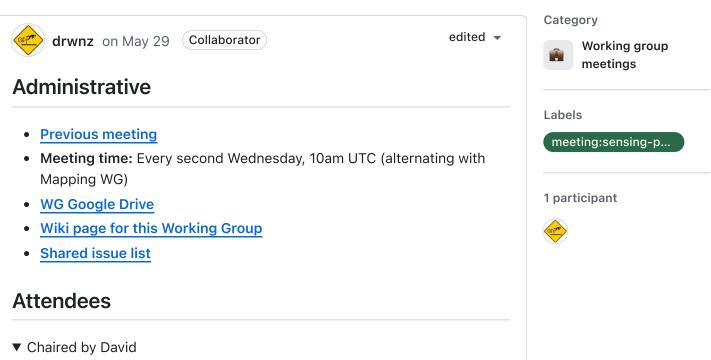


# Autoware Sensing Perception Working Group Meeting 2024-05-29 #4792

drwnz started this conversation in Working group meetings



Ryohsuke

Taekjin

Koji

Shunsuke

Kaan

Fatih

Dai

Armagan

Leonardo

### Agenda

- Introduction of new attendees
  - Welcome Leonardo Rossetti from Red Hat
- Review of Issue List and assignment
- Review of Project Board and assignment
- Nebula update: https://github.com/tier4/nebula/tree/develop

## **Discussion topics**

- Armagan: Issue related to team orientation and priority setting
- In Autoware labs there are some items to be achieved
  - https://github.com/orgs/autowarefoundation/discussions/4550

- Some issues related to datasets and improving data, and also performance of sensing-perception
- Want to to see performance of current systems
- Less focus on new features, more on current performace
- Therefore evaluation is necessary how can we evaluate Autoware?
- Needs more than just checking videos
- Minoda: Autoware perception evaluator: https://github.com/tier4/autoware\_perception\_evaluation
  - Driving log replayer: https://github.com/tier4/driving\_log\_replayer
  - Also have evaluator within TIER IV's product, Web.Auto
- Armagan: is Perception Evaluator mandatory for development? Any value in testing in AWSIM for evaluation?
  - Minoda: not mandatory. Only works with collected data, not simulation.
  - Takejin: Probably more in tracking, AWSIM would be useful (currently pass/fail tests bit not metric performance)
- Armagan: what about testing in against a leaderboard?
  - Minoda: We internally evaluate on ML dataset metrics when integrating new dataset, and Autoware Evaluation pipeline.
  - Armagan: results should be repeatable and universal
- David: what about multiple reference designs?
  - Aramgan: you can choose, as long as it is common
- David: Universal dataset conversation has come up multiple times: perhaps dataset from Co-MLops?
- Fatih: Autoware Perception Evaluator or other Autoware Evaluation methods: even if we don't see the datasets, we still want to know the test date, sensor configuration, size of dataset. Nuscenes also gave Autoware permission to evaluate against their dataset.
  - Minoda: do you want evaluation results in PR for example?
  - Fatih: not every PR, but results could be shared with existing algos (in documetnation for example)
- David: Let's introduce the Autoware Evaluator as used by TIER IV at next WG. Maybe also have a report on evaluation progress every WG. Does LeoDrive have any evaluator work?
  - Currently no, but Kaan did some work on Waymo dataset:
     <a href="https://github.com/autowarefoundation/perception\_benchmark\_tool">https://github.com/autowarefoundation/perception\_benchmark\_tool</a>
  - Pending task assigned to LeoDrive member: 

    Evaluate
    prediction accuracy with nuScenes autoware.universe#6806
- Fatih: do you have speed benchmarks, or just accuracy?
  - Minoda: we were working on it but not sure of latest status
  - Taekjin: messages to monitor processing times, but not direct measurement
  - Fatih: could set up an AWS instance to run specific parts of Autoware and monitor CPU/GPU usage automatically
- David: Nebula update refactor(hesai)!: combine Hesai ROS wrappers into a single node tier4/nebula#127

- o Mehmet's update should be reviewed and merged
- Robosense PR also needs a review from Mehmet
- Armagan: currently testing and having issues with trees
  - The tree filter based on height does not work
  - Two issues: trees and hanging branches, z-filter is not enough, and bushes on the side of the road
  - Minoda: have initiative for unknown object detection, trying to add algorightms with an architecture modification. Attempting to use semantic segmentation in camera to remove false positives.
  - Dai: Currently still working on semantic segmentation byased pointcloud filtering, currently dealing with bugs in semantic segmentation causing performance to not be sufficient

    - feat(image\_projection\_based\_fusion): add image segmentation\_pointcloud\_fusion for pointcloud filter autoware.universe#5562
  - Also merged intensity filter: Add intensity for poincloud processing in perception and an intensity\_based\_unknown\_validator autoware.universe#6785

#### **Action items**

Prepare presentation for TIER IV's evaluation for next WG meeting

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#### 0 comments