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Weathernews works toward practical implementation of Japan's first AI Road Management Support System using video analysis

Conducting operational tests this winter on automatic detection of icy roads / snow cover from dashboard camera images

Weathernews Inc. (Head Office: Mihama-ku, Chiba-shi; CEO: Chihito Kusabiraki) has announced the practical implementation of an “AI Road Management Support System” by summer 2019, to support an even higher quality of road management. At present, the identification of road surface conditions (snow cover / ice / damage, etc.) vital to road management is primarily conducted by visual checks on-site or using fixed-point cameras. But there are problems with visual checks: it takes time to understand the conditions, and the results can vary according to the person checking. This system performs automatic detection / mapping of changes in road conditions through video analysis using cutting-edge AI technology, making it possible to discover and respond quickly to snow cover or damage. Through technical cooperation provided by the National Institute of Information and Communications Technology (NICT), CLEALINK TECHNOLOGY Co., Ltd., and IoT Consulting Co., Ltd., the transmission of dashboard camera images at high resolution and the low-cost introduction of the system can be achieved. Video analysis is starting to be used for a wide variety of purposes, but the practical implementation of real-time analysis aimed at road managers will be the first initiative of its kind in Japan. We recently conducted operational testing of the transfer of real-time images from the dashboard camera in a vehicle driving around Morioka City, with the purpose of detecting any road surface damage that could cause an accident or a puncture. This winter, we will conduct operational testing regarding the identification of icy roads / snow cover and the detection of white lines.

Successfully tested the automatic detection of road surface damage

Road surface damage (cracks and potholes) occurs by the following mechanism: Asphalt contracts when it hardens, forming small gaps into which water enters. This water expands when it freezes, causing the road surface to swell upwards (called “frost heaving”). Last year, Morioka experienced record levels of cold and snowfall, and when the spring thaw arrived, visual checks by Morioka city officials and citizens discovered approximately 4,800 cases of road surface damage. According to Morioka City, the number of punctures reported was 10 times higher than an average year (about 200 cases). By conducting automatic detection instead of visual checks, it is likely that earlier discovery of damaged roads would lead to a reduction in the number of punctures and accidents.

In order to confirm the usefulness of this Road Management Support System for detecting road damage, Weathernews conducted operational testing on October 22nd-23rd with the cooperation of Morioka City. We transmitted, in near-real time, the images from a dashboard camera installed in a vehicle driving around Morioka, and we could confirm the detection of road damage when we analyzed the images using our proprietary technology. Through receiving cooperation from NICT, etc. regarding transmission technology, the real-time transmission of high-resolution images has become possible.

