ROSBag2nuScenes: Share the Bags, Spread the Joy - Autonomous Vehicle ROS Datasets Deploy

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John Chrosniak

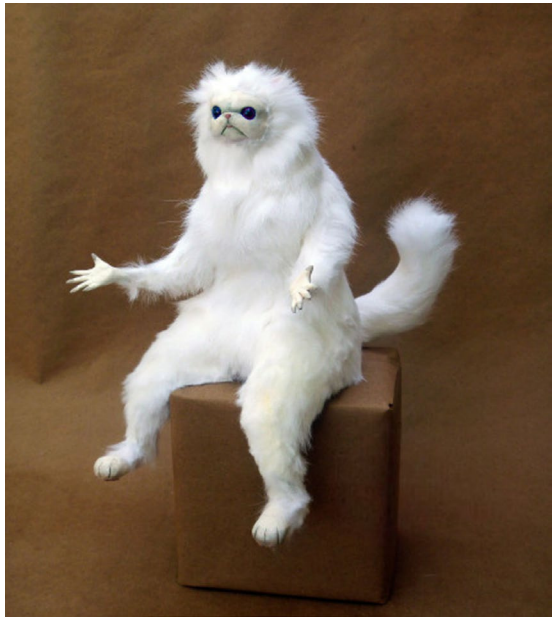
- Graduate Student at the University of Virginia
- Advised by Dr. Madhur Behl
- Researching the Intersection of Machine Learning and Vehicle Dynamics Modeling
- Graduating in December

Cavalier Autonomous Racing
Perception Team Lead

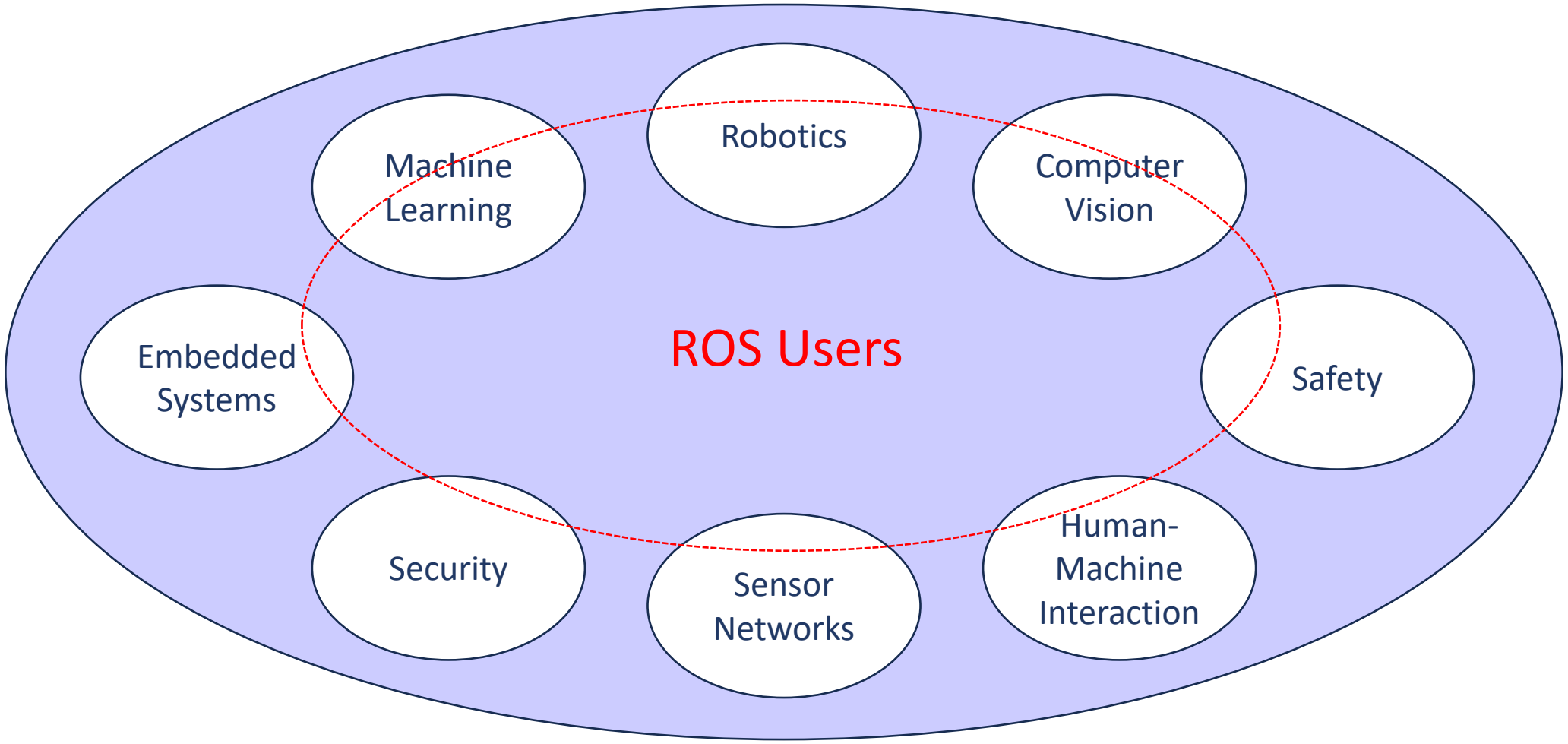
…But Only if You Use ROS

metadata.
yaml

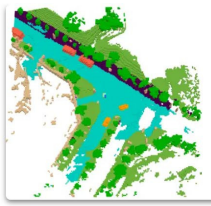
perception
_test_0.db3



Autonomous Vehicles Research



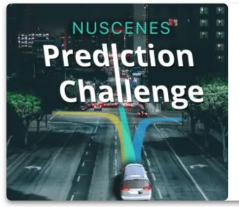
nuScenes is Widely Used



12 May, 2023

3D occupancy prediction challenge at CVPR 2023

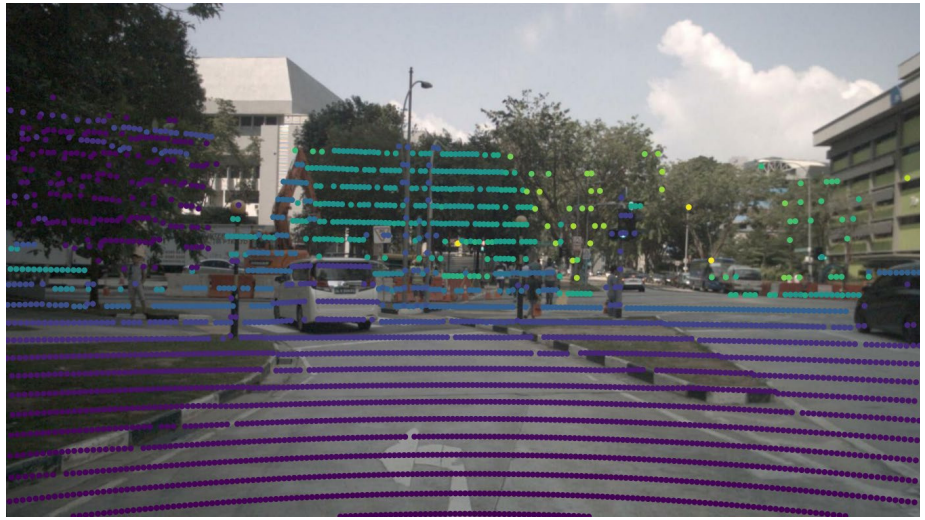
A collaboration by Shanghai AI Lab, Tsinghua MARS Lab and Motional (image from "Scene as Occupancy")



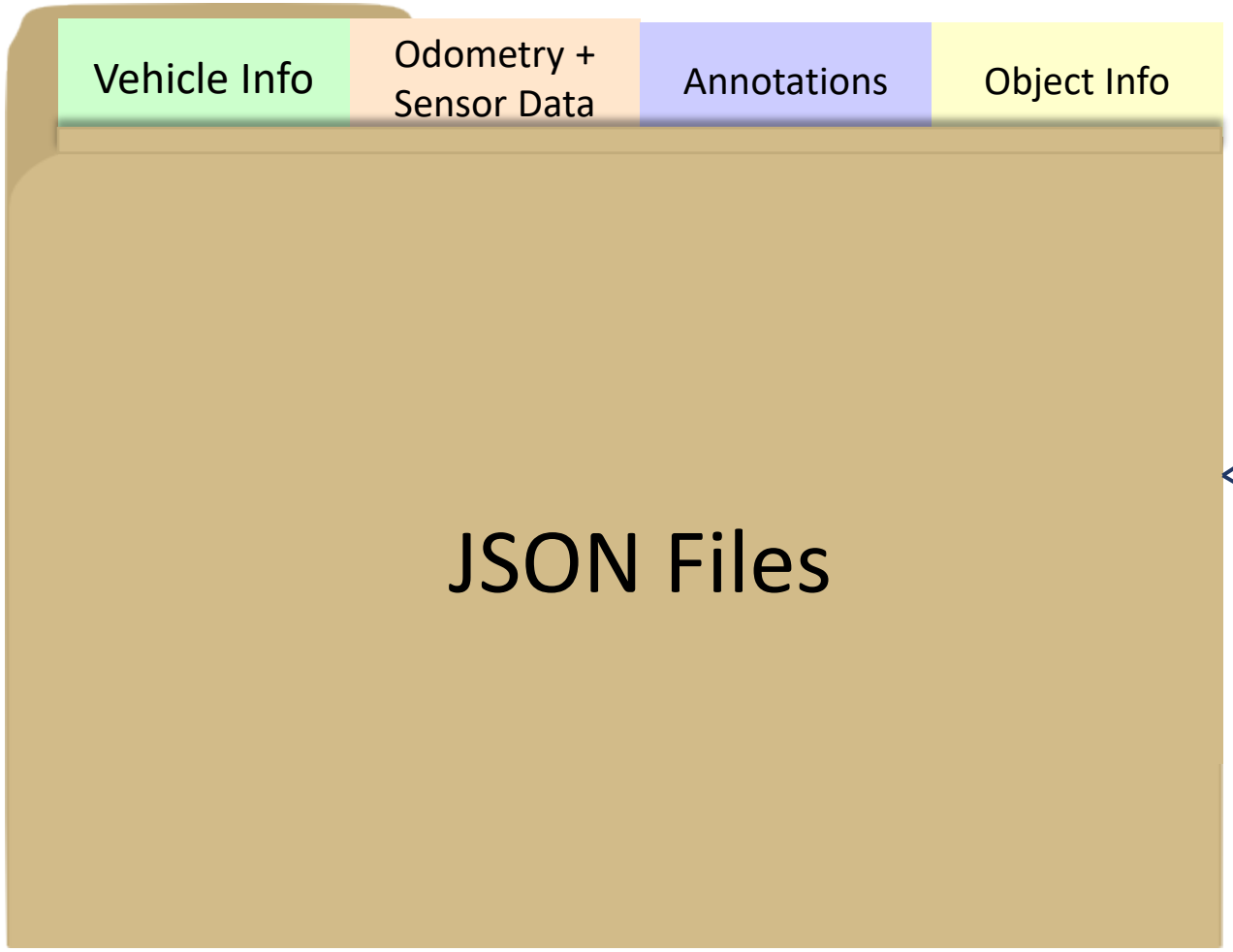
1 April 2020

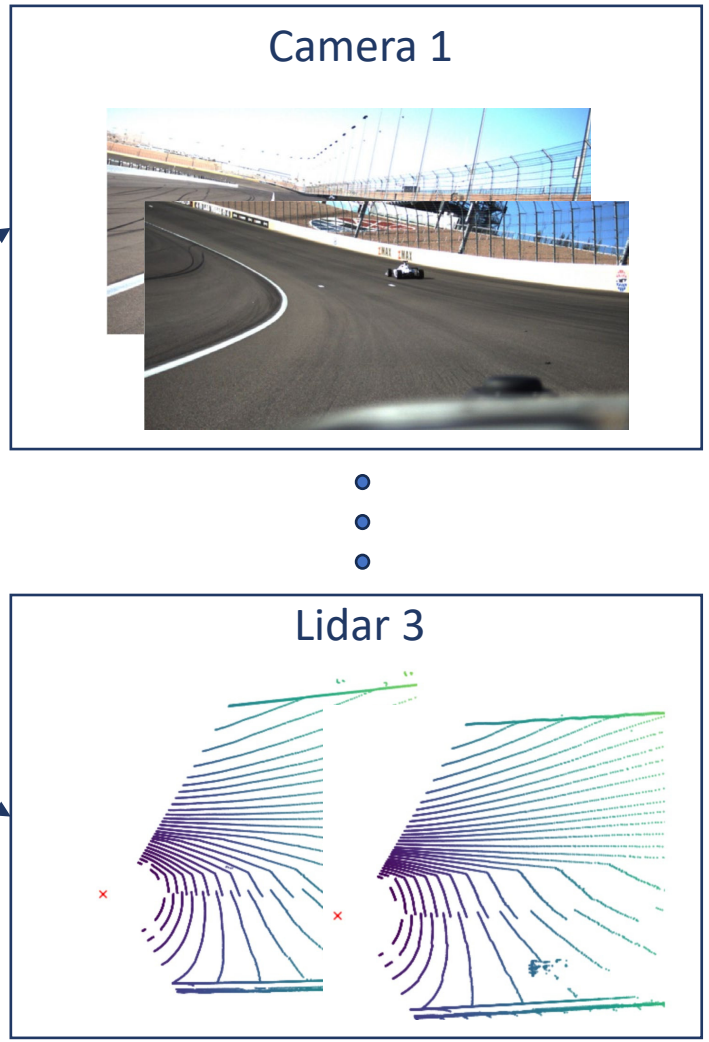
nuScenes prediction and detection challenge at ICRA 2020.

Join the challenge and beat the state-of-the-art.



The nuScenes Dataset Format

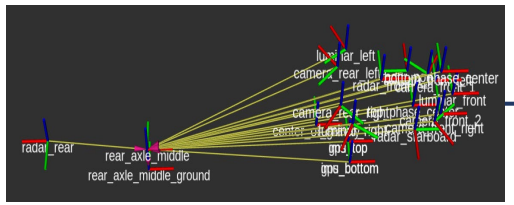




The ROSBag2nuScenes API

ROS Bag

URDF File



Param File (YAML)

(User Must Create This)

> _

./Bag2Scenes

Vehicle Info	Odometry + Sensor Data	Annotations	Object Info

JSON Files

Tutorial: Bag to nuScenes Param File

params > ! mit.yaml

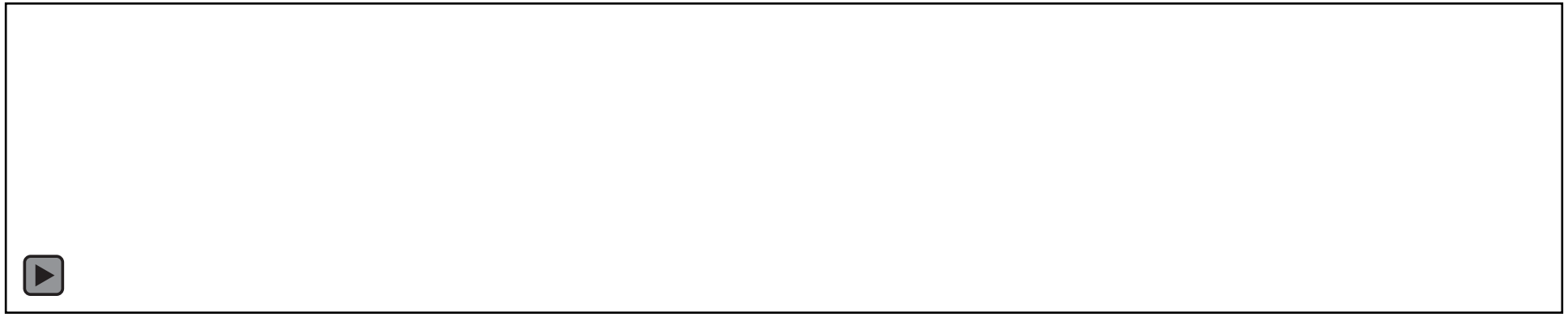
```yaml
BAG_INFO:
  TEAM: MIT-PITT-RW
  DESCRIPTION: Low speed multi-agent laps with KAIST
  ODOM_TOPIC: /vehicle_8/local_odometry
  TRACK: IMS
  URDF: urdf/av21.urdf
SENSOR_INFO:
  LIDAR_FRONT:
    TOPIC: /luminar_front_points
    FRAME: luminar_front
  CAMERA_FRONT_RIGHT:
    TOPIC: /camera/front_right/image/compressed
    FRAME: camera_front_right
    CALIB: /camera/front_right/camera_info
  RADAR_FRONT:
    TOPIC: /radar_front/esr_track
    FRAME: radar_front
```

1. Provide context and ego odometry topic

2. Provide path to URDF

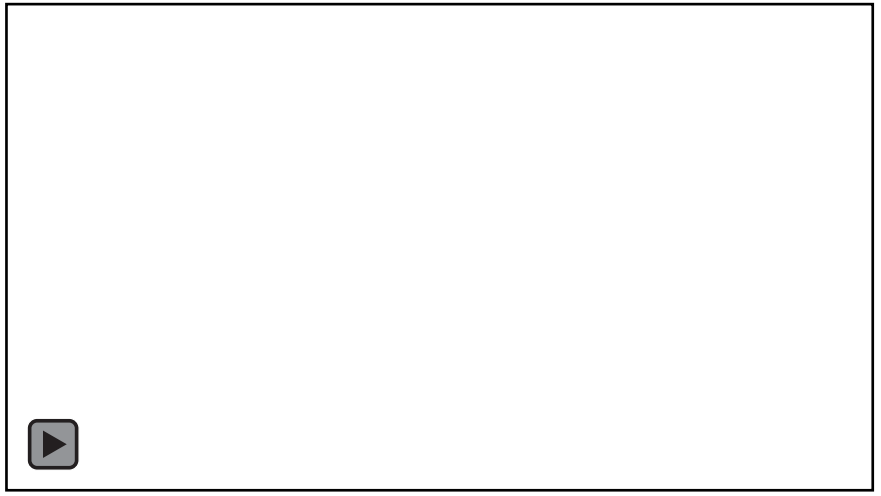
3. Provide sensor topics + frames

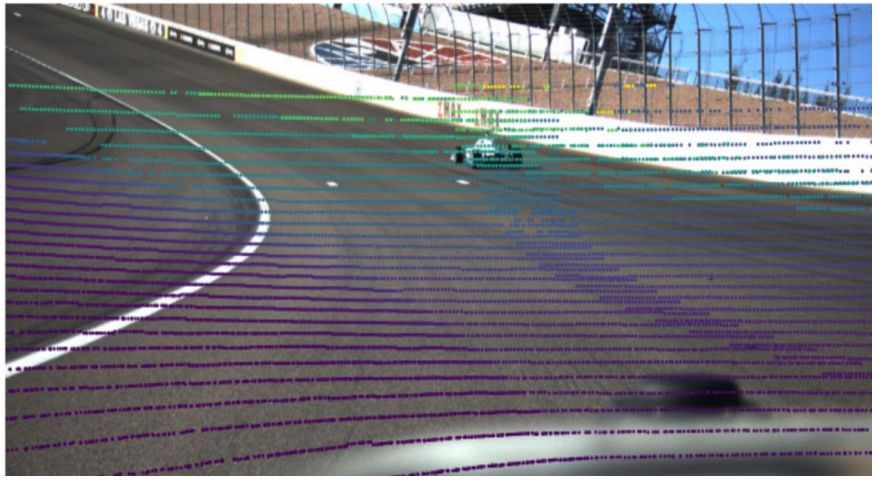
Tutorial: Bag to nuScenes



./rosbag2nuscenes {path to bag} {path to param} {output path} {num threads}

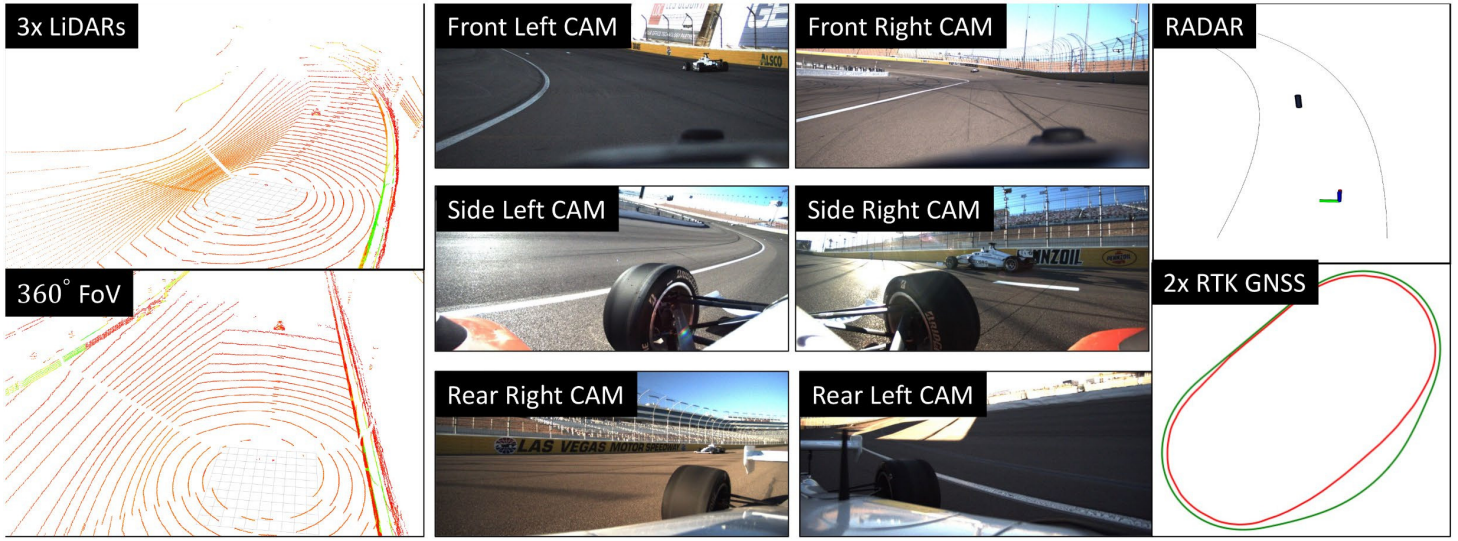
ROS Data in nuScenes Format!





Deploy Your Datasets!

https://github.com/linklab-uva/rosbag2nuscenes



RACECAR Dataset
(*https://github.com/linklab-uva/RACECAR_DATA)*

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