

Automatic driving experiments using roadside stations as bases in hilly and mountaneous areas

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Hidenori Yoshida, Head Shinji Itsubo, Senior Researcher Kazuya Tamada, Researcher Satoshi Sawai, Guest Research Engineer
 Intelligent Transport Systems Division, Road Traffic Department

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1. Introduction

The Ministry of Land, Infrastructure, Transport and Tourism (MLIT) is conducting experiments on automatic driving services using roadside stations as bases using automatic driving vehicles in hilly and mountainous areas where the population is becoming very old to lead the outcomes of the experiments to secure human and material flows and support rural areas.

Regional Development Bureaus launched Regional Experience Councils consisting of intellectuals and local governments in 13 locations around Japan in FY 2017. The councils established experiment plans and ran experiments.

2. Details of technical examinations

The National Institute for Land and Infrastructure Management (NILIM) is participating in Regional Experiment Councils as a committee member. The NILIM is providing technical support to run the experiments and analyzing technical examination categories to lead the experiments to social application (figure 1) including [1] road and traffic, [2] regional environment, and [3] social acceptability.



Figure 1: Technical examination category (the red frames indicate categories assigned to the NILIM)

Detailed analyses are now being conducted. This paper introduces some of the knowledge gained through the experiments.

3. The relationship between road management and automatic driving

Automatic driving vehicles detect whether there are any obstacles on their routes using optical cameras and laser sensors. In the example shown in figure 2, an automatic driving vehicle detected a plant hanging over a

road as an obstacle and stopped. Similar incidents are occurring in other locations. Many obstacles, such as weeds and litter are expected to be on roads. A high-level road management, such as the early detection of obstacles in cooperation with other regions, needs to be established for the early application of automatic driving.

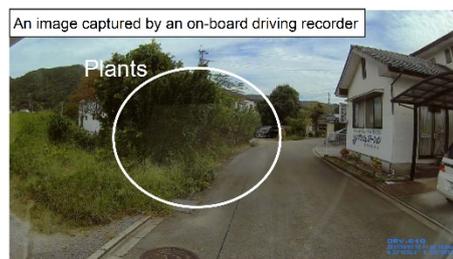


Figure 2: Detection of plants

4. Analysis of social acceptability

Figure 3 is the outcome of surveys on reliability toward automatic driving gathered from on-board monitors. It indicated that the reliability toward automatic driving improved after being on board an automatic driving vehicle.

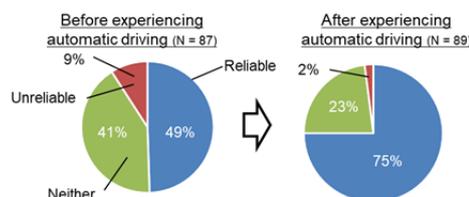


Figure 3: Reliability toward automatic driving (Ashikita Dekopon)

5. Future activities

Providing mobility in hilly and mountainous areas is an urgent task because elderly drivers are expected to voluntarily give up their drivers' licenses, and public transportation in such areas is decreasing. These experiments are expected to result in the social application of automatic driving in hilly and mountainous areas.

For detailed information

1) The MLIT website on the experiment of automatic driving using roadside stations as bases
<http://www.mlit.go.jp/road/ITS/j-html/automated-driving-FOT/index.html>