

UNIVERSITI TEKNOLOGI MARA

**THE RELIANCE OF INSOLATION PATTERN
TOWARDS DIGITAL TERRAIN MODEL (DTM)
CHARACTERISTICS IN PERLIS, MALAYSIA.**

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**BACHELOR OF SURVEYING SCIENCE AND
GEOMATICS (HONOURS)
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Thesis submitted in fulfillment
of the requirements for the degree of
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Centre of studies for Surveying Sciences and Geomatics**

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AUTHOR'S DECLARATION

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

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ABSTRACT

Sun-derived energy has significantly aided humankind in developing advanced and emerging technology. Due to the Earth's enormous absorption of solar radiation energy, green technology is advancing at an increasing rate. The formation of an ambiguous insolation pattern, which serves as a starting point for additional research, results from the interaction of incoming solar radiation (insolation) with the state of the atmosphere and objects on the Earth's surface. In the context of global solar radiation, this study investigates the insolation pattern and ambiguities concerning digital terrain model (DTM) properties. Two (2) separate years, 2015 and 2022, will be used to model the properties of DTM. The monthly variations in the DTM's properties will allow us to track the insolation value. The Arc GIS environment will be used for all operations before the insolation pattern can be seen. The topography's slope and aspect influence insolation, which is the focus of this study. The study's principal outputs are the insolation map and graphs showing the relationship between insolation, slope characteristics, and aspect features. The results of this study aid the usefulness of the DTM in the analysis of its characteristics, such as slope and aspect, to determine the value of insolation in Perlis, Malaysia. Also, the topographic information derived from a DTM must be considered in this study since it plays a vital role in ups and down. The value of insolation depends on how the arrangement of topographical structures. Nevertheless, as findings depend on the DTM resolution, it is critical to consider additional elements like the albedo to get more accurate predictions. Hence, this study's information will help implement green building technology's sustainable practices.

Keywords: Insolation, slope, aspects, Digital Terrain Model

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