

UNIVERSITI TEKNOLOGI MARA



**SUITABILITY OF UAV PHOTOGRAMMETRY AS
A PLATFORM IN TOPOGRAPHIC MAPPING**

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Thesis submitted in fulfillment
of the requirements for the degree of
Bachelor Science of Geomatics


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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

There are several instrument and method used to collect the details of topography such as Total Station, Unmanned Aerial Vehicle (UAV) Photogrammetry, Real Time Kinematic Global Positioning System (RTK-GPS) and Terrestrial Laser Scanner. Among those instrument and method, most frequent used was Total Station because of its can give high accuracy output. However, since few years ago UAV Photogrammetry become an alternative way to collect the topographic data because it is lower in operating and manufacturer costs, reduce time and reduce man power. The aim of this study is to analyze the potential of UAV Photogrammetry as a platform to collect the topographic data. In this study, Aero M fixed wing UAV and Topcon ES Total Station was used to collect the topographic details of Academic Height, UiTM Arau, Perlis. Ground Control Points (GCPs) were established by using fast static method of GPS observation while, the Check Points (CPs) was established by using Tacheometry method (Total Station). An analysis carried out from this study is qualitative and quantitative assessment. The qualitative assessment was done by comparing the visualization of DEM and contour lines generated. Based on the result of qualitative assessment, the DEM and contour line generated from UAV was more beautiful and smooth. The quantitative assessment was verified by compared the number of features collected from the survey and digitized and calculating the planimetric and elevation Root Mean Square Error (RMSE) of coordinates from UAV Photogrammetry and Total Station. Based on the assessment, the result shown that the number of features collected from UAV was greater than Total Station, while the result of RMSE_x is $\pm 0.2244\text{m}$, RMSE_y is $\pm 0.1996\text{m}$ and RMSE_z is $\pm 0.530\text{m}$. In conclusion, this study shows that UAV Photogrammetry data can be used for detailed topographic survey.

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