

Roof Modelling Potential of UAV Point Clouds by Laser Scanning

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SUMMARY

In parallel with the improvement of laser scanning technologies, dense point clouds which provide the detailed description of terrain and non-terrain objects became indispensable for remotely-sensed data users. Owing to the large demand, besides laser scanning, point clouds were started to achieve using photogrammetric images. Unmanned air vehicle (UAV) images are one of the most preferred data for creating dense point clouds by the advantage of low cost, rapid and periodically gain. In this study, we tried to assess the roof modelling potential of UAV point clouds by comparing three dimensional (3D) roof models produced from UAV and terrestrial laser scanning (TLS) point clouds. In the study, very popular low cost action camera SJ4000 and Faro Laser Scanner Focus3D X 330 were used to provide point clouds and the roof of Bulent Ecevit University Civil Aviation Academy building was utilized. For the validation of horizontal and vertical geolocation accuracies, standard deviation was used as the main indicator. The visual results demonstrated that UAV roof model is almost coherent with TLS roof model after the filtering-based refinement on noisy pixels and systematic bias correction. Moreover, the horizontal geolocation accuracy is approx. |5cm| both in X and Y directions and bias corrected vertical geolocation accuracy is approx. 17cm for zero roof slope.

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