Development of Traffic Accident Scenarios Database for Autonomous Driving Accidents

FORUM8 9th CPWC

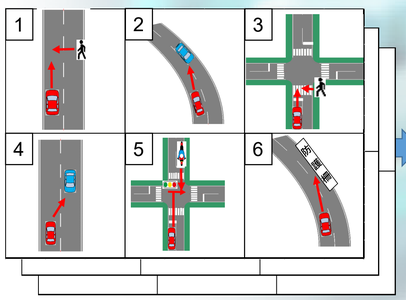
Team : **Let's go go DS !!!**

Overview

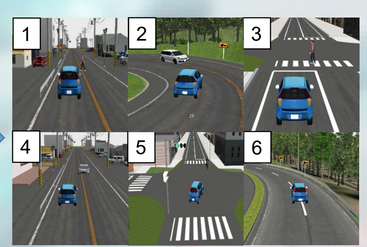
Currently, autonomous driving technology is advancing, and as a result, it is predicted that different type of accidents from the conventional manual driving will occur. Therefore, by developing a database that can be used to create scenarios efficiently using the scenario function of UC-win Road, assuming traffic accidents during autonomous driving based on accident types and SIP1) . With this database, it will be possible to examine the accident risks of autonomous driving using a driving simulator, and contribute to the prevention of accidents during autonomous driving that are expected to occur from the viewpoint of "people, roads, and vehicles". 1)Strategic Innovation Promotion Program

Method

- Existing accidents were analyzed, and accident patterns with a large number of fatalities were extracted.
- A scene of an existing accident was created in UC-win/Road.

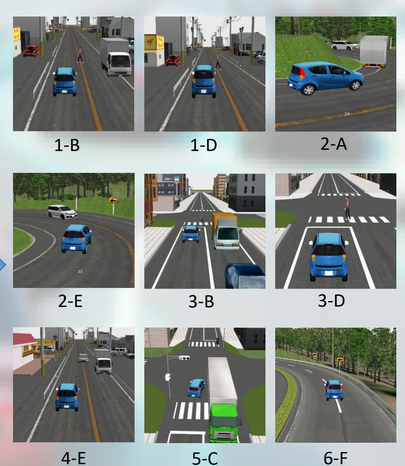


Patterns of existing accidents
(Extracted from 255 patterns)



The true causes of remaining accidents and accident situation

True causes of Accident	Accident Types	Accident Scenes	Code
Cannot see the target	Head-on collision	Sharp curve	A
	Pedestrian accident	Shielding	B
	Right turn and left turn accidents	Sensor blind spot	C
Sudden movement of the target	Pedestrian accident	Pedestrian running out	D
	Head-on collision	Sudden going off the road	E
High velocity・ High relative velocity	Going off the road	Velocity(＞80km/h)	F

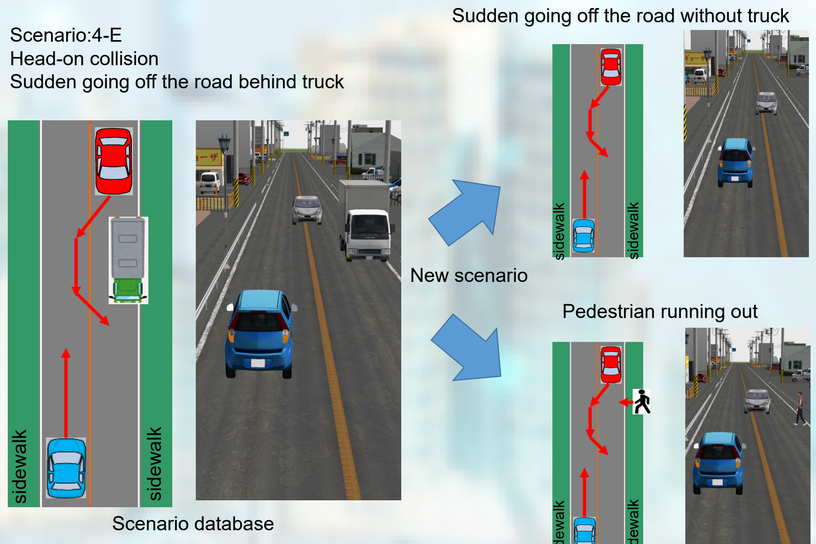


Accident scenario databases

A database of accident scenes for autonomous driving car was constructed from existing accident scenes and the true causes of remaining accidents.

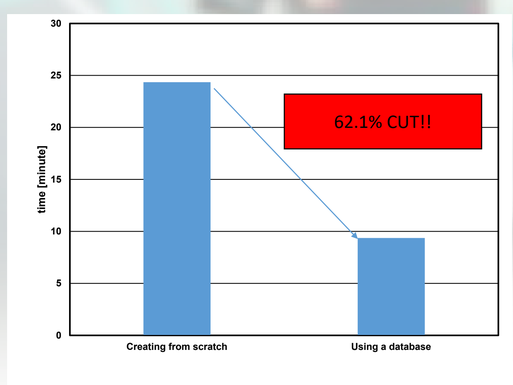
Use of Scenario Database (4-E) Head-on collision

By creating a scenario database, it is easy to create various accident patterns based on it.

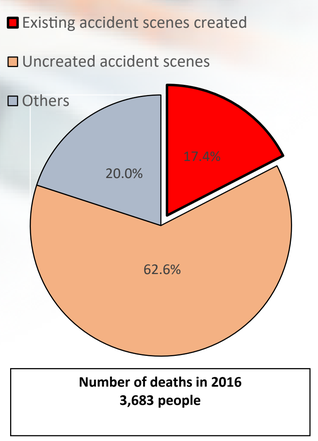


Effects of improvement

In accident No.4-E case, the database has reduced work efficiency by 62.1%.
In addition, the database created can cover about 17.4% of target number of deaths. In the future, we plan to increase the number of databases and increase the coverage of the database.



Comparison of creation efficiency (4-E)



Coverage of existing accident scenes created