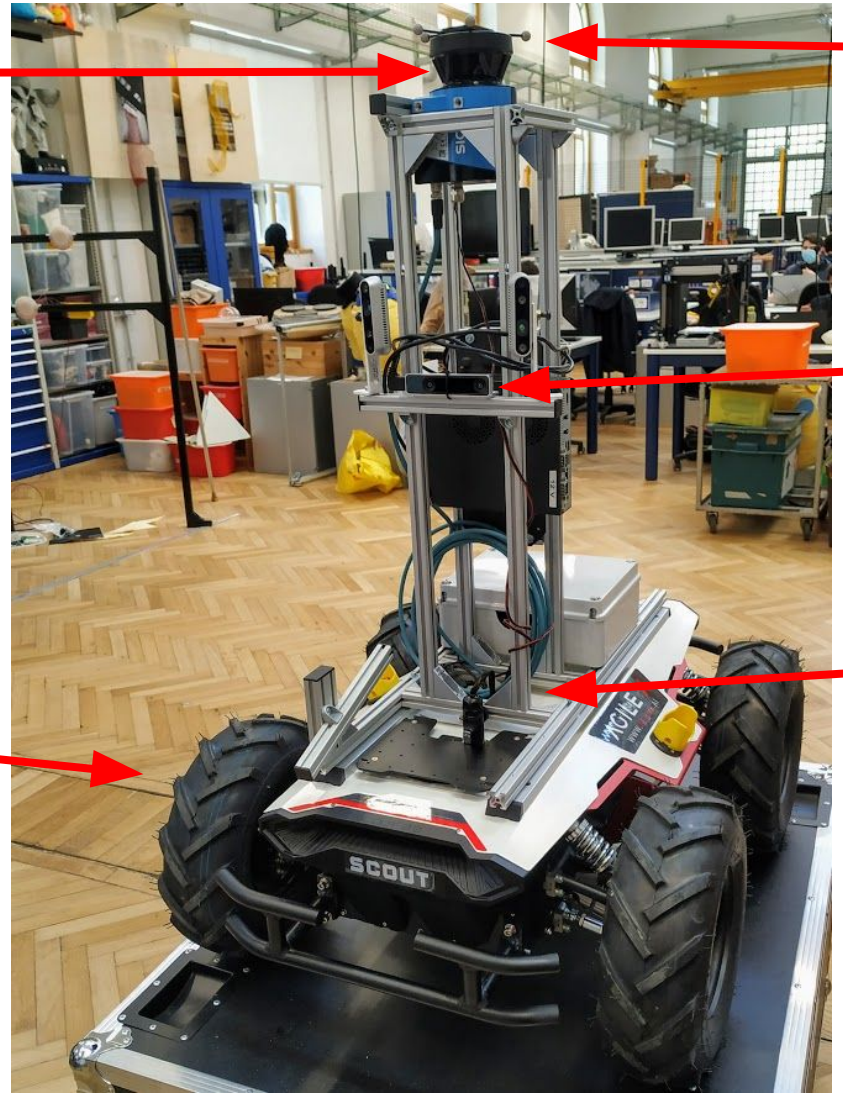
SECOND ROBOTICS PROJECT

ROBOTICS

POLITECNICO
MILANO 1863

THE ROBOT



SICK LMS100

Optitrack Markers

Intel T265

pixhawk mini

Agilex Scout

DATA

Format: ROS Bag file

Data: bag files

Topics:

- /Robot_1/pose: gt from optitrack (not always available)
- /camera/accel/sample: camera IMU
- /camera/gyro/sample: camera IMU
- /camera/odom/sample: camera Odom (visual odom+IMU)
- /mavros/imu/data_raw: IMU data (cog mounted)
- /odom: scout odometry
- /scan: laser data
- /scout_status: scout status
- /tf: some tf

THE PROJECT

- **Small bag** (calibration.bag)
- use only for sensor calibration (estimate missing tf)

- Choose **one bag**
- use the data to create a map using gmapping

- Configure robot localization, imu_filter, amcl
- Perform localization on the **other bags** using the recorded map

THE PROJECT

- The map can be created using **directly the odometry** or with the **output of robot localization**
- odometry and laser are **not aligned** , there is a rotation between them (use calibration bag to estimate it)
- **Localization** need to be performed with **amcl+robot localization**
- Use the best sensor setup to achieve accurate localization (**min two sources** in robot localization)
- you can use imu_tools to preprocess imu data (not mandatory)
- We employed commercial sensors, for question regarding mean error, max distance, etc. you can **refer to the datasheet**