

UNIVERSITI TEKNOLOGI MARA

**Building Footprint Extraction Based on Insolation with
Topographic Surface Derived from LiDAR Dataset**

NUR AMALINA BINTI MOHAMED

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requirements 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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Name of Student : Nur Amalina Binti Mohamed
Student I.D. No. : 2016340997
Programme : Bachelor of Surveying Science and
Geomatics (Honours) – AP220
Faculty : Architecture, Planning & Surveying
Thesis/Dissertation : Building Footprint Extraction Based on Insolation with
Title Topographic Surface Derived from LiDAR Dataset
:
Signature of Student :

Date : January 2020

ABSTRACT

Automatic building extraction has widely been used by many sectors in making their job easier. Example of this sector is land cover mapping, change detection, urban planning, disaster management and many other socioeconomic operations with the combination from remote sensing and GIS methods play an important role in increasing the efficiency of their job. The manual digitization of building outlines is expensive and time-consuming and building footprint extraction is not complete due to covered with trees and cloud that may include the building's rooftop. The main purpose of this research is identifying the building footprint from all the above ground information captured by LiDAR based on insolation and the objectives is to examine the slope and contour of surface and building roof derived from LiDAR point cloud data, to generate the insolation pattern based on derived topographic surface model, and to identify building footprint based on insolation. The ArcGIS software was used for process the building extraction and identifying characteristic of surface and terrain. The study area was in Taman Melati, Kuala Lumpur. The LiDAR points were used for this research by using solar radiation tools to establish building footprint. The result of this research is the slope and contour of surface and building roof and the building footprint extraction based on the Digital Surface Modelling (DSM). By using building footprint, it is providing the researcher to recognize the potential area for land use planning and urban development and investment in study area.

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