

Feasibility assessment of constructing high-resolution 3D panoramic images using the VLP-16 LiDAR Puck

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We use the low-cost LiDAR sensor “the VLP-16 LiDAR Puck” to capture the surrounding scene for building high-resolution 360° panoramic images. The VLP-16 LiDAR Puck is mounted on a portable automatic lifting platform(see the attached figure) to increase spatial resolution while doing the experiments. The study locations include buildings, landslide areas, and soil&water conservation structures. The results from the VLP-16 LiDAR Puck will be well compared with those from the high-cost LiDAR sensors “the Trimble TX8” and ” The RIEGL VZ-1000” . The comparisons between three LiDAR sensors include their spatial resolution, accuracy, practicality, convenience, and cost-performance ratio. Overall, the purpose of this research is to analyze the feasibility of constructing high-resolution 3D panoramic images with the VLP-16 LiDAR Puck for applications of soil&water conservation. We also hope this new technique of remote sensing can contribute to environmental monitoring and anthropogenic activities.

Keywords: the VLP-16 LiDAR Puck, 3D panoramic images, remote sensing

