

**UNIVERSITI TEKNOLOGI MARA**

**Effect of Slope on The Vertical Accuracy of Spatial  
Information Acquired by Using Multi Rotor  
Unmanned Aerial Vehicle**

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Thesis submitted in fulfilment of  
the requirement for the degree of  
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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) recently has been proved that it can be used for slope mapping studies especially for acquiring slope data. Slope mapping is one of the methods to monitor slope changes in order to avoid any incidents involving slope failures. Slope map can be created by gathering spatial information including elevations and surface features of the surrounding terrain. Spatial information of a slope is important to enhance the efficiency of slope modelling. That is why the spatial information must be very accurate and reliable. This study aims to determine the effect of a slope on the vertical accuracy of spatial information acquired by using multi rotor UAV. The first objective is to investigate the effect of slope elevation on the vertical accuracy of spatial information acquired by using a multi rotor UAV. The second objective is to investigate the effect of slope steepness on the vertical accuracy of spatial information acquired by using a multi rotor UAV. The images of slope were captured using DJI Phantom 4 Pro with 80% along and 75% across overlap from the altitudes of 100 meter. All images were processed using Agisoft software to produce Digital Terrain Model (DTM) and ArcMap software to produce Contour Map, Triangular Irregular Network (TIN), and Slope Map for analysis purpose. It was found that that the vertical accuracy of spatial information increase when the elevation of slope and steepness of slope decrease. In conclusion, slope elevation and slope steepness does have an influence on the vertical accuracy of spatial information captured by UAV.

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