UNIVERSITI TEKNOLOGI MARA

THE CAPABILITY OF MULTI-ROTOR DJI PHANTOM 3 ADVANCED FOR DETECTING CRACK ON CONCRETE WALL AT DIFFERENT DISTANCE

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Dissertation submitted in fulfilment
of the requirement for the degree of
Bachelor of Surveying Science and Geomatics

Faculty of Architecture, Planning and Surveying

JULY 2018

AUTHOR'S DECLARATION

I declare that the work on this project /dissertation was carried out in accordance with the regulations of Universiti Teknologi MARA. The project/ dissertation are original and it is the result of my own work, unless otherwise indicated or acknowledge as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree qualification.

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Code Programme	:	AP220
Thesis Title	:	The Capability of Multi-Rotor DJI Phantom 3 Advanced for Detecting Crack on Concrete Wall at Different Distance
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Date	:	July 2018

ABSTRACT

Distance plays an important role in determining the crack detection where without proper or fixed value of distance, the time taken to capture image of crack is increased. It is important to know the capability of multi-rotor DJI Phantom 3 at different distance for detecting crack as the maximum distance may be useful for next buildings inspection where it shorten the time taken to inspect crack on the buildings. This paper provides the capability of multi-rotor DJI Phantom 3 for detecting crack at different distance. This study has been constructed by considered to three objectives that need to be achieved at the end of this research. The three objectives are to identify crack width of the study area, to study the relationship of distance affected the size of detectable crack by quantitative and qualitative measures and to access the accuracy of multi-rotor DJI Phantom 3 in detecting crack at different distance measurement. In this study covered four parts of methodology including planning and reconnaissance, data acquisition or collection, data processing and data analysis. Data processing is divided into two parts which using Agisoft software and Digimizer software. The accuracy assessment is used in order to analyze capabilities of multi-rotor DJI Phantom 3 in detecting crack at different distance. The qualitative measures uses edge detection algorithm of Digimizer software to detect crack whereas quantitative uses accuracy assessment with edge detection algorithm to study their relationship. The capabilities of multi-rotor DJI Phantom 3 in detecting crack at different distance is identified where hairline crack is visible at 3 meter, narrow crack at 5 meter, medium crack at 6 meter and 10 meter at wide crack.

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