UNIVERSITI TEKNOLOGI MARA

EVALUATION PERFORMANCE OF UAV MULTISPECTRAL IMAGES FOR GERMPLASME MANGROVE FOREST MAP USING OBJECT BASED IMAGE ANALYSIS(OBIA) AT BAGAN DATOK, PERAK

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Thesis submitted in fulfillment
of the requirements for the degree of
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Faculty of Architecture, Planning and Surveying

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AUTHOR'S DECLARATION

I declare that the work in this disertation 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 Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

The importance of conservation and restoration of mangroves are to ensure that wetland ecosystems in good condition because the mangrove defend or become natural habitats for some living things such as fish, crab and other. A lot of studies in this topic using satellite remote sensing imagery which to be efficient for monitoring the mangrove ecosystem. The current technology in sensor and carrier platform of Unmanned Aerial System (UAS) with high spatial resolution have been used to monitor crops, forest and other landscapes of interest. The aim is to study the performance of unmanned aerial Vehicle (UAV) multispectral images to establish the germplasm mangrove forest map at Bagan Datok, Perak. First, the image objects were obtained by segmenting the UAV multispectral images. Second, spectral features, textural features and vegetation indices were extracted from the UAV multispectral images. Then generate the 3D point cloud to produce digital surface model (DSM) and the digital terrain model (DTM). The height of the tree was extracted from DSM subtract with DTM. Finally, the objects were classified into different mangrove family and other land covers based on their spectral and spatial characteristic differences. The overall classification accuracy result by using support vector machine (SVM) classifier was 76% (kappa = 0.68). The accuracy of 3D point for height of tree shows 68% with the standard error 0.04. The results provided evidence for the effectiveness and potential of UAV multispectral images for identify mangrove germplasm forest area.

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