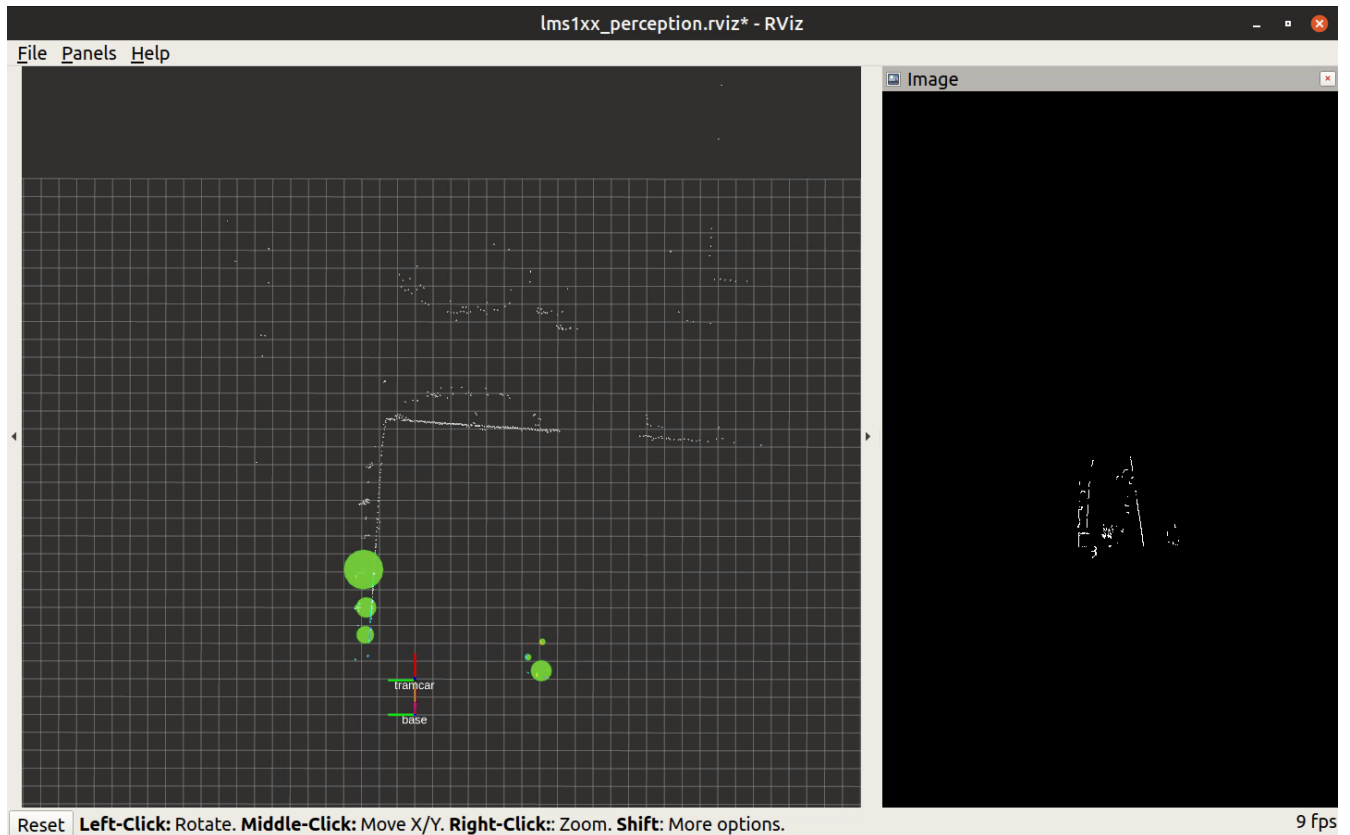


# Tramcar LMS1xx Perception

build **passing** code quality **A**

This is part of our tramcar perception system. It generate a fused grid map for obstacles with four [SICK LMS151](#).

Check out a video that shows all objects with the distance of less than 15 meters:



## Prerequisites

### Set up workspace and catkin

Regardless of your system you will need to do the following steps:

```
cd <catkin_ws>          # navigate to the workspace
mkdir src               # create src dir if you don't have it already
cd src
# Now you just need to clone the repo:
git clone --recursive https://github.com/zhearing/lms1xx_perception.git
git submodule update --init --recursive
```

## System requirements

**Warning:** The driver of [LMS1xx](#) is **Not Available** under Ubuntu 18.04, you need to fix the bug by yourself.

You will need [ROS](#), [CMake](#), [Eigen3](#), [Armadillo](#), [RViz plugins](#). The following sections contain an installation command for various Ubuntu systems (click folds to expand):

► Ubuntu 14.04

### Install these packages:

```
sudo apt install -y ros-indigo-desktop-full libeigen3-dev libopenblas-dev liblapack-dev  
libarpack* libarmadillo*
```

► Ubuntu 18.04

### Install these packages:

```
sudo apt install -y ros-melodic-desktop-full ros-melodic-rviz*
```

You can easily install these packages using `sudo bash install.sh`. Script is include in [install.sh](#).

## How to build?

This is a catkin package. So we assume that the code is in a catkin workspace and CMake knows about the existence of Catkin. It should be already taken care of if you followed the instructions [here](#). Then you can build it from the project folder:

```
catkin_make -DCMAKE_BUILD_TYPE=Release -j8
```

## How to run?

### Run online

```
roslaunch lms1xx_perception four_scanners.launch  
roslaunch lms1xx_perception lms1xx_perception.launch
```

### Run offline

Note: Don't forget to use simulation time when republishing from a bag file: [Using Sim Time](#).

```
roslaunch lms1xx_perception lms1xx_perception.launch
```

## Authors

- **Zeyu Zhong** - *Initial work* - The single SICK LMS1xx ROS driver is originally from [@clearpathrobotics](#). The obstacle\_detector package is originally from [@tysik](#).

## License

This project is licensed under the LGPL-3.0 License.

