Running Autoware in a distributed computing setup for improved performance #3544

Unanswered   **damodarRohit** asked this question in **Ideas**

damodarRohit on Jun 1, 2023

On behalf of Danlaw, we recently tested running Autoware in a Jetson AGX Orin Devkit. It was observed that certain algorithms were not supported by AGX Orin architecture (ONNX models) and features like Object Detection had poor performance.
We would like to try distributing the workload across multiple compute modules. The initial configuration is a Jetson AGX Orin + Dell Precision 7920 Wrokstation (NVIDIA GP104GL [Quadro P4000] GPU) connected using either an Ethernet switch or wireless.

I would much appreciate any inputs/ feedback from prior attempts or experience in related area and any recommendations.

↑ 1

Category

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Labels

None yet

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evshary on Jun 1, 2023   **Collaborator**   edited ▾

Actually, I don't have much experience in this case. However, in the scenario, the connection between your Orin and Workstation might be the key point. If you use ROS 2 & DDS to connect, ru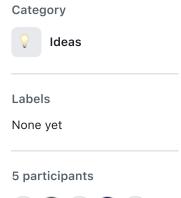nning in the wireless environment might not be suitable. In my past experience, DDS doesn't perform well in a wireless environment while there are too many ROS 2 topics (maybe it works if you only have two hosts). If you still want to run in a wireless environment, maybe zenoh-bridge-dds is another solution.

I have another question: Since you'll add another Workstation + GPU in your environment, why do you still need Jetson AGX Orin? It should be OK to run the whole Autoware in your workstation. Is there any reason you need Orin?

↑ 1   1 reply

damodarRohit on Jun 27, 2023 Author

Hi @evshary, thanks for your inputs. Will try zenoh-bridge for the wireless setup.
The Orin will be on a smaller robot chassis that will not be able to handle the weight or power requirement of a workstation.

👍 1

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mitsudome-r on Jun 5, 2023 Maintainer

We have a vehicle with 2 Nuousys PC + 4 ADLINK ROSCube (which uses Jetson Xavier inside). They are connected with ethernet switch, and I think we had to do some tuning with DDS configuration. We can provide a sample if you are interested.

↑ 1   2 replies

damodarRohit on Jun 27, 2023 Author

Hi @mitsudome-r san, we completed an initial setup with an ethernet switch and were able to run perception component on the workstation and rest of AUTOWARE on the Orin. There was no much additional tuning required, but it will be helpful to have the sample configuration.

We are now trying to go ahead and replace the ethernet swicth with a wireless connection.

markusschratter on Jul 17, 2023

Hi @mitsudome-r, I also want to distribute components to different machines based on workload issues. Is it possible to share your DDS configuration?

Autostone-c on Jul 1, 2023

hi Recently, I also ran autoware awsim-stable on Orin and conducted joint debugging with the awsim simulation platform on x86, but running autoware on Orin was too laggy and too laggy, and path planning and traffic light recognition were basically impossible. Where should I optimize this performance

↑ 1   0 replies