

2024-06-20 Racing Working Group Meeting #4895

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



pojenwang on Jun 20

Collaborator

edited

Category



Working group meetings

Labels

meeting:racing-wg

1 participant



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

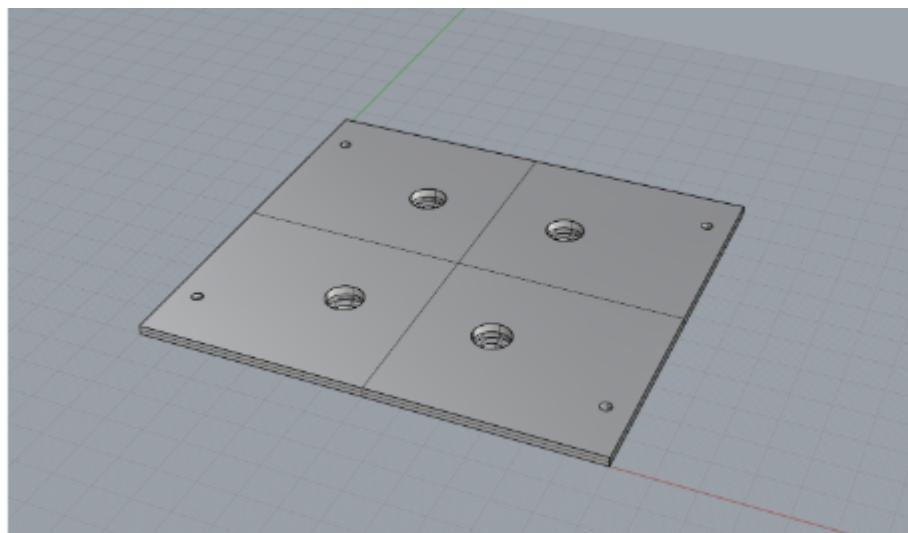
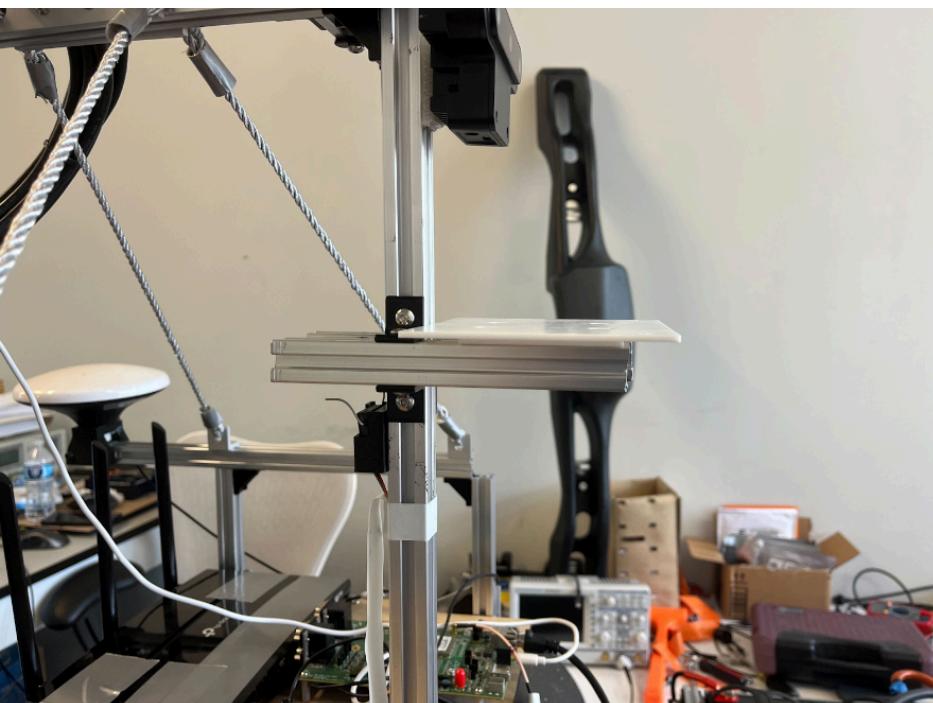
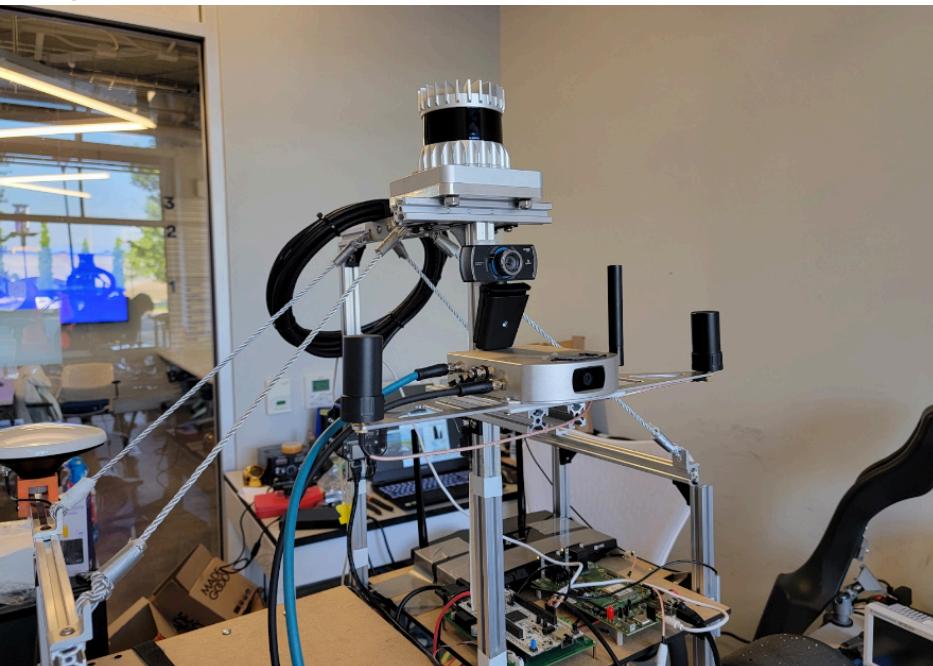
Topics

Recent go-kart hardware modifications for the Autonomous Karting Series (AKS) competition

- **Septentrio GNSS Antenna Relocation:** The GNSS antennas at their original mounting positions can have receptions partially blocked by Lidar and the center t-slot. We extended the t-slot and shifted the antennas further toward the back of the go-kart to improve localization accuracy



- Fixposition Vision-RTK2 Sensor: We added a secondary GNSS sensor that provides GNSS localization with visual odometry sensor fusion. It is mounted on the front side of the rear shelf facing forward using a 3D-printed mount. Parts of the steering wheel(static) are visible to the camera, and the lower part of the image feed is cropped out using a provided tool. The sensor provides reliable and precise localization during the entire competition



Camera Configuration

Fusion is running, configuration disabled!

Camera image



Refresh live stream

Image cutout

Top % 0 Bottom % 20

Enable stream

Disable

Encoding

H.264 (compressed)

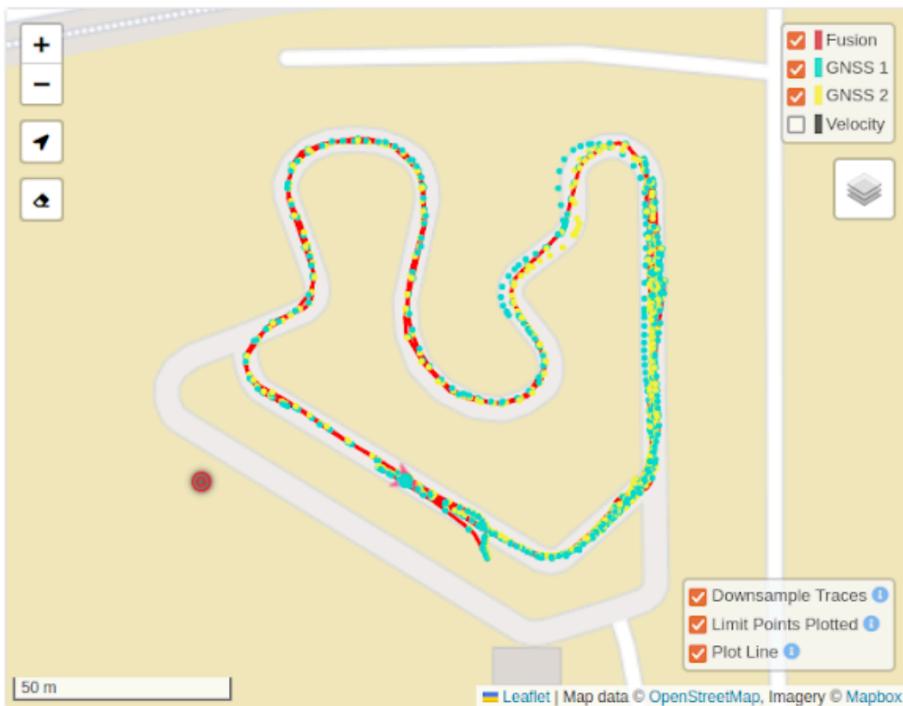
Stream

Destination



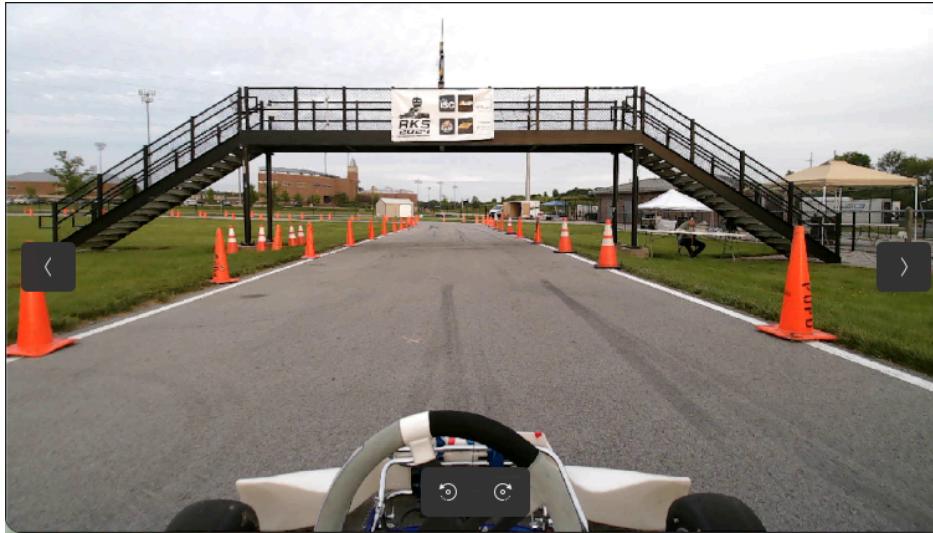
Fusion Status

Fusion engine	Fusion status	IMU status	IMU noise	Wheelspeed status
Running (Generic)	Initialized	Converged	Low noise	Not configured
<input type="button" value="Stop"/>		<input type="button" value="Reset"/>		

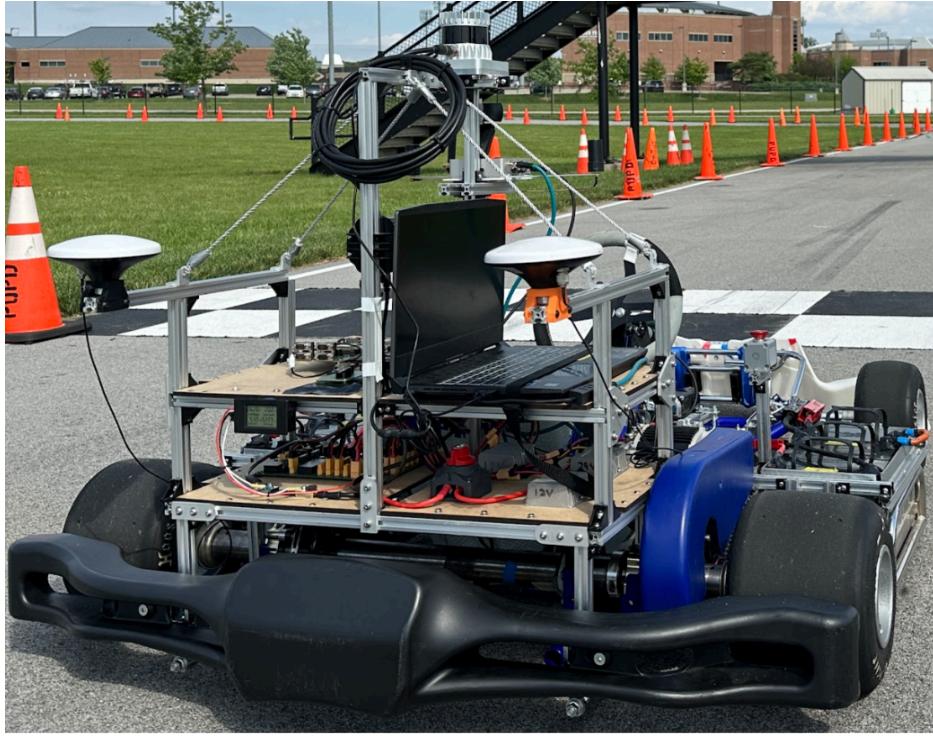


.	Output	StdDev
Position	40° 26' 15.6643" N	0.042 m
	-86° -56' -39.9107" W	0.043 m
	172.91m	0.035 m

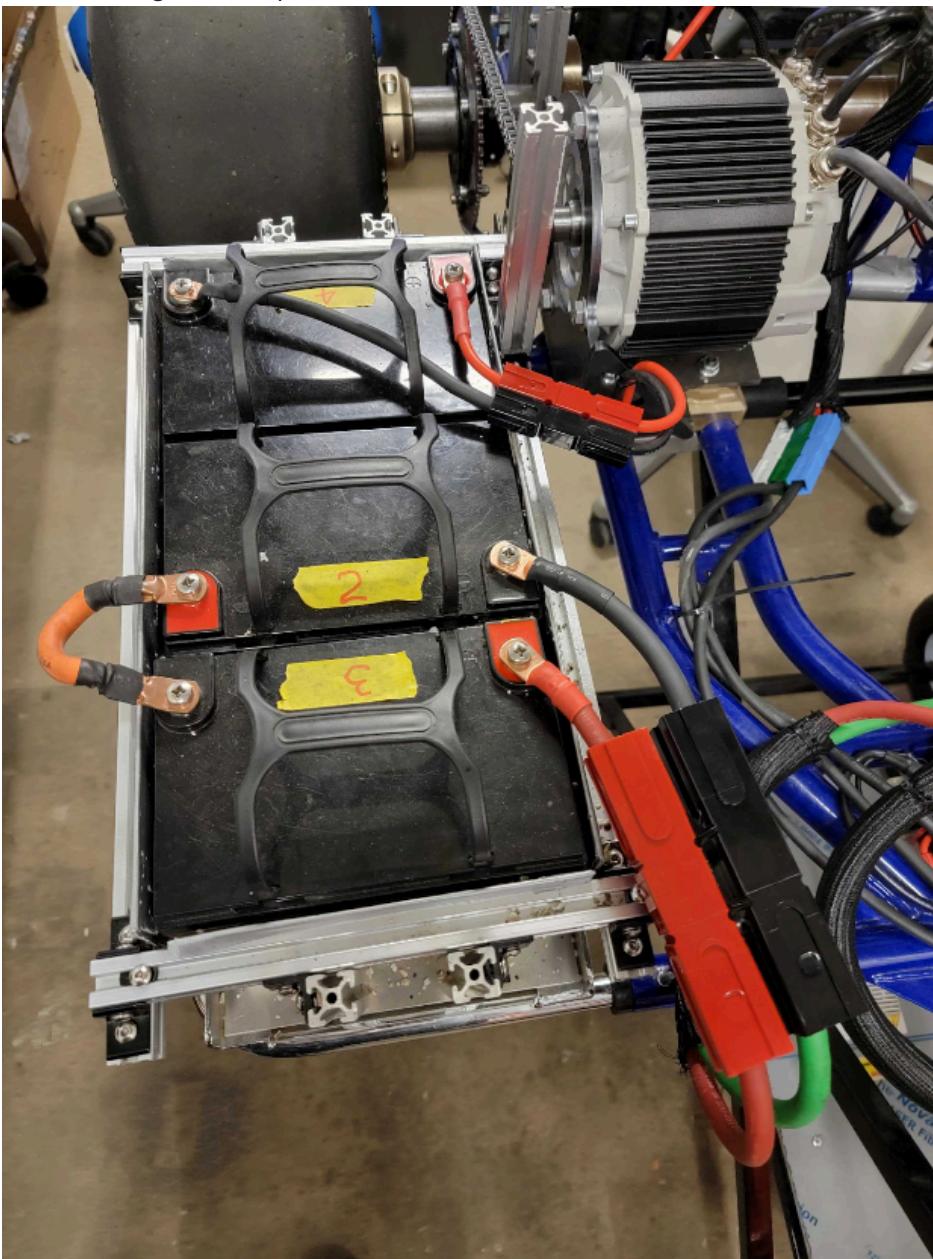
- **NexiGo N980P Webcam:** Replaced the OAK-D camera with the NexiGo N980P wide-angle webcam. This camera provides a wider FOV (horizontal 110 deg vs 69 deg) that allows seeing both track boundaries most of the time.



- **Front and Rear Bumpers and Chain Cover:** Front and rear bumpers and chain cover were mounted back onto the go-kart as part of the safety requirements of the competition. However, it makes lifting and carrying the go-kart onto the stand harder
- **Mechanical E-Stop:** A mechanical mushroom E-Stop button was added to kill power to motor when triggered. Next year this E-stop must kill power to the entire go-kart system.



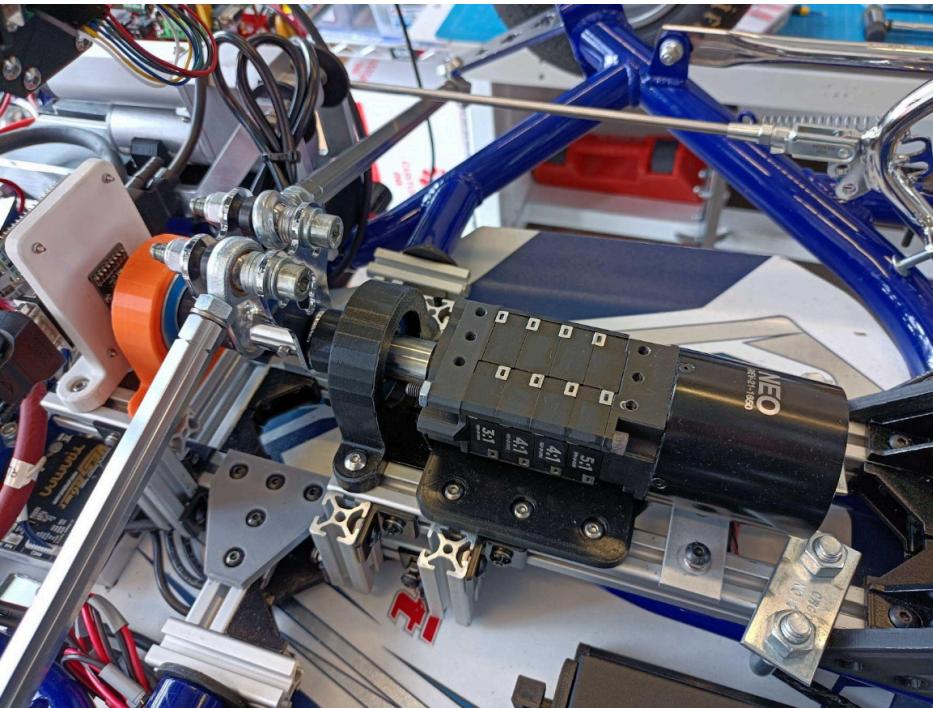
- **Battery Connectors:** Battery connectors were added to the drivetrain and AUX power systems to allow fast removal and disconnect without the use of tools. The organizer recommended that we attach a t-slot across the top of the battery box to prevent batteries from falling out of the box in case the go-kart flips over.



Mechanical issues encountered at the competition

- **Weak T-slot connections using the L-shape connector:** It was found at the competition that some of these connections were not strong enough to withstand impact (going on the grass at higher speeds). They can become loose or deform causing components to relocate (especially for the lower steer-by-wire system and battery box).
- The lower steer-by-wire motor was detached from the rest of the steer-by-wire system at the competition. The lower steer-by-wire system had to be completely reassembled and caused us two attempts at the

reactive race.



Other topics:

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

↑ 1

0 comments