UNIVERSITI TEKNOLOGI MARA

ACCURACY ASSESSMENT OF AGISOFT PHOTOSCAN AND PIX4D MAPPER IN ORTHOPHOTO AND DEM PRODUCTION

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AUTHOR'S DECLARATION

I declare that the work in this thesis/dissertation was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

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Abstract

Unmanned Aerial Vehicle (UAV) has succeeded in attaining a position in the aerial image survey as a cheaper and more effective for 3-dimension-modeling compared to traditional photogrammetry and Light Detection and Ranging (LIDAR). Besides that, the utilization of UAV photogrammetry software is important in giving the highest accuracy for orthophoto production. This research will compare two different software packages used namely, Agisoft PhotoScan and Pix4d Mapper. The project aims to assess the accuracy of orthophoto generated using Agisoft PhotoScan and Pix4d Mapper. The study area is in University Technology Mara Campus Arau, Perlis. For data acquisition, the instrument that has been used is micro fix swing UAV for aerial photography. The ground control points (GCP) observed by using Rapid static technique, while checkpoint established using the Real-Time Kinematic (RTK) technique by using a set of equipment GPS Topcon GR-5 was carried out during the field survey observation. Arial photographs were processed by using digital photogrammetric software which is Agisoft PhotoScan and Pix4d Mapper for producing orthophoto. The processing phases involved were photo alignment, geo-referencing, dense points cloud and mesh, texture model, Digital Elevation Model (DEM), and orthophoto. The assessment of the accuracy of the software was based on both qualitative and quantitative analysis. The qualitative analysis includes points and distance measurements that used the root mean square error (RMSE) method for accuracy, while the quantitative analysis was used on the quality of the images. Finally, the expected outcome in the study is getting analysis the accuracy of the Orthophoto map in different software processing. The best software in accuracy specification used in the UAV processing method also will be determined at the last of the study.

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