

Summary of OKINAWA Automated driving Project (FY2016)

Name of the project	Investigation and studies of various tasks to be solved for realization of an automated driving system and survey on the social adaptability of the system in Okinawa prefecture
Responsible Organization	Advanced Smart Mobility Co.,Ltd.

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Object of the Project

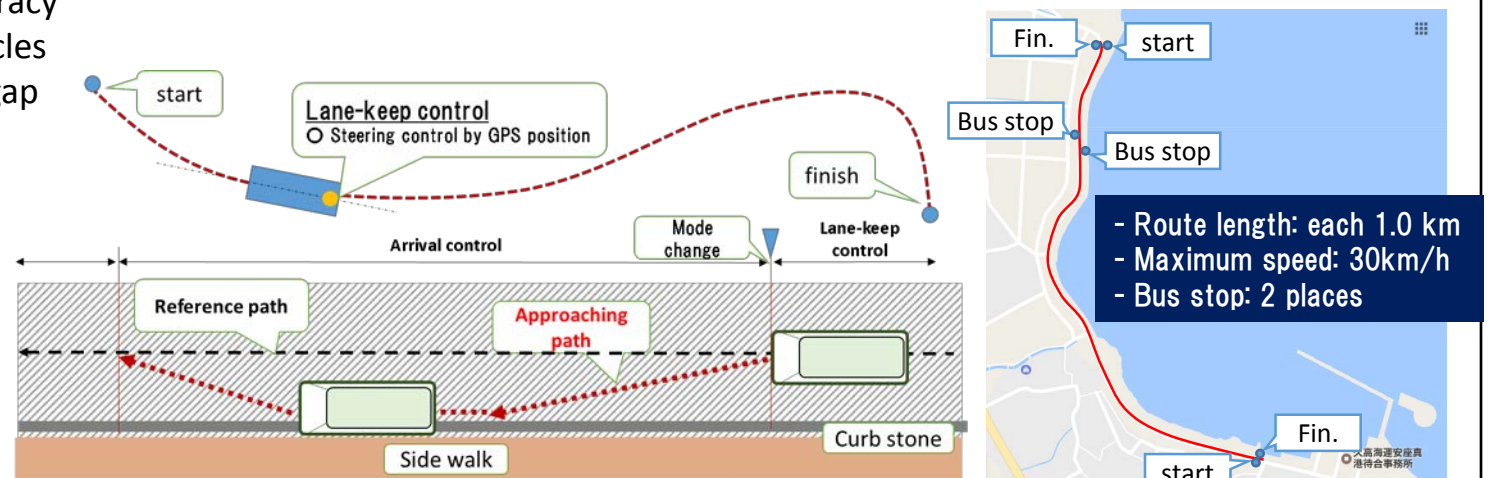
People requires safety, punctuality, express service and convenience such as precision docking for automatic bus operation like the next-generation urban transportation system (ART: Advanced Rapid Transit) .
 system (ART: Advanced Rapid Transit) and correct access to the bus stop is required.
 In order to realize these items, lane keeping control to maintain the lane with high accuracy, recognition of obstacles for lane change control to avoid them and precision docking to the bus stop by laser-radar are required.
 In this time, we will report the results of verifying their controllability and usefulness on san-san beach in Nanjo City, Okinawa Prefecture.
 We also implemented services targeting passengers and operators, so we report on its usefulness.

Project Summary

1. Outline of demonstration experiment

Automatic bus demonstration experiment was carried out on public road along azama sun-sun beach of Nanjo City, Okinawa Prefecture. The following control and system were constructed and evaluated mainly on the accuracy of the control of the sticking.

- 1) Lane keep control to maintain lane with high accuracy
- 2) Lane change control to recognize and avoid obstacles
- 3) Precision docking at the bus stop with almost no gap
- 4) Speed control to maintain target speed
- 5) Service system for passengers and operators



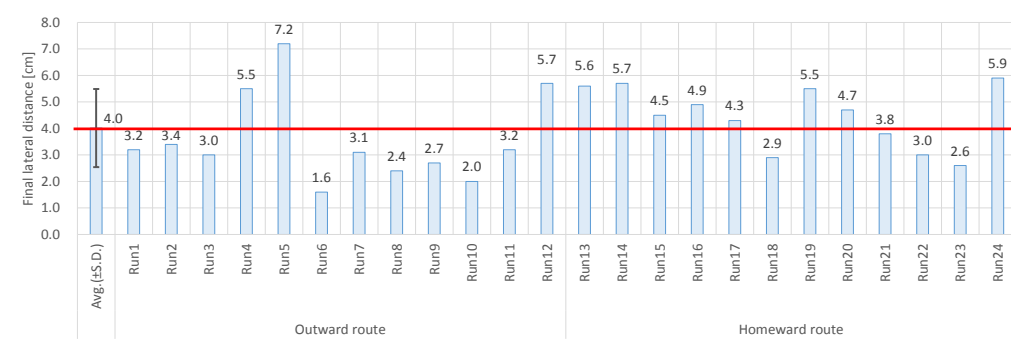
2. Evaluation results

For the lane keeping and the lane change control, the system were able to stably control while maintaining the inside of the lane without greatly deviating from the target trajectory. For speed control, the system was able to run at almost the target speed.

For the precision docking, the bus is able to arrive within the error range of ± 3 cm from the target distance.

Further, it is expected that modification for automatic brake improve the accuracy of precision docking.

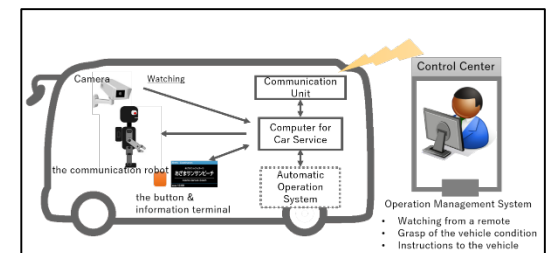
Finally, service system including communication robot and passenger monitoring system also be conducted by the monitor survey.



Results of precision docking



Precision docking



Service system

Future plan

Following problems are obtained through the demonstration experiments.

- Request for shorter and faster approach on precision docking.
- Lane keep control at the higher speed
- Improvement of recognition for obstacles
- Modification for automatic brake and emergency brake
- Improvement of reliability and security of service system