Autonomy Software WG Meeting 2022/03/08 #2470

BonoloAWF started this conversation in **Working group meetings**

BonoloAWF on Mar 3, 2022 edited

Administrative

- Previous Meeting Minutes

Attendees

▶ Chaired by Fatih

Common Resources

- Bus ODD software architecture proposal
- Bus ODD architecture design discussions
- Bus ODD candidate simulator comparisons
- Autoware contributors list

Autoware.Auto

- [x] Review Cargo MS10 Cleanup & Technical Debt Issues
- [ ] Updates on bug fixes and documentation bugs
- [ ] Release of Autoware.Auto v2.0.0

Autoware.Universe

- [x] Create high level epics for Bus ODD

Announcements

- Autoware.Auto v2.0.0 release is pending the completion of the Yolo (node for image classification) and planner (documentation) MRs.
- Everyone to please add your Github username to the list of contributors document

Discussion topics

Proposed by Mitsudome:

Category

Working group meetings

Labels

meeting:software-wg

4 participants

- Bus ODD starts this week!
- An overview of Autoware Core/Universe and Github for Bus ODD and future developments

Mitsudome gave a presentation on the current status of the transition to Autowae.Core/Universe. See presentation slides in the comments below. Summary of presentation:

- Autoware.AI is a ROS 1 AD stack with no architecture design, Autoware.Auto is a ROS 2 AD stack with a design architecture however making large changes is complex.
- Autoware.Core is a ROS 2 AD stack containing stable packages which are maintained by AWF. Autoware.Universe is a ROS 2 AD stack that contains unstable community maintained packages.
- A list of repositories has been defined. The .repos files are in autoware.
- There are separate repositories for documentation, launchers, common libraries (eg. CMake), Core, and Universe.
- The presentation contains a link to instructions for setting up your development environment (Docker or Source installation)
- Detailed tutorials are currently being reviewed (see open PRs in the documentation repo.)
- Github Projects will be used for managing project milestones. There is both a board and list view available.
- The Wikis for WG are in the AutowareProjects repo.
- Discussions should be posted on the Discussion threads
- Create issues for tasks or bugs in the appropriate repository

Ambriose (A) - Will we be porting all the packages from Autoware.Auto to Universe? Mitsudome (M) - Maintainers will go through the Autoware.Auto packages to decide which should be moved to Universe. Fatih and I will create an initial list of candidate packages and ASWG members could help with porting to Universe. Fatih (F) - Universe is mainly the proposal from TierIV architecture. Let's first evaluate Universe and decide per package which to keep or replace based on performance.

Maxime - will the current Autoware.Auto be accessible? What about the docs rendering? M - We will archive Autoware.Auto and main development will move to Core/Universe. The documentation will remain the same and be located in the old Gitlab repo. It will be like Autoware.AI where no new features are being added.

Hatem (H) - the plan is to start developing bus ODD. Will it be in Core or Universe? How will previous ODDs (AVP, cargo delivery) be merged into Core? M - Core is currently empty. The proposed architecture for bus ODD will be in Universe then later refactored. After testing on a real vehicle, writing missing tests/docs to meet the coding requirements of Core, bus ODD packages will be ported from Universe to Core. H - will the node interfaces for other ODDs match with Autoware.Universe? M - the baseline autoware_auto_msgs will continue to be used. If we achieve the bus ODD features, we will have all the features in the AVP demo and cargo ODD demo. So people won't have to use both Autoware.Auto with Universe.

H - Autoware.AI allows having multiple nodes that can achieve the same objective (eg. 2 NDT nodes). So users could add different localisation packages for use. M - packages developed by the community in Universe can be merged to Core (subject to meeting the required standards). People can also use Core and select the Universe packages they want. So people could easily try out your contributed Universe packages. In Autoware.AI it was difficult to know which module replaces another and sometimes interfaces were not shared. We have now standardised the interfaces.

Timeline summary:

- We are finishing up cargo ODD
- ASWG members should set up Github repository in order to contribute to bus ODD.
- Bonolo will work with the software architects to develop milestones for bus ODD (see Runtime Manager, brushup about wx.BoxSizer #59)
- TierIV packages are merged to Universe. We welcome members' contributions to Universe.
- We will port some packages from Autoware.Auto
- Autoware.Core merge criteria, coding guidelines, test strategy is ongoing
- Bus ODD prototype development is ongoing

Fatih (F) - packages should have the same interface. We should finalise and standardise the msg infrastructure. Mitsudome (M) - yes, good point. F - next week we could do a demo of Universe architecture and later present the finalised message architecture. F - is universe working with SVL? M - I'm not sure if there is a connection to the SVL simulator. I need to check that since we are mostly using rosbags.

F - Hatem will you be able to test Autoware with Carla simulator? Hatem (H) - should I test with Universe repo or Autoware.Auto? Which is the highest priority? M - we are looking for a simulator for the bus ODD so test with Universe. We want to know how the data looks in ROS 2 and what the delays are. H - OK, I shall try to do that. F - I would like to see how it works with Autoware.AI too. H - I can can show at the next meeting how it works with Autoware.AI.

Proposed by Bonolo (Presentation):

- A presentation from Huei-Ru (ITRI) outlining the vision of the Bus ODD (in partnership with ITRI) and introducing the ITRI team.

Huei-Ru gave a presentation on the current state of the ITRI autonomous bus platform. She introduced the ITRI team that will be working on the bus ODD: Yi-Ling (perception) and Henry (decision control). See comments below for presentation slides.

Summary of presentation:

- ITRI collaborated with several partners to develop autonomous bus pilot in urban area with high traffic (without priority bus lane).
- 1st year of the project provided a 5.3km shuttle service ride without passengers (from the rail station to a hotel). This phase ended in Nov. 2021

- 2nd year bus testing is on ITRI campus
- the demo showed the bus driving at speeds up to 30km/h and challenging test cases (overtaking temporary parking, multiple vehicles and oncoming traffic; and pedestrian crossing prediction).
- the demo was developed using Autoware.AI
- the ITRI team is working on upgrading to ROS 2
- the presentation contains sensor list and system architecture of the bus

Fatih (F) - how many cameras and what lidars do you use? Huei-Ru (H) - 3x Ouster lidar and 8 cameras. Lidar is used for localisation. Mistudome (M) - do you drive backwards since there is no lidar at the back of the bus? H - we use cameras only at the back. M - so is the position estimate from the camera? What about obstacles behind the bus? You don't assume backward motion? H - correct.

F - what is the GPS/IMU? H - Trimble without RTK. F- what is the final output from the computers? Do you send acceleration, reference velocity to the vehicle? Henry - we send the gas paddle level for longitudinal control. For steering we send the steering angle and ROS topic to the steering CAN bus. For brakes we translate a voltage to brake pad level. F - what about the user interface? Henry - we monitor data through the lidar MPC including ROS topics.

Action Items

- [ ] **@mitsudome-r** to contact NE Raptor developers to discuss https://gitlab.com/autowarefoundation/autoware.auto/AutowareAuto/-/issues/1102
- [x] **@mitsudome-r** to create a Discussion for point cloud fields
- [x] **@mitsudome-r** to check with Nagoya University regarding the status of the lidar driver
- [x] **@mitsudome-r** to go through all MRs and move the relevant ones to Github

Review of issues

The last few remaining issues/MRs from the cargo ODD are expected to be completed this week.

↑ 1

0 comments · 5 replies

Oldest | Newest | Top

xmfcx on Mar 8, 2022 Maintainer

@xmfcx to create a Discussion for point cloud fields with the prev. mermaid diagram.

↑ 1 0 replies

mitsudome-r on Mar 8, 2022 Maintainer edited by ghost

Today's presentation: Transition.to.Autoware.Core_Universe.pdf

↑ 1 0 replies

hueirutseng on Mar 8, 2022 Collaborator

Today's presentation.
ITRI Autonomous Bus Pilot Run in Hsinchu Update_20220308.pdf

↑ 1 0 replies

ghost on Mar 8, 2022

@BonoloAWF Can the recording of this meeting be shared please?

↑ 1 1 reply

BonoloAWF on Mar 9, 2022 Author

Please ask @mitsudome-r for the recording. I don't have access.