# Racing Working Group Meeting 2024/10/10 #5327

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

**pojenwang** on Oct 10 Collaborator

## Administrative

Previous Meeting Minutes

## Attendees

- Po-Jen Wang (AWF)
- Mitsudome-san (Tier.IV)
- David Walmroth (Open AD Kit / Pix-Moving)
- Atanasko

Minutes: Po-Jen Wang

## Topics

Autoware on F1tenth Update

- Our goal is to expand the usage of Autoware packages for F1tenth and introduce mission planning and scenario planning so users can run more complicated scenarios
- Previously we successfully ran Autoware's planning simulation on a PC using pointcloud and vector map generated from F1tenth's 2D occupancy map. In this simulation, the system uses the simulated vehicle pose (ground truth) for localization
- For this update, F1tenth's **f1tenth_gym_ros** simulator and **particle_filter** has been integrated into Autoware pipeline
  -- **f1tenth_gym_ros** is used for generating the 2D Lidar scan (not required on a real car)
  -- **particle_filter** is used for 2D Lidar localization (required on a real car)
- We can now generate 2D Lidar scan from the vehicle and then use particle_filter for a more realistic localization simulation. Everything was also tested on a Jetson Orin Nano to get a more realistic performance on the F1tenth vehicle
- Planning sim on Jetson Orin Nano
- In the second part of the video, thick white dots are the simulated 2D Lidar scan and the red dots are the down-sampled scan data used for

Category

Working group meetings

Labels

meeting:racing-wg

1 participant

particle_filter localization. The sim loses some fps for screen recording the video.

- Still need to link f1tenth_gym_ros to use the current simulated vehicle pose to generate 2D Lidar scan
- Currently, there's a bug that when using the **2D pose estimate** to reset the vehicle pose on the map, it may not trigger paticle_filter localization at the correct location on the first attempt. However, it will usually be successful on the second attempt for the same target pose. This is likely caused by scan data update not being synchronized with pf.
- Performance Summary of running Planning/Control Autoware pipeline on a Jetson Orin Nano
  -- Using ground truth simulated vehicle pose: 20~30 fps
  -- Using f1tenth_gym_ros and particle_filter: 8 fps
  -- Using particle_filter only(expected real car performance): >20 fps

Other topics:

- AWF Work Group overview: https://autoware.org/join-a-work-group/

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## 0 comments