Data Collection:

open terminal:
cd catkin_ws && source devel/setup.bash && roslaunch velodyne_pointcloud VLP16_points.launch

new terminal tab:
start recording : rosbag record /velodyne_points
stop recording : Ctrl+C

.bag file with the recording will be created in the same catkin_ws folder, with date and time as its name.

For Mapping:

Close all the terminals,

open terminal:
cd aloam && source devel/setup.bash && roslaunch aloam_velodyne aloam_velodyne_VLP_16.launch

Play the recorded rosbag file:
First go into directory where the recorded bag file is there, then:

open terminal:
rosbag play filename.bag

map.pcd is created in home or aloam directory rename it according to convenience for eg hc_mg.pcd

Create a new folder:

Assume we are creating a new path for hostel circle to main gate,
create a folder with the name hc_mg.

Copy the ndt_loc_maini folder into the hc_mg folder.
Inside the ndt_loc_maini folder delete the build and devel folders.

Open terminal in the new ndt_loc_maini:
catkin_make

Copy the waypoint_collect_ud.py, navmaini.py, TESTBED.sh files into the hc_mg folder and rename the TESTBED.sh to hc_mg.sh in our case.

Waypoint Collection:

Load the Map hc_mg.pcd in map folder of localization package(it is inside ndt_loc_maini/src/ndt_localizer/map):

Change the name of map.pcd file in map_loader.launch in localization package (ndt_loc_maini/src/ndt_localizer/launch/ in map_loader.launch. write the file name of new map here hc_mg.pcd.

Delete the old files with name waypoints.txt present if any

open terminal:

cd ndt_loc_maini && source devel/setup.bash && run roslaunchndt_localizer ndt_localizer.launch

open new terminal:

Run python code to collect waypoint:

python3 waypoint_collect_ud.py

Go to the location of the rosbag file recorded for map

open terminal:

rosbag play filename.bag

A new waypoints.txt file will be created.

Once the waypoint is collected, copy the address of this waypoints.txt file and paste in the navigation python code.

Change the path of navmaini.py and waypoint.py in the hc_mg.sh

Open terminal:

cd hc_mg && chmod +x hc_mg.sh

For navigation:

Switch on the Auto button in the vehicle,make it neutral and engage the emergency switch for safety.

open terminal:

Run the bashscipt file

./filename.sh on one terminal

Check for correct localization in rviz, if not correct it using 2D

pose interactive feature.

Run the python navigation code to start navigation:
open terminal:
  python3 navmaini.py

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