NuPlan Documentation

UF Senior Design Project

Team Giraffe

Fall 2024

Table of Contents

[Dataset 2](#_Toc177055684)

[Documentation link 2](#_Toc177055685)

[Structure Overview 3](#_Toc177055686)

[Planners 4](#_Toc177055687)

[Functions 4](#_Toc177055688)

[Tutorial 4](#_Toc177055689)

[Sensors 4](#_Toc177055690)

[Scenario Visualization 4](#_Toc177055691)

[Tutorial 4](#_Toc177055692)

[Model training 5](#_Toc177055693)

[Tutorial 5](#_Toc177055694)

# Dataset

## Documentation link

<https://nuplan-devkit.readthedocs.io/en/latest/nuplan_schema.html>

## Structure Overview

A diagram of a computer

Description automatically generated

# Planners

Planners are algorithms or models that determines the path and behavior of the car.

* Path planning, speed and control management, decision making

Few planners included with nuplan that are a starting point, all of which have code we can take advantage of.

## Functions

*initialize* initializes the planner. Takes in:

* A high-level goal (x, y, heading) pose

*observation\_type* dictates what type of observations the planner will consume to inform its decision. Need to decide what type the planner should consume for either:

* Sensors (raw sensor information)
* DetectionTracks (outputs of an earlier perception system)

*compute\_trajectory* responsible for producing the trajectory dictating the path the ego vehicle will attempt to follow in the future

* Will consume a history buffer containing discretized past ego trajectory information
* Observations of the type declared in *observation\_type* up until the current time step.

## Tutorial

<https://github.com/motional/nuplan-devkit/blob/master/tutorials/nuplan_planner_tutorial.ipynb>

# Sensors

Stored as object blobs (.jpg for images and .pcd for pointcloud). The database files simply provide a reference to the corresponding sensor blob.

**Both sensor info and database info need to be downloaded.**

The primary method of accessing the data is through a NuplanScenario (below)

Scenario Visualization

How to visualize driving scenarios present in the dataset – interactions with pedestrians, stopping/going, unprotected turns, etc.

Loads in database files.

## Tutorial

<https://github.com/motional/nuplan-devkit/blob/master/tutorials/nuplan_scenario_visualization.ipynb>

# Model training

Also, a deep dive into the architecture, coving the extensibility points to be used to build customized models in the framework.

## Tutorial

<https://github.com/motional/nuplan-devkit/blob/master/tutorials/nuplan_advanced_model_training.ipynb>