

# Summary of SIP-adus Project (FY2017)

**Name of the project**

Development and substantiation of simulation technology for estimation of detailed traffic accident reduction effects

**Responsible Organization**

Japan Automobile Research Institute

**Name** Akito Adachi, Nobuyuki Uchida, Sou Kitajima, Hiroyuki Ota

**Object of the Project**

In order to achieve the safest automobile transportation society in the world, early practical use and promotion of the automated driving system have been expected. In this project, the simulation technology of the traffic environment reproduction to figure out the quantitative reduction effect of traffic accidents with such system is developed and contributes to the achievement of the above target.

**Project Summary**

In this year, the simulation is developed to implement the diverse travel behaviors by approx. 500 agents including drivers and pedestrians and to execute a trial calculation of accident reduction effect of several advanced driver assistance systems. The validation of behaving models of traffic participants were carried out through an experiment for investigation of the relationship between walking behavior and pedestrian's characteristics(age and sexuality etc.) in test course.

- (1) In this simulation is capable of occurring multiple types of collision based on stochastic error due to stochastic error of an agent. It is necessary to continue the implementation of other human's error in order to expand the simulating scope of traffic accidents.
- (2) A trial calculation was executed with the typical six scenarios based on AD system diffusion and enables us to compare the results of accident reduction effect of each scenarios quantitatively. Six scenarios are composed of different level of diffusion combination of manual driving, advanced driver assistance system(e.g., Autonomous Emergency Braking, Lane Departure Warning) and automated driving.
- (3) The behaving model of pedestrian was improved as more realistic model on the basis of analysis of relationship between walking behavior and pedestrian's characteristics. For example, elderly pedestrians are apt to give up crossing a road earlier than non-elderly pedestrians. Pedestrian agents can have the stochastic error in the same way as driver agents.

**Future plan**

The multi-agent simulation will estimate the nationwide accident reduction effect in terms of fatality quantitatively in 2018.

- (1) Selection of model areas to represent the occurrences of traffic accidents based on relevant statistics
- (2) Verification of the simulation result of each model area from the viewpoint of accidents occurrence points and component rate of respective accident type
- (3) Estimation of the nationwide accident reduction effect in terms of fatality by setting practical diffusion scenario of automated driving system