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Hitachi Automotive Systems develops risk-estimation technology for autonomous driving on public roads

Tokyo, October 11, 2019 --- Hitachi Automotive Systems, Ltd. today announced the development of a drive control technology that uses an AD ECU* to avoid risks by artificially mapping and recognizing potential hazards by anticipating the behavior of moving objects including the sudden intrusion of objects from hidden areas. The AD ECU* functions to realize a safe autonomous driving experience and provide peace of mind to the driver.

Autonomous driving has the potential to reduce accidents, mitigate traffic jams, provide transportation for the elderly, and serve as a solution for societal problems. Taking up the challenge, Hitachi Automotive Systems has begun advanced research of technology that will contribute to the realization of autonomous driving on public roads, parking lots and highways.

In order to meet the demands of autonomous driving, the AD ECU must process all sensory data (stereo camera, radar, etc.) to determine vehicle control commands. The risk mapping and route planning technology integrated into the AD ECU allows autonomous vehicles to plan a safe driving route during dangerous situations and to predict various risks posed by the complex behavior of other vehicles, pedestrians, and other road occupants, whether on the road or suddenly appearing from unexpected locations.

Hitachi Automotive Systems had previously developed basic collision avoidance technology that predicted changes in pedestrian behavior and similar detection targets, and used this prediction to safely and naturally decrease vehicle speed in order to prevent a collision. Now, in order to implement a safer and more natural driving behavior, we have developed technology that uses the AD ECU to engage in “defensive driving” and to control the vehicle as a human would, by anticipating high-risk areas based on the seen or unseen behavior of road users and changing the speed and route of the vehicle to avoid the identified areas.

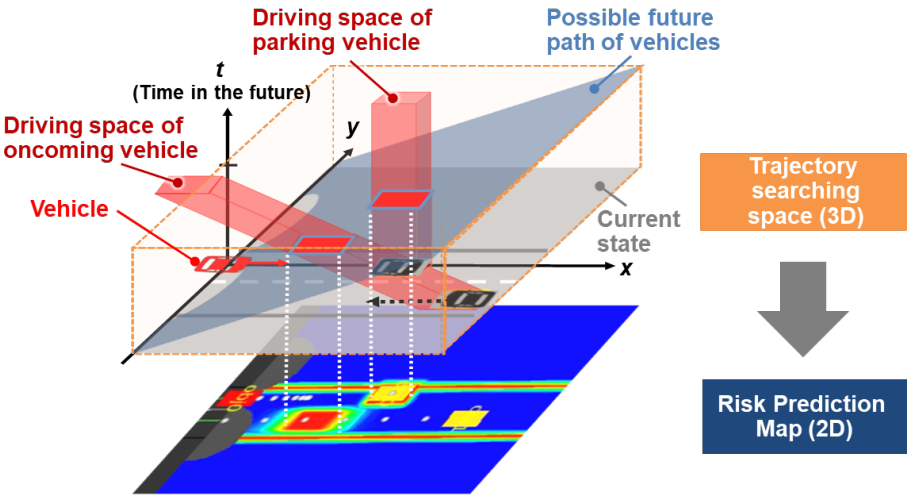
Due to the fact that the risk prediction map integrated in this technology incorporates the motion of objects, and only targets areas where there is a potential to collide with

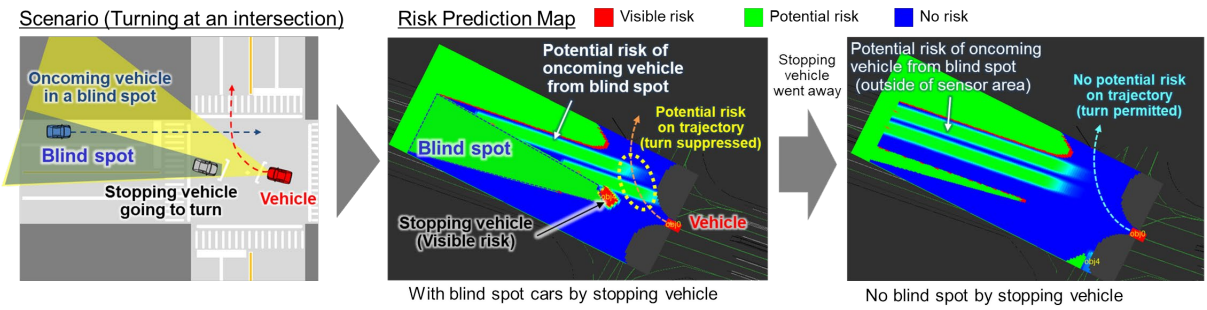
the vehicle, it is possible to use risk prediction even in public road situations, where the potential for collision is high and it is otherwise difficult to plan a safe route. In addition, the risk prediction map enables the autonomous vehicle to deal with moving objects in its blind spot (such as other cars), something which was previously difficult.

Previously, when an AD ECU predicts a collision risk of moving objects, the movement time is added to the 2d plane of the risk map, extending it to the third dimension and requiring an enormous amount of data processing. However, with this technology, the future time of moving objects is compressed and expressed in the 2d risk prediction map, allowing the risk of object collision to be predicted in a more manageable two dimensional environment. This reduces data processing load of the AD ECU, and enables a real-time risk prediction map to be displayed. This technology was developed in collaboration with Hitachi Ltd. R&D group.

In addition to continuing the development of the risk estimation technology explained here, looking ahead the Hitachi Group will offer tools and solutions to contribute to the practical implementation of autonomous driving vehicles and the connected car.

* AD ECU：Autonomous Driving Electronic Control Unit





About Hitachi Automotive Systems, Ltd.

Hitachi Automotive Systems, Ltd. is a wholly owned subsidiary of Hitachi, Ltd., headquartered in Tokyo, Japan. The company is engaged in the development, manufacture, sales and services of automotive components, transportation related components, industrial machines and systems, and offers a wide range of automotive systems including Powertrain Systems, Chassis Systems and Advanced Driver Assistance Systems. For more information, please visit the companys website at http://www.hitachi-automotive.co.jp/en/.

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Information contained in this news release is current as of the date of the press announcement, but may be subject to change without prior notice.
