

TrafficComposer Benchmark Scenarios Construction Guidelines

Background

TrafficComposer is a tool designed to assist Autonomous Driving System (ADS) developers in automatically generating traffic scenarios for ADS testing. The tool requires two inputs: (1) a textual description of the traffic scenario and (2) a reference image of the traffic scene.

As a user, you will take on the role of an ADS developer tasked with designing traffic scenarios. Based on your inputs, TrafficComposer will automatically generate runnable scenarios for ADS testing in simulation environments. You'll be able to see how ADSs perform on the traffic scenarios you design!

Design a Traffic Scenario

You are encouraged to design traffic scenarios based on real-world observations or your own interests. It can reflect a traffic scenario commonly seen in your life; it can also be a specific scenario that you are particularly interested in. To get some inspiration, we encourage you to watch some videos. We refer you to the list of videos at the end of these guidelines. You can also search for similar images online. A good starting point is searching for “scenic drive” on YouTube.

You need to provide two descriptions of the traffic scenarios you design: 1) a textual description and 2) a reference image of the traffic scene. These videos are a very good source for the reference image. Of course, you can also directly search for images online.

Writing the Textual Description

You will need to write a short paragraph to describe the traffic scenario you design. Please follow the following guidelines when creating the description:

1. The textual description should include three core components: the environment, road network, and traffic actors.
2. The environment is defined by time and weather conditions.
3. The road network includes lane configurations and traffic control signals.
4. For the actors, you can only focus on the two to three most relevant ones to the ego vehicle. Briefly describe the position, speed, and behavior of the actors.
5. This description can be very concise since the reference image you specify will provide the supplementary details.

Example

Here is a demo of the textual description you should write and a demo reference image.

Textual Input:

It is currently daytime and cloudy. The ego vehicle is on the middle lane of a five-lane road. Pedestrians are walking on both sides. There is an orange car in front of the ego vehicle. There are other cars driving in front of the ego vehicle in both left and right lanes. The traffic light in the direction of the ego vehicle is green.

Reference Image:**List of scenic driving videos for your reference**

- <https://www.youtube.com/watch?v=TE2tfavlo3E>
- <https://www.youtube.com/watch?v=7HaJArMDKgl>
- <https://www.youtube.com/watch?v=2054gi9TzcA>
- <https://www.youtube.com/watch?v=8mf5prrubCM>
- <https://www.youtube.com/watch?v=K23dlJAE4w>
- <https://www.youtube.com/watch?v=eR5vsN1Lq4E>
- <https://www.youtube.com/watch?v=kuRPXB3q5eo>
- <https://www.youtube.com/watch?v=MAiltiE8tgl>
- <https://www.youtube.com/watch?v=QZPqluJA0OY>
- https://www.youtube.com/watch?v=Cod_ggrs69U
- <https://www.youtube.com/watch?v=EXFIYUM5Fgl>
- <https://www.youtube.com/watch?v=vBySF9eSKQs>