

# autware source code can build and test in Hardware environment like Renesas environment #3058

Unanswered **anilbommareddy** asked this question in Q&A



**anilbommareddy** on Nov 21, 2022

Is autware source code can build and test in Hardware environment like Renesas environment(only CPU-multi core)  
example : In Renesas board connected-camera sensors or simulation like Canoe environment + autware build source code- falsh binaries to the Renesas board -check the runtime behavior like pedestrian or obstacle detection ?

↑ 1

Category



Q&A

Labels

None yet

4 participants



4 comments · 8 replies

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**harihitode** on Nov 22, 2022

**@anilbommareddy** Hi, I have the same interests to you about porting Autware to some emdedded platforms.  
Dose your target board have Ubuntu or any OS supporting ROS2 stack?

↑ 1

👍 1

2 replies



**anilbommareddy** on Nov 28, 2022

Author

**@harihitode** yes it have Ubuntu packages.



**harihitode** on Nov 28, 2022

Hi, **@anilbommareddy**

Basically you can build Autware.universe on any Ubuntu-supported platforms except some packages like scenario simulator or tensor-rt based perception packages. They might depend on Intel or nvidia specific libraries.

As **@liuXinGangChina** says in

<https://github.com/orgs/autwarefoundation/discussions/3058#discussioncomment-4251563>, some tweaks will be required to run object detection without GPGPU.

YOLO v4 is the NN model for object detection now and it seems compute-intensive.

There are another detection packages, Euclidean Clustering using LiDAR, but it also takes lots of CPU power.

I have ported Autoware to a non-Intel systems. I am sure you can also do it if your system's CPU power meets your Autoware configurations.



**liuXinGangChina** on Nov 22, 2022 Collaborator

Hi, @anilbommareddy .

Currently you can run autoware without build from the source code. Please take look into this [tutorial](#)

Autoware use yolo(tensor-rt based) for camera based segmentation of pedestrian or obstacle. You may need to implement that part using the unique neural accelerator on your board.

Welcome joining the Autoware big family!  
Happy hacking!



1



1

0 replies



**arjunshetty955** on Nov 28, 2022

@liuXinGangChina @harihitode @anilbommareddy I'd also interest in porting Autoware to embedded platforms -multi core environment(CPU) instead of using GPU accelerator.off course GPU accelerator may have better performance compared to multi core environment.And also I would like to contribute and check feasibility in multi core environment like shared/Distributed environment using OpenMP+OpenMPI. I'm able successful build autoware branch . Could you please help me how to test the use cases like traffic light detection use case,lidar\_centerpoint use case,euclidean\_cluster - with using simulator + data sets need to uses and without using simulator +data set.



1

4 replies



**liuXinGangChina** on Nov 28, 2022 Collaborator edited ▼

hi, @arjunshetty955

1. For testcase like traffic light detection , you need some work to run NN-models on cpu rather than gpu( like using TVM)
2. For testing, you may consider using autoware's new-released official simulator [AWSIM](#) to generate sensor data

Welcome joining the Autoware big family!  
Happy hacking



**arjunshetty955** on Nov 28, 2022

edited ▾

Hi liuXinGangChina ,  
For euclidean\_cluster and lidar\_centerpoint use cases also need some work to run NN-Models on CPU.?  
is any sample data can be run in Ubuntu(Desktop) environment like hard coded in command line like terminal rather than using Simulator or test tools. ?  
In this link <https://autowarefoundation.github.io/autoware-documentation/main/how-to-guides/running-autoware-without-cuda> mentioned Running traffic light detection without CUDA-It mean this traffic light dection run in CPU environment ?



**liuXinGangChina** on Nov 29, 2022

Collaborator

edited ▾

hi, @harihitode  
euclidean\_cluster only use cpu to do the math  
while lidar\_centerpoint is definitely an nn based solution

yes any nodes in autoware is developed following the data-driven concept. If you want to test them you have to feed some data into those nodes( eg. data from a rosbag or data from a real sensor or data from a simulator)

Happy hacking!



**anilbommareddy** on Dec 11, 2022

Author

I'd following the questions on Autoware.it help me on better understanding in CPU environment i.e without using GPU-to implement that part using the unique neural accelerator on your board.

1. for complete use case like 360-degree sensing by the camera-LiDAR fusion or Recognition of dynamic objects or any sample use case-how to understand code flow & testing flow using Data sets via command line in terminal example:  
\$ rosbag play --pause  
~/shared\_dir/sample\_moriyama\_150324.bag --clock  
\$roslaunch autoware\_quickstart\_examples my\_map.launch  
\$roslaunch autoware\_quickstart\_examples my\_sensing.launch  
\$ roslaunch lidar\_localizer ndt\_matching\_monitor.launch &  
\$ rostopic echo /ndt\_monitor/ndt\_status

2.How to build

autoware.universe(<https://github.com/autowarefoundation/autoware.universe.git>) repo only and test .

3.I tried to download below sample data gets and got an error like timeout

wget

[http://db3.ertl.jp/autoware/sample\\_data/sample\\_moriyama\\_data.tar.gz](http://db3.ertl.jp/autoware/sample_data/sample_moriyama_data.tar.gz)

\$ wget

[http://db3.ertl.jp/autoware/sample\\_data/sample\\_moriyama\\_150324.tar.gz](http://db3.ertl.jp/autoware/sample_data/sample_moriyama_150324.tar.gz)

4.Euclidean Clustering using LiDAR:Could you please provide a sample data to test via command line in the terminal.

5.In my environment not able to use AWSIM simulation demo due to GPU drivers issues



**arjunshetty955** on Nov 28, 2022

hi @daichi Murakami,

I'm also able to build autoware like

<https://github.com/autowarefoundation/autoware.git> in the Ubuntu environment.

Here I'm not able to figure out how to run one sample test case in an autoware environment to check the behaviour of CPU serial execution(without using Cuda/GPU) and underon it stand and try to execute in openMPI+openMP environment rather than using Cuda wrt Autoware.

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↑ 1

2 replies



**harihitode** on Nov 30, 2022

Hi, @arjunshetty955

@liuXinGangChina already has commented a helpful answer, but this is just my note ;)

For lidar point segmentation, Autoware.universe has two packages. One is lidar center point using an NN model and the other is euclidian clustering without NN model.

Now the packages which use NN models are not executed on CPU-only environment. Therefore you can check only euclidian clustering as lidar point segmentation in your case. (Every other NN packages like traffic light recognition, object detection need GPGPU.)

For dataset to check there functionalities, there seems not to be any rosbag, but you can use [AWSIM](#) which is a full-end to end world simulator including LiDAR/Camera sensors.

I'm sure you can generate dataset as you wish using AWSIM. I can actually generate dataset to check traffic-light-recognition successfully.



**arjunshetty955** on Nov 30, 2022

@harihitode Thank you for sharing your note. I will check on this note in my environment

@harihitode and @liuXinGangChina: Instead of using colcon configuration and colcon build, Autoware repos can be build using Cmake-gcc/clang ?