

July 23, 2018

Development and Mass Production of On-board Stereo Cameras that Detect Road Conditions

RICOH Industrial Solutions Inc. (President: Katsunori Nakata) has developed an on-board stereo camera together with Denso that utilises dense stereo matching technology for the automotive industry and its rapidly growing self-driving technological needs. Mass production has already begun in September 2017.

This on-board stereo camera uses RICOH's unique dense stereo matching technology on top of 3D image processing to enable confirmation of obstacles such as pedestrians, other vehicles, guard rails, and even road conditions. Thus enabling vehicles to detect the free space of traversable road surfaces and provide obstacle avoidance through steering control.

Stereo cameras to date have featured parallax algorithms using edge detection, so cannot accurately detect the unevenness and irregularities of road surfaces. In contrast, dense stereo matching technology picks up on everything around the vehicle in high density 3D, enabling the detection of even minute unevenness in a road surface. However, dense stereo matching technology requires the processing of enormous amounts of data, so achieving the real-time capabilities needed for self-drive vehicle safety equipment was an issue. We sped up the processing speed of our on-board dense stereo matching technology so that we could mass produce an automotive on-board stereo camera utilizing the world's leading dense stereo matching technology ahead of the industry.

We started production of this on-board stereo camera at our Production Center, and have already shipped a total of 20,000 units.

RICOH Industrial Solutions Inc. will continue to collaborate with RICOH Group companies and accelerate our research and development to further expand business in the self-driving ADAS (Advanced Driver Assistance System) field, where needs are growing and becoming ever more sophisticated.



On-board Stereo Camera

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Ricoh is empowering digital workplaces using innovative technologies and services enabling individuals to work smarter. For more than 80 years, Ricoh has been driving innovation and is a leading provider of document management solutions, IT services, commercial and industrial printing, digital cameras, and industrial systems.

Headquartered in Tokyo, Ricoh Group operates in approximately 200 countries and regions. In the financial year ended March 2018, Ricoh Group had worldwide sales of 2,063 billion yen (approx. 19.4 billion USD).

For further information, please visit www.ricoh.com

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