Building fourteen kinds of highly automated driving scenarios

Lead vehicle cuts out to the right lane

Lead vehicle cuts out to the left lane

Lead vehicle autonomously emergency brakes in a long distance

Lead vehicle autonomously emergency brakes in a short distance

Surrounding vehicle runs on the left lane and not cut in

Surrounding vehicle cuts in from the right lane in a short distance

Surrounding vehicle cuts in from the right lane in a long distance

Surrounding vehicle runs on the right lane and not cut in

Surrounding vehicle cuts in from the left lane in a short distance

Surrounding vehicle cuts in from the left lane in a long distance

Pedestrian crosses the road from right

Pedestrian stands on the right side without crossing the road

Pedestrian crossing the road from left

Pedestrian stand on the left side without crossing the road

An empty scenario, there are no events

scenarios

Building a signal acquisition system based on hardware-in-loop equipment

Hardware-in-loop equipment

Image display system

Auditory stimulation system

Crew status recording system

Blood oxygen monitoring device

Driving simulator

Peripheral equipment

Scenario information

Stimulation time

Crew status

Blood oxygen

Data merge
Matlab/Simulink module

Status record
Python module

Record blood oxygen
OxySoft3.4.9 Software

Host computer

Data Processing

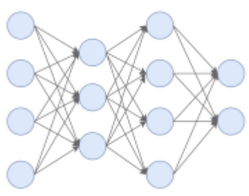
scenarios

Passenger

fNIRS

the raw intensity data

scenarios



Machine Intelligence

Vehicle data

the vehicle data of position, velocity and acceleration

Data

Experiment

An fNIRS dataset for driving risk cognition of passengers in highly automated driving scenarios

Dataset