

3D Building Model Utilizing Airborne LiDAR Dataset and Terrestrial Photographic Images

Authors : J. Jasmee, I. Roslina, A. Mohammed Yaziz & A.H Juazer Rizal

Abstract : The need of an effective building information collection method is vital to support a diversity of land development activities. At present, advances in remote sensing such as airborne LiDAR (Light Detection and Ranging) is an established technology for building information collection, location, and elevation of the reflecting laser points towards the construction of 3D building models. In this study, LiDAR datasets and terrestrial photographic images of buildings towards the construction of 3D building models is explored. It is found that, the quantitative accuracy of the constructed 3D building model, namely in the horizontal and vertical components were $\pm 0.31\text{m}$ (RMSE_{x,y}) and $\pm 0.145\text{m}$ (RMSE_z) respectively. The accuracies were computed based on sixty nine (69) horizontal and twenty (20) vertical surveyed points. As for the qualitative assessment, it is shown that the appearance of the 3D building model is adequate to support the requirements of LOD3 presentation based on the OGC (Open Geospatial Consortium) standard CityGML.

Keywords : LiDAR datasets, DSM, DTM, 3D building models

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