

Hitachi Astemo develops autonomous driving technology that enables cooperative behavior on narrow roads

Strengthening cost competitiveness by linking new stereo camera instead of LiDAR

Tokyo, May 17, 2023 – Hitachi Astemo, Ltd. (“Hitachi Astemo”) has developed an autonomous driving technology that help to safely and smoothly pass by oncoming vehicles on narrow roads and other situations by utilizing 3D sensing results of the surrounding vehicle environment. Hitachi Astemo aims to strengthen its cost competitiveness through the use of 3D sensing data obtained from new stereo cameras with improved cost benefits.

The demand for autonomous driving is increasing to help solve social issues such as alleviating traffic congestion and supporting the transportation of disabled, elderly and others with special needs. For the practical implementation of autonomous driving on public roads, it is necessary to predict the risks of complex behavior of pedestrians and other moving objects, as well as sudden emergence from hidden areas, in order to avoid danger in advance. In addition, a vehicle is required to plan a safe driving trajectory and driving control based on 3D sensing information such as LiDAR and stereo cameras, so that smooth driving can be achieved in an environment mixed with non-autonomous vehicles.

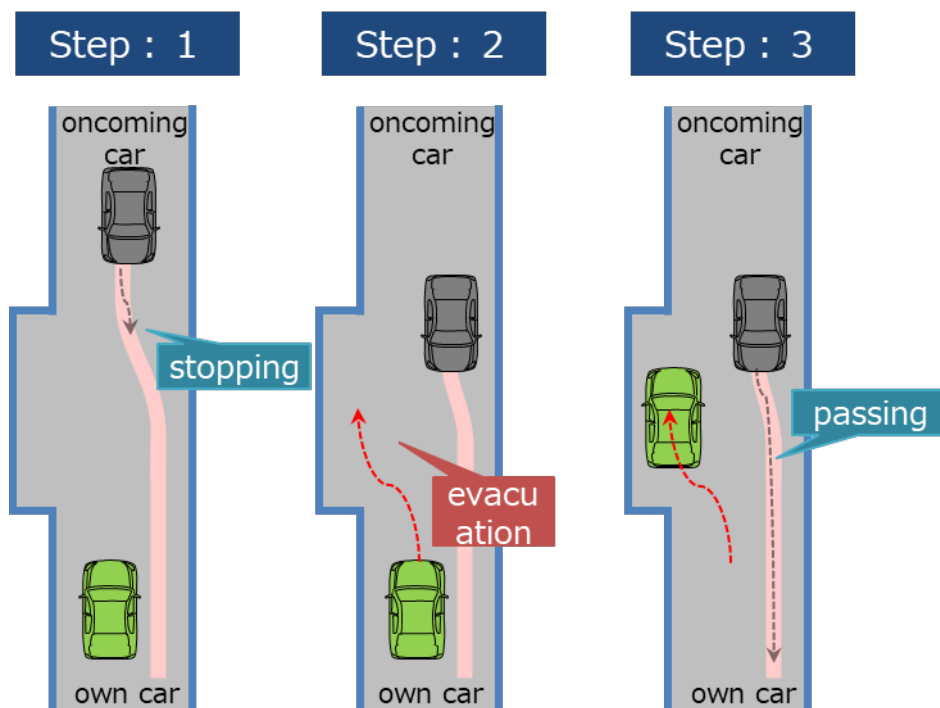
Until recently Astemo’s technologies¹ were developed to prevent collisions by predicting the behavioral changes of pedestrians and other road users in autonomous driving on general roads, and by performing safe and natural deceleration. Astemo has also developed a hazard prediction and avoidance driving technology that, like human driving, predicts areas with potentially high collision risk, such as the behavior of other moving objects and sudden appearances from blind spots, and drives at a speed and trajectory that can avoid risk in advance.

[*1 October 11, 2019 Announcement on driving control technology based on risk prediction of driving environment on general roads](#)

Now, Hitachi Astemo has developed technologies that enable smooth passing automated driving in narrow roads by coordinating with oncoming vehicles, by integrating three-dimensional information obtained from sensing such as LiDAR, recognizing the driving environment around the vehicle in three dimensions, and by understanding intended movement from the detected free space and the behavior of the oncoming vehicles, and by performing route prediction.

Looking ahead, Hitachi Astemo is working towards collaborating with a high-precision, versatile new stereo camera launched in March 2023. This stereo camera can detect pedestrians and bicycles with a high degree of accuracy and measure distances by combining long-range detection with a wide viewing angle. It also stores identification patterns in advance using machine learning techniques, contributing to collision prevention during right and left turns at intersections^{*2}. Furthermore, by utilizing Hitachi Astemo’s AI and recognition technology, we have created software processing that enables advanced image recognition and vehicle control on cost-competitive electronic control units. By collaborating with the new stereo camera, it will be possible to further enhance the cost competitiveness of autonomous driving technology that enables cooperative behavior in narrow roads.

[*2 December 25, 2019 announcement regarding stereo cameras that combine distance detection and wide angle view.](#)



While recognizing the actions of the other vehicle, steps are taken to coordinate with the other vehicles.

Hitachi Astemo's autonomous driving technology using cooperative behavior in narrow roads and the new stereo camera will be introduced at the "Automotive Engineering Exposition 2023 Yokohama" (booth number: 148) held at Pacifico Yokohama from May 23.

Hitachi Astemo is committed to strengthening its business and delivering technological innovation through a strategic business portfolio, which includes Powertrain & Safety Systems, Chassis, Motorcycle, Software and Aftermarket businesses. Aiming for growth based on the pillars of "green," "digital," and "innovation," Hitachi Astemo will contribute to a better global environment by developing xEV systems and highly efficient internal combustion engine systems that reduce emissions. In addition, it will deliver enhanced safety and comfort through autonomous driving systems, advanced driver assistance systems and advanced chassis systems. Through such advanced mobility solutions, Hitachi Astemo will contribute to realizing a sustainable society and provide enhanced corporate value for its customers.

Company Profile

Hitachi Astemo, Ltd.

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Business: Development, manufacture, sales and service of machinery and equipment and systems for automotive parts and transportation and industrial use

For more information, please visit the Hitachi Astemo website:

(<https://www.hitachiastemo.com/en/>).

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