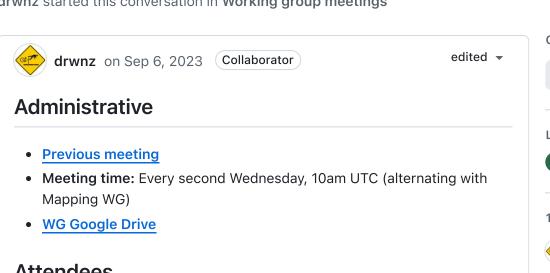


# Perception and Sensing WG Meeting 06/09/2023 #3812

drwnz started this conversation in Working group meetings



### **Attendees**

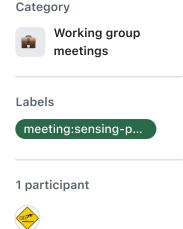
- ▼ Chaired by David
  - Shunsuke Miura
  - Ryohsuke Mitsudome
  - Dai Nguyen
  - Fatih Cirit
  - Yusuke Muramatsu
  - Kaan Colak
  - Kenzo Lobos
  - David Walmroth
  - Mehmet Basoglu
  - Tony Cai
  - Benjamin Gilby
  - Alexey Panferov

### **Agenda**

- Introduction of new attendees
- Discussion on Downloading artifacts outside of CMake from Alexey
- Progress report on Nebula from David
- Progress report on ROI pointcloud fusion for small objects detection from Dai
- Review of Project Board and assignment

## **Discussion topics**

Discussion on Downloading artifacts outside of CMake



- Addressing Move downloading artifacts outside
   CMake autoware.universe#3137
- Started with initiative from creating packages with Autoware, which had a rule for downloading objects for security reasons
- Decision for now is to create a folder in the system
- Ansible: what happens when updating rather than running first time?
  - Not currently mentioned in discussion
  - Also the case when you have several vehicles should also be considered
- Progress report on Nebula
  - PRs and issues from LeoDrive:
    - **1 perf: unpack velodyne packets in parallel** tier4/nebula#62
      - Fatih producer consumer pattern would be good
      - Queue for input
      - STL vs Open MP external library required so choosing compatibility at compile time is best
      - Fatih: using STL is preferred, also has support on ARM:
         <a href="https://docs.nvidia.com/hpc-sdk/compilers/c++-parallel-algorithms/index.html">https://docs.nvidia.com/hpc-sdk/compilers/c++-parallel-algorithms/index.html</a>
    - <u>Enhancement: Add Ring-Based Filter for Removing</u>
      Reflected and Vehicle Points tier4/nebula#60
      - Have impeementtion for Velodyne, will PR
  - PR from Robosense: **3 5 feat: support robosense lidar** tier4/nebula#54
  - PR from Innoviz: \$ ; feat: (Support Innoviz Two) tier4/nebula#66
  - Issue from TIER IV: 
    Parameters: align with Autoware Foundation proposal for ROS nodes tier4/nebula#63
- Progress report on ROI pointcloud fusion for small objects detection
  - Addressing or in point for small objects detection autoware.universe#4680
  - David: how small objects does it detect? Dai: current parametrization is with 2 points, mostly depends on YOLO model detection ability
  - Time penalty: maybe 3ms increase in delay time
  - Miura: Have you checked how many objects are in the camera lidar clusters topic? Dai: Maybe less than 10 objects
  - Previously, no result from pointcloud because too few points to cluster
  - LeoDrive has similar issues for poles, but currently overcome by fixing minimum IoU: see
     <a href="https://github.com/orgs/autowarefoundation/discussions/3744">https://github.com/orgs/autowarefoundation/discussions/3744</a>
  - David: would this detect a piece of paper? Dai: If it's showing in camera-lidar fusion then maybe, but if it's fast moving it might be lost in tracking
- Discussion on ground removal issue: ground remover package cannot delete ghost points appears front of car when passing speedbump autoware.universe#3673
  - Currently they are using 35cm cut for ground filter, which is too much to detect some cats etc
  - David; IMU suggestion? Kaan: did not work well

- David: has anything be tried to fix? Kaan: so far tried to change position of filter when going over speedbump
- Dai; How about compare map filter? Fatih: we don't want to use compare map filter, perception shouldn't rely on map.
- Miura: When perception performance is better we can reduce dependency on compare\_map
- Dai can also propose using semantic segmentation results, Fatih: image based is not very reliable, priority is using LiDAR scan data and prior information
- Project board

### **Action items**

- []
- []
- []

**1** 

#### 0 comments