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THE OPTIMUM NUMBER AND EFFECT OF GROUND CONTROL POINT DISTRIBUTION OF THE MAP ACCURACY GENERATED FROM UAV IMAGES

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AUTHOR'S DECLARATION

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

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ABSTRACT

In recent years Unmanned Aerial Vehicles (UAV) become popular in various sector and one such major sector is surveying applications. Ground Control Point (GCP) collection being the most deciding factor for accurate result. The intent of this research is to investigate the optimum number and effect of GCP distribution of map accuracy generated from UAV images. A fixed wing platform with the sensor of digital camera PowerShot SX230 HS is used in the image acquisition process. The images were collected at an altitude of approximately 150 m around UiTM area. Agisoft PhotoScan software is used in the image processing process after all the required images is obtained. GCP are utilized in the indirect geo-reference process for the images of UAV. In this research, GCPs scattered and GCPs with well distributed is tested to determine the best accuracy. Besides, through the method of GPS RTKnet, 20 verification or also known as check point were established in the research area in order to determine the accuracy of photo. The analysis shows how much the accuracy amends with the increase in the number of GCP and the paramountcy of uniform distribution. The analysis included an examination of the distribution of error based on the distribution of the GCP and reporting of Root Mean Square Error (RMSE). Significance testing of result showed there is significant difference in the RMSE report for the scattered and well distributed GCPs. The RMSE is slightly increase when the GCPs is scattered. From this study it can be concluded that the increasing in the number of GCP the distribution of the GCPs affected the map accuracy generated from UAV images.

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