Automatic Calibration Tool Usage Guide

Automatic Calibration Tool Usage Instructions

Usage: """ ./run_lidar2imu <lidar_pcds_dir> <lidar_pose_file> <extrinsic_json> """

Data Requirements for Running the Calibration Tool

1. Lidar PCDs Directory:

- Description: A directory containing Lidar point cloud data files in .pcd format.
- Preparation:
    - The Lidar data should be collected and saved in .pcd format.
    - Organize these files in a directory to specify as an input to the tool.

2. Lidar Pose File: // IMU Data or other positioning systems

- Description: A text file containing pose information for the Lidar data, similar to the NovAtel-pose-lidar-time.txt file in the sample data.
- Preparation:
    - Collect pose data for the Lidar sensor, ensuring it is synchronized with the Lidar data.
    - Format this data in a text file with timestamps and pose information.

Sample Data:

2021-10-26-16-21-29-468 1.000000000 -0.000014703 -0.000006041 0.000061155 0.000014701 1.000000000 0.000004847 0.000095810 0.000006040 -0.000004848 1.000000000 -0.000077579

- First part of each line (2021-10-26-16-21-29-468) is a timestamp indicating the date and time when the data was recorded.
- The next nine numbers form a 3x3 rotation matrix which represents the orientation of the vehicle in 3D space.
- The last three numbers represent a translation vector that indicates the position of the vehicle in the global coordinate system.

3. Extrinsic JSON File:

- Description: A JSON file containing the initial extrinsic calibration parameters between the Lidar and another reference frame (e.g., GNSS or vehicle frame).
- Preparation:
    - Perform an initial calibration to determine the transformation matrix between your Lidar sensor and the reference frame.
    - Format this matrix in a JSON file similar to the sample data.

Summary:

The automatic calibration tool does not support camera data or directly process data from ROS bags. It specifically requires Lidar PCD files, a Lidar pose file, and an extrinsic calibration JSON file for operation.