# **Autoware NDT Mapping manual**

# 1. Go to **Autoware/ros** directory

- 2. Run Autoware using "./run" command
- 3. Go to Simulation tab and Load a ROSBAG
- 4. Click **Play** and immediately **PAUSE**



# 5. Click Computing tab and select ndt\_mapping



# 5. Click RViz button at the bottom 6. In Rviz click File menu and then click Open Config to select visualization template for ndt\_mapping.rviz located in Autoware/src/.config/rviz

🙁 🖨 💿 ndt_mapping.rviz* - RViz								
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7. ndt\_mapping will read from /points\_raw

#### IF the pointcloud is being published in a different topic, use the relay tool in a new terminal window

rosrun topic\_tools relay /front/velodyne\_points /points\_raw

This will forward the topic /front/velodyne\_points to /points\_raw

- 8. Go back to Simulation tab and click Pause to start mapping
- 9. Mapping process can be seen from Rviz



- 10. Once the desired area is mapped. Click **[app]** button next to ndt\_mapping
- 11. Select the desired path specified using the **Ref** button
- 12. Press the PCD OUTPUT to generate the file.
- 13. Uncheck the ndt\_mapping node to stop.

ndt_mapping	
topic:/config/ndt_mapping	
Resolution —	1
Step Size	0.1
Transformation Epsilon	0.01
Maximum Iterations	200
Leaf Size	1
Minimum Scan Range	5
Minimum Add Scan Shift	3
Use IMU imu_topic /imu_raw Use Odometry Inverted IMU 🧭 Use OpenMP	)Use GPU
autoware-171110.pcd	Ref
Filter Resolution     0.2     Original	
PCD OUTPUT	
Close	

# **Verify Map**

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- 1. Select **Map** tab in runtime Manager and click on **Ref** button
- 2. Select the recently created file
- 3. Click on the **PointCloud** button and wait until the progress bar reaches Loading... 100%

👂 🔍 Runtime	Manage	r							
Quick Start Setup	Мар	Sensing	Computing	Interface	Database	Simulation	Status	Topics	
Point Cloud	/hom	e/ne0/Desl	ktop/apex.pc	d					Ref
Auto Update	1x1   ‡	Area List	: None						Ref
Loading 100%	_	_	_	_	_	_	_	ОК	
Vector Map	/medi	a/ne0/256	GB_MoriRost	oag/data_m	oriyama_0.2/	/map/vector_	map/zel	prazone.cs	sv,/m Ref
TF	/medi	a/ne0/256	GB_MoriRost	oag/data_m	oriyama_0.2/	/tf/tf.launch			Ref
Map Tools PCD Filter	/medi Point T	a/ne0/AM 'ype: Poir	Tsukuba2017( ntXYZI ‡	01/log/tsuki Leaf Size	uba_170125/ e: 0.2 🗘	bin_autoware	201701	25_3.rosb	ag.4 <sup>:</sup> Ref
PCD Binarizer	/home Point T	e/ne0/Desl ype: Poir	ktop/autowa ntXYZI ‡	re-20170125	_3.rosbag.47	70s.pcd			Ref
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### 4. Open RVIZ, Click the ADD button

- 5. Select the **By Topic** Tab
- 6. Double Click on /points\_map PointCloud2
- 7. The map will be displayed (remember to set the frame to **map**)

🖲 🗊 rviz	⊗		
Create visualization By display type By topic	Image: Select with the point size (points frame points size (pixels) 1   Alpha   Alpha   Alpha   Amount of transparency to apply to the points. Note	► Views Type: Orbit (rviz) <b>Current View</b> Near Clip Target Fra Distance Yaw Pitch ► Focal Point	* Cero Orbit (rviz) 0.01 <fixed frame=""> 116.908 2.9054 0.375398 82.237; -3.7295;</fixed>
Information.	that this is experimental and does not always look correct.       Add       Duplicate       Remove       Rename	Save	move Rename
Display Name	🕑 Time		×
PointCloud2	ROS Time:         1510295645.09         ROS Elapsed:         127.23         Wall Time:         1510295645.14         Wall Elapsed:         127.16		Experimental
<u>C</u> ancel <u>O</u> K	Reset Left-Click: Rotate. Middle-Click: Move X/Y. Right-Click/Mouse Wheel:: Zoom. Shift: More options.		30 fps