

UNIVERSITI TEKNOLOGI MARA

**The Effect of Diffuse And Specular Object Towards
Insolation Value Derived From LiDAR Point Cloud
Data.**

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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.

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

Incoming solar radiation have an impact towards specular and diffuse object. Solar radiation has become one of the significant roles in the structural planning and sustainable urban development. Insolation patterns is produce through interaction of sun to particles on atmosphere and objects on earth surface. Rough surface and smooth surface of an object such nature feature and man-made feature produces different insolation value. The aim of the study is to identify the effect of insolation towards specular and diffuse object. Objectives of this study are to determine the characteristic of specular and diffuse object derived from LiDAR point cloud data, explore the insolation towards object pattern of the research area, and identify the insolation value interaction towards diffuse and specular object. Solar radiation analysis is used through ArcGis software to achieve the objective. In this study several data is used such as LiDAR point Cloud Data and LiDAR Image in order to generate Digital Surface Model (DSM). The data is process through converting DSM into Triangular Irregular Network (TIN). Characteristic object based on slope and hill-shade are identify in order to analyse specular and diffuse. The main outcome of this study is emphasizes the analysis on explore insolation map through object pattern and then graph relationship between insolation and characteristic object. Findings for this study is to understanding the interaction that contribute to decision making in term of designing structure according to their purpose such as install solar Photovoltaic and roof structure.

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