud:

We generate an array of Point32 class instances with a length equal to the number of beams in the LaserScan message. Then, for each entry in the ranges section of the message:

- We calculate the x coordinate using $x = r \cdot \cos(\theta)$, where θ is calculated from the beam's index and the angle increment and is offset from the starting angle of the beams.
- We calculate the y coordinate using $y = r \cdot \sin(\theta)$ in the same way as above.
- We set z to 0.

We then set the "points" part of the PointCloud message to our newly allocated Point32 array and publish the message.

Note that we define the 'laser' frame id as part of the PointCloud message, so a transform is not required to view it in Rviz.