The calculation of the control module takes time #5173

Unanswered   **hzkkk1997** asked this question in **Q&A**

Category

🙏 Q&A

Labels

None yet

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2 participants

🟩 🧑

🟩 **hzkkk1997** on Sep 5

I have tried to update the two visual plugins currently in the main branch to my v1.0 version and they work, but I found that the calculation time of the control module after stripping it out has increased significantly, to more than 150ms, this affects the actual control effect of the car. What might be the cause?

↑ 1

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3 comments · 18 replies

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🧑 **maxime-clem** on Sep 5 (Collaborator)

Are you able to share your changes ? It is hard to know what could be the issue without knowing exactly what you changed.
But if you only changed things on the visualization side it should not impact the controller performance, so your issue is strange.

↑ 1   👀 1   11 replies

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🟩 **hzkkk1997** on Sep 6 (Author)

Thank you for your comment, but in fact, our independent control project is started in the same way as the original autoware.

🧑 **maxime-clem** on Sep 6 (Collaborator)

So you are using the `ros2 launch autoware_launch autoware.launch.xml ...` command but disabling all components excepts for `control` ?

🟩 **hzkkk1997** on Sep 6 (Author)

Yeah, we did it the relatively simple way, trying to get through first.

🧑 **maxime-clem** on Sep 6 (Collaborator)

Can you share log files corresponding to each `ros2 launch ...` command you run in your system when the issue occurs ?
I will check if there is any useful message.

hzkkk1997 on Sep 6   Author

[output.log](#)
This is a separate log record after the start of the control project, the other modules are not convenient to upload at present, I will update as soon as possible in the future, sorry ~

hzkkk1997 on Sep 10   Author   edited ▾

@maxime-clem Hello, sorry to bother you. We seem to have solved the problem of which calculation takes time above by placing the individual control project in the same directory as other projects, but the reason is not clear at present.
https://github.com/orgs/autowarefoundation/discussions/5198#discussion-7159134
This question link would like to ask you for advice, what is a good way?
Thanks a lot~

↑ 1   5 replies
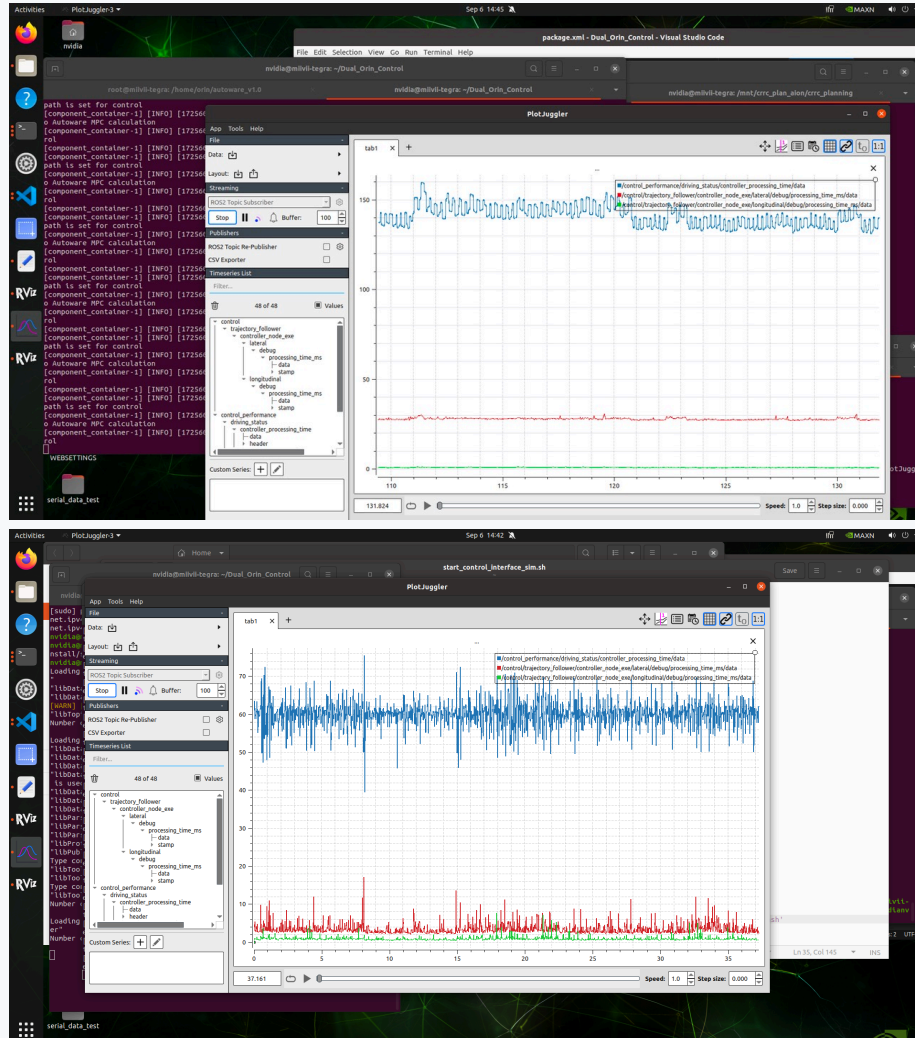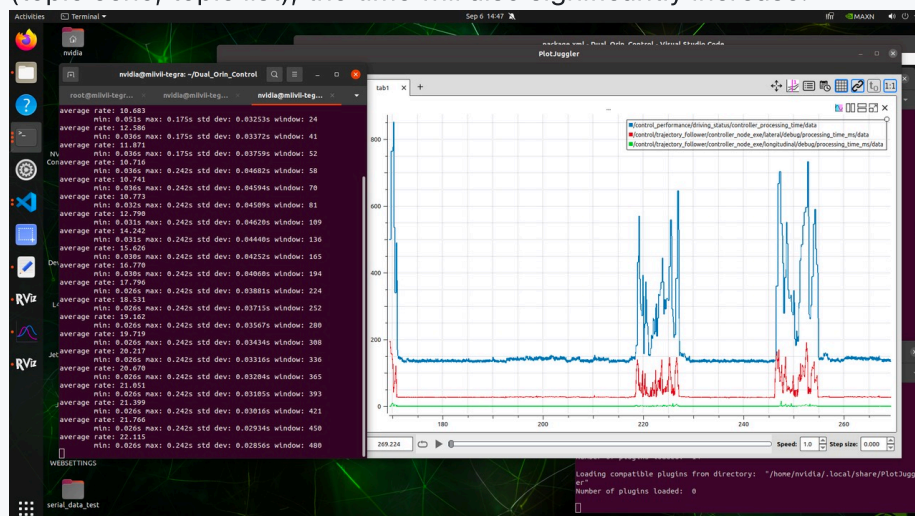
hzkkk1997 on Sep 10   Author   edited ▾

@maxime-clem Hi, sorry to interrupt again, but the situation seems to have only been resolved on one machine. So I wanted to consult you again, When the control part of the code is running, a timeout problem occurs. There are two Orin machines running the same control code, and the code execution times out on one machine, while the other runs normally. The control code on both machines is completely identical, and the related configuration libraries, such as the osqp library, are also the same. How to determine the cause of this problem
The following figure shows the abnormal and normal calculation time of the control module.(blue line)

In abnormal circumstances, When operating the topic commands (topic echo, topic list), the time will also significantly increase.

maxime-clem on Sep 12   Collaborator

If just doing a `ros2 topic list` causes these delays, then the issue is probably caused by the communication cost over the network.

hzkkk1997 on Sep 12 Author

Thanks for your reply, I can understand that the communication pressure has increased, but I don't quite understand why the algorithm calculation time in the code has also increased.

maxime-clem on Sep 12 Collaborator

Without profiling it is hard to guarantee that it is the issue, but I can imagine that publishing or receiving messages (which happens during the "algorithm calculation") takes a lot of time. From what I understand, communication issues can cause any call using `rclcpp` (which includes publishers, subscribers, transforms, parameters, ...) to become laggy and cause performance issues.
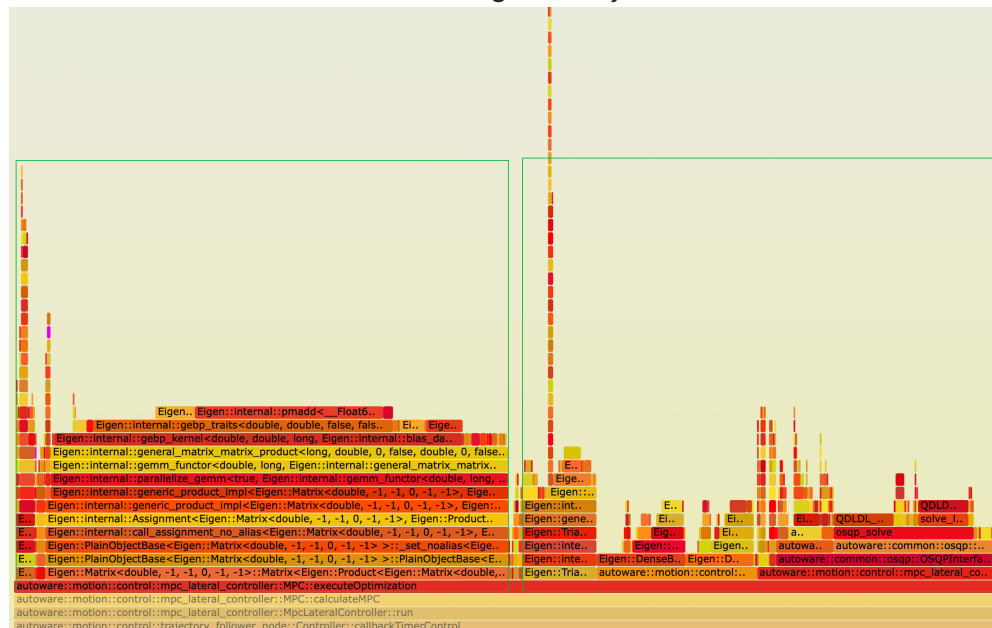
hzkkk1997 on Sep 12 Author

Thank you very much for your answer   We will try to analyze it from the Angle you mentioned

hzkkk1997 on Sep 18 Author

@maxime-clem Hello, I'm very sorry to bother you. Recently, we used the tool "Flame graph" to try to analyze the calculation time of various functions in our project, and found that the time and times of various functions of eigen library called by the control project we separated were obviously different in different directories (/home/XXX/ directory and /mnt/ directory respectively). Do you know the possible reasons?

This is a situation where the time is significantly increased.

This is normal (under the /mnt/ directory).

↑ 1   👀 1   2 replies

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maxime-clem on Sep 18   `Collaborator`

I know the Eigen functions become very slow when building with the `DEBUG` flag. Is it possible that one of your workspace was built with the `DEBUG` flag (instead of `RELEASE`) ?

Otherwise I don't know. You can try a clean build of the workspace to see if it fixes the performance issue (`rm build install -rf` before building).

hzkkk1997 on Sep 18   `Author`

Thank you very much for your suggestion. We'll try it right away.