[Question]Can autoware run in CPU environment i.e without using GPU? #3146

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

anilbommareddy on Dec 20, 2022

Initially, the source is written on the CPU side and after execution on the CPU side, profiling and performance wise the code is shifted to the device side like on the GPU side.
So I would like to know that the autoware repo i.e source is available for non-Cuda i.e CPU source code, and runs only in the CPU environment

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Labels
None yet

3 participants

2 comments · 12 replies

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angry-crab on Dec 26, 2022 Maintainer

Theoretically, yes. Some of the perception modules can be implemented with tvm which supports cpu backend deployment. However, as we have tested, performance cannot be expected. There are some object detection model implemented, ie `lidar_centerpoint_tvm`, `lidar_apollo_segmentation_tvm`, etc.

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angry-crab on Jan 4, 2023 Maintainer

`get_neural_network` will check and download the required model from modelzoo. `inference_engine_tvm_config.hpp` is in the downloaded package. To test `lidar_centerpoint_tvm`, you can try Rosbag replay tutorial. Change this line https://github.com/autowarefoundation/autoware.universe/blob/6992bc5b7083229dc6b02ab4fd961d10a126549d/launch/tier4_perception_launch/launch/object_recognition/detection/lidar_based_detection.launch.xml#L68
into

```
<include file="$(find-pkg-share
lidar_centerpoint_tvm)/launch/lidar_centerpoint_tvm.launch.xml
```

anilbommareddy on Jan 9, 2023 Author

@angry-crab i followed the above your mention steps but still I'm not clear on inference_engine_tvm_config.hpp
And i think inference_engine_tvm_config.hpp this file not downloaded .

angry-crab on Jan 9, 2023 Maintainer

@anilbommareddy
There are a few things you could check.

1. make sure `tvm_utility` is built correctly. `tvm_utility` provides the function to download compiled models.
2. check if the compressed file exists in the following path: `$path_to_lidar_centerpoint_tvm/data/download`. If the tar file exists, `inference_engine_tvm_config.hpp` will be unzipped to `$path_to_lidar_centerpoint_tvm/data/models/centerpoint_backbone` for example.
3. make sure you have access to internet while building the work space.

anilbommareddy on Jan 12, 2023 Author

@angry-crab with your latest comments . compress files are exsits in the $path_to_lidar_centerpoint_tvm/data/download and also inference_engine_tvm_config.hpp also exists.

angry-crab on Jan 13, 2023 Maintainer edited

@anilbommareddy then please try to fetch the latest master, delete `build` and `install` folder under your workspace, and rebuild. If its still not working, please share your built log so that I can take a look.

angry-crab on Jan 4, 2023 Maintainer

@ashkildighin
Could you try `colcon build --symlink-install --cmake-args -DDOWNLOAD_ARTIFACTS=ON --package-select tvm_utility` to see if `tvm_utility` is built?

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