How to use kdlidar_ros node with kitti

This is the ROS implementation of Kudan LiDAR SLAM (KdLidar) library.

Quick start

Setup kdlidar_ros

1. Install ROS

- ROS Melodic (Ubuntu 18.04)

```
sudo sh -c 'echo "deb http://packages.ros.org/ros/ubuntu $(lsb_release -sc) main" > /etc/apt/sources.list.d/ros-latest.list'
sudo apt-key adv --keyserver hkp://ha.pool.sks-keyservers.net:80 --recv-key 421C365BD9FF1F717815A3895523BAEEB01FA116
sudo apt update
sudo apt install ros-melodic-desktop-full
sudo rosdep init
rosdep update
echo "source /opt/ros/melodic/setup.bash" >> ~/.bashrc
source ~/.bashrc
```

- ROS Kinetic (Ubuntu 16.04)

```
sudo sh -c 'echo "deb http://packages.ros.org/ros/ubuntu $(lsb_release -sc) main" > /etc/apt/sources.list.d/ros-latest.list'
sudo apt-key adv --keyserver 'hkp://keyserver.ubuntu.com:80' --recv-key C1CF6E31E6BADE8868B172B4F42ED6FBAB17C654
sudo apt-get update
sudo apt-get install ros-kinetic-desktop-full
sudo rosdep init
rosdep update
```

```
echo "source /opt/ros/kinetic/setup.bash" >> ~/.bashrc
source ~/.bashrc
```

2. (For customers) Extract `kdlidar_ros.zip` and `source setup.bash`

```
unzip kdlidar_ros.zip
source kdlidar_ros/install/setup.bash
```

Map making mode

3. Launch `kdlidar_ros_pcl` node

```
source /path/to/kdlidar_ros/install/setup.bash
roslaunch kdlidar_ros kdlidar_ros_pcl_nissan_mapper.launch
```

4. Open a new terminal and `rosbag play`
   kdlidar_ros might skip frames so please add `-r 0.5` to play a rosbag file with x0.5 speed

```
rosbag play /path/to/kudan_input_filt_2020-09-09-15-26-12.bag -r 0.5
```

5. Open another terminal and save map

```
source /path/to/kdlidar_ros/install/setup.bash
rosservice call /kdlidar_ros_pcl/save_map nissan.kdlm
```

You can replace "nissan.kdmp" with any file name you want. The file will be saved at ROS_HOME which is by default ~/.ros
Note that you need to source your catkin workspace in your terminal in order for the services to become available.

Launch kdlidar_ros_pcl node

KITTI dataset

1. Download a sample bag file

You can download kitti_2011_10_03_drive_0027_synced.bag from here

2. Launch `kdlidar_ros_pcl` node

```
roslaunch kdlidar_ros kdlidar_ros_pcl_kitti.launch
```

3. Open a new terminal and `rosbag play`

```
rosbag play /path/to/kitti_2011_10_03_drive_0027_synced.bag -r 0.5
```

Save map

To save the map with a simple command line command run one the commands (matching to your node running):

```
rosservice call /kdlidar_ros_xxx/save_map path/to/map.kdlm
```

You can replace "map.kdmp" with any file name you want. The file will be saved at ROS_HOME which is by default ~/.ros

Note that you need to source your catkin workspace in your terminal in order for the services to become available.