



UNIVERSITI TEKNOLOGI MARA

**ASSESSMENT OF BUILDING DETECTION ACCURACY
BASED ON DIFFERENT ALTITUDE OF HIGH-RESOLUTION
IMAGES**

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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.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Postgraduate, Universiti Teknologi MARA, regulating the conduct of my study and research.


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ABSTRACT

The building detection information is very important because nowadays the development in urban area is seen to grow rapidly. However, because of variations in spatial and spectral characteristics to support urban building classification, automated and transferable detection of building features remains difficult. Therefore, this study aimed to assess building detection accuracy in urban areas based on the different altitude of a high-resolution image. In addition to assessing the possible factors that influence building classification accuracy. High-spatial resolution Sentinel-2A with 10 meter spatial resolution and Unmanned Aerial Vehicle (UAV) with 0.08m spatial resolution of Pulau Pinang, Malaysia, was compared in terms of their spatial and spectral resolution. Object Based Image Analysis (OBIA) via SVM classifier was applied to classify LULC and so on extract the building. As a result, the accuracy of urban building and suitable feature selection have been determined. This study shows that building extraction using Sentinel 2A image produce better accuracy compared to UAV image for all scale with 67% for scale 20, 77% for scale 30 and 70% for scale 50. Hence, this study will provide virtuous benefit for future development in urban area.

Keyword- UAV, Sentinel-2A, High Resolution, Support Vector Machine, Building Detection

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