

Contents

1 ROS2 のインストール

参考: <https://qiita.com/k-koh/items/838c70004119c329c617>

2 AutowareAuto のインストール

参考: <https://www.softtek.co.jp/SID/support/sidfmvm/guide/install-docker-ubuntu1804.html>

参考: https://qiita.com/MAEHARA_Keisuke/items/81e2cae93f50cabd160c

参考: <https://qiita.com/mafuto/items/1b037018cd7301b8c06d> 一番参考

になった 参考: <https://autowarefoundation.gitlab.io/autoware.auto/AutowareAuto/installation>

docker2 の環境をインストール [https://github.com/NVIDIA/nvidia-docker/wiki/Installation-\(version-2.0\)](https://github.com/NVIDIA/nvidia-docker/wiki/Installation-(version-2.0))

docker を始めに入れなければいけない。また docker の最初のユーザーは root のため、今後 sudo をつける必要をなくするために docker の設定を行う。

- 足りないものをインストール `pip install lark_parser sudo apt-get install libecal-dev sudo apt install python3-rospkg sudo apt install ros-dashing-mrt-cmake-modules sudo apt install ros-dashing-apex-test-tools-add-gtest sudo apt install ros-dashing-lanelet2*`

3 CMake Error at CMakeLists.txt:66 (add_rostest):

Unknown CMake command "add_rostest".

- solution `source /opt/ros/melodic/setup.bash source /opt/ros/dashing/setup.bash`
で何故か治った

4 CMake Error at CMakeLists.txt:56 (find_package):

By not providing "Findrostesting.cmake" in CMAKE_MODULE_PATH this project has asked CMake to find a package configuration file provided by "rostesting", but CMake did not find one.

Could not find a package configuration file provided by "rostesting" with any of the following names:

- solution `sudo apt install ros-dashing-ros-testing`

5 CMake Error at /opt/ros/dashing/share/ament_cmake_target_dependencies/ (message):

ament_target_dependencies() the passed package name 'osrf_testing_tools_cpp' was not found before Call Stack (most recent call first): CMakeLists.txt:60 (ament_target_dependencies)

- solution `sudo apt install ros-dashing-osrf-testing-tools-cpp`

6 /home/itolab-chotaro/adehome/AutowareAuto/src/drivers/xsens_node.cpp: fatal error: serial_driver/serial_driver_node.hpp: No such file or directory

```
#include "serial_driver/serial_driver_node.hpp" ^~~~~~
```

- solution `sudo apt install ros-dashing-serial-driver`

7 /opt/ros/dashing/include/lanelet2_core/primitives/BoundingBox.h:8: fatal error: Eigen/Geometry: No such file or directory

```
#include <Eigen/Geometry> ^~~~~~
```

- solution

8 Failed to create an OpenGL context. BadValue (integer parameter out of range for operation)

- solution これは~/adehome/AutowareAuto/.adernv-amd64-dashingの中
の `ADE_DISABLE_NVIDIA_DOCKER` の行を消せば動作した

9 ROS2のインストール手順

1. ROS Melodic install `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 C1CF6E31E6BADE8868B172B4F4`
`sudo apt update`
`sudo apt install ros-melodic-desktop-full`

```

sudo apt install python-rosinstall python-rosinstall-generator python-
wstool build-essential

sudo apt install python-rosdep

sudo rosdep init

rosdep update

echo "source /opt/ros/melodic/setup.bash" » .bashrc

source ~/.bashrc

```

2. ROS dashing install

```

sudo apt update && sudo apt install curl gnupg2 lsb-release

curl -s https://raw.githubusercontent.com/ros/rosdistro/master/ros.asc
| sudo apt-key add -

sudo sh -c 'echo "deb [arch=amd64,arm64] http://packages.ros.org/ros2/ubuntu
lsb_release -cs main" > /etc/apt/sources.list.d/ros2-latest.list'

sudo apt update

sudo apt install ros-dashing-desktop

sudo apt install python3-colcon-common-extensions

sudo apt install python3-argcomplete

echo "source /opt/ros/dashing/setup.bash" » ~/.bashrc

```

3. ROS1 bridge install sudo apt update

```

sudo apt install ros-dashing-ros1-bridge

```

10 ROS bridge のインストールと使い方

1. ros bridge のインストール sudo apt update

```

sudo apt install ros-dashing-ros1-bridge

```

2. ros bridge の動かし方

- shell A


```
source /opt/ros/melodic/setup.bash roscore
```
- shell B


```
source /opt/ros/melodic/setup.bash source /opt/ros/dashing/setup.bash
```

 - ROS_MASTER_URL に roscore で表示されている URL に移動する

```
export ROS_MASTERURL=http://localhost:11311
ros2 run ros1bridge dynamicbridge
```

- shell C source /opt/ros/melodic/setup.bash rosrun rospytutorials talker
- shell D source /opt/ros/dahsing/setup.bash ros2 run demonodescpp listener

11 AutowareAuto インストール

1. Docker のセットアップ

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