Main Autoware packages

Localization

- **ndt_ localizer**

  The position of the vehicle can be located by scan matching based on the NDT (Normal Distribution Transform) algorithm with the 3-D map of PCD (Point Cloud Data) format and LIDAR data. The position error of localization is around 10cm.

- **orb_ localizer**

  This is a localizer node that uses maps generated from built-in mapper. In other words, this package is a SLAM localizer.

- **gnss_ localizer**

  Global Navigation Satellite system

Detection

- **road_ wizard**
- **cv_ tracker**
- **laidar_ tracker**

Mission

- **freespace_ planner**
- **lane_ planner**
- **way_ planner**

Motion Planning

- **astar_ planner**
- **dp_ planner**
- **ff_ waypoint_ follower**
- **lattice_ planner**

  Lattice based motion planning

- **op_ simulator**
- **op_ simulator_ perception**
- **waypoint_ follower**

- **waypoint_ maker**

  There are 3 types of csv format of route file handled by waypoint_ maker:

  - ver1: It consists of x, y, z and velocity (the first line does not have velocity)

    Example:

    3699.6206,-99426.6719,85.8506

    3700.6453,-99426.6562,85.8224,3.1646

    3701.7373,-99426.6250,85.8017,4.4036

    3702.7729,-99426.6094,85.7969,4.7972

    3703.9048,-99426.6094,85.7766,4.7954

    3704.9192,-99426.5938,85.7504,4.5168

    3705.9497,-99426.6094,85.7181,3.6313

    3706.9897,-99426.5859,85.6877,4.0757

    3708.0266,-99426.4453,85.6608,4.9097

    ...

  - ver 2: It consists of x, y, z, yaw and velocity (the first line does not have velocity)

    Example:

    3804.5657,-99443.0156,85.6206,3.1251

    3803.5195,-99443.0078,85.6004,3.1258,4.8800

    3802.3425,-99442.9766,85.5950,3.1279,7.2200

    3801.2092,-99442.9844,85.5920,3.1293,8.8600

    3800.1633,-99442.9688,85.5619,3.1308,10.6000

    3798.9702,-99442.9609,85.5814,3.1326,10.5200

    3796.5706,-99442.9375,85.6056,3.1359,10.2200

    3795.3232,-99442.9453,85.6082,3.1357,11.0900

    3794.0771,-99442.9375,85.6148,3.1367,11.2300

    ...

  - x,y,z,yaw,velocity,change_ flag

    Example:

    3742.216,-99411.311,85.728,3.141593,0,0

    3741.725,-99411.311,85.728,3.141593,10,0

    3740.725,-99411.311,85.733,3.141593,10,0

    3739.725,-99411.311,85.723,3.141593,10,0

    3738.725,-99411.311,85.719,3.141593,10,0

3737.725,-99411.311,85.695,3.141593,10,0
3736.725,-99411.311,85.667,3.141593,10,0
3735.725,-99411.311,85.654,3.141593,10,0
...