Automated Extraction of Road Surface Information from Mobile Laser Scanning Point Clouds: State–of–the–Art

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SUMMARY

In this paper the main problems and the available solutions are addressed for the automated extraction road information from 3D point clouds acquired by mobile laser scanning (MLS) systems. Mobile mapping using CCD and video cameras has dealt for many years with manual or automated extraction of road geometric information from digital images. Nowadays mobile laser scanning systems are also becoming a standard source for input data in many transformation application areas. However, transportation agencies have neither interests in such 3D point clouds nor know how to covert those huge volume, highly dense, irregularly distributed MLS point data into their CAD-formatted road information. Automated software tools for handling such convention robustly and accurately are therefore urgently required. The development and implementation of an automated road information extraction strategy become very critical to make the MLS technology the most complete, economical, portable, flexible and widely used approach in transportation applications. This paper presents the results for automated extraction of road information (e.g., road surface, centrelines, road markings, payment cracks) from MLS data, considering the different approaches and analyzing all the steps involved.