A Preliminary Study on the Road Surface Feature Extraction using MMS Collected Point Clouds

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Abstract: The advantage of Mobile Mapping System lies in its high mobility and efficiency in collecting massive 3D spatial information as well as reflective spectrum. The system is frequently applied to environmental conservation, deformation analysis, and detail 3D reconstruction. As urban roads expand over time, road-surface features have become more complicated and critical to driving safety. In order to manage existing road-surface features for long-term planning and maintenance, it is especially important to establish a technique which can be used to extract and manage road-surface features efficiently. This research aims at modeling and categorizing models of road-surface features by using point cloud data and its reflective spectrum acquired by a Mobile Mapping System. Main processes include segmentation, grouping of point clouds through cluster analysis, and feature matching and modelization. The experimental results indicate that the proposed approach can accurately extract existing road-surface features without any human intervention. Consequently, an automatic and efficient management for road facilities becomes achievable using MMS collected point clouds.

Keywords: Mobile Mapping System, Reflective Spectrum, Segmentation, Cluster Analysis, Feature Extractions.