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College of
Built Environment

Poster Book

IIIDBEE X 2023
20 JANUARY 2023
*International Invention, Innovation & Design Exposition
for Built Environment and Engineering 2023*

**College of Built Environment
UiTM Puncak Alam**
20 January 2023 | Friday

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**Unleashing Potentials
Shaping the Future**

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LANDSLIDE IDENTIFICATION ON MULTISPECTRAL UAV USING FUZZY LOGIC APPROACH

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INTRODUCTION

A landslide is a phenomenon that occurs when materials on a slope deform due to natural forces like gravity. However, the Machine Learning and GIS were used to enhance the image recognition and to identify the slope failure using multispectral UAV. Taking all of this into consideration, the purpose of this study is to monitor the slope failure or landslide as an effective means of preventing a landslide tragedy. In this project, it started with data processing for image UAV-multispectral and integrated with fuzzy logic approach. Through this project the advancing landslide studies and the use of innovative technologies is to provide knowledge and understanding of landslide phenomena and processes that enable problem-solving, faster and much better.

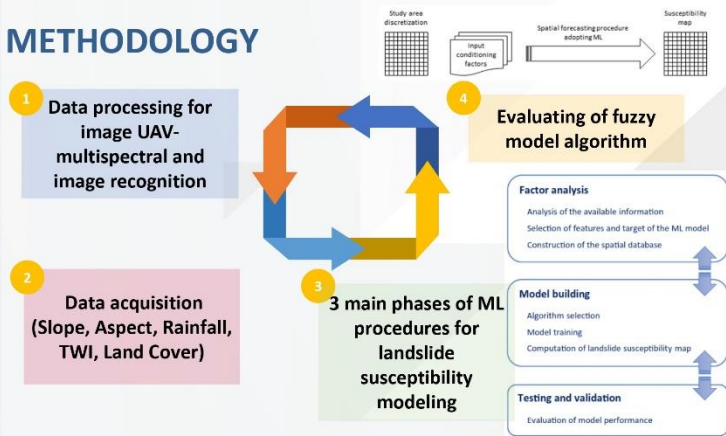
PROBLEM STATEMENT

- 01 Slope failures occur everywhere in this world that has caused billions of dollars in infrastructure damage and thousands of deaths every year. Malaysia is among the top 10 countries with many slope failures over the past decade (Leoi et al., 2018).
- 02 Climate change plays an important role in the environment and human life and exhibits some effect in the development and occurrence of landslides; in particular, rainfall is the key factor (Feng et al. 2017; Franz et al. 2017).
- 03 After several days of continuous heavy rain, the earth structure supporting one side of the road began to deteriorate Subhash Nair (2021).

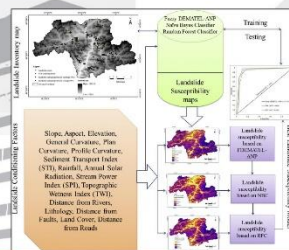
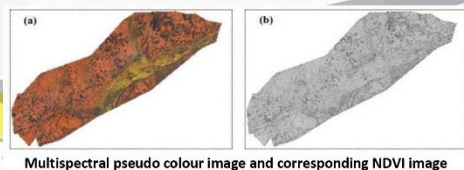
OBJECTIVES

- 1 To determine the landslide detection using machine learning indicator
- 2 To integrate image recognition using ML and spectral indices for landslides

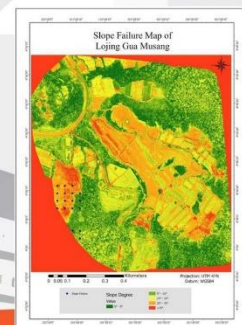
METHODOLOGY



FINDINGS



Source: Ali et al., (2021)



NOVELTY

- Framework for enhancement of Landslides identification on Multispectral UAV
- An integration concerning the type of landslide detection using Fuzzy Logic Machine Learning

CONCLUSION

A land slide is a phenomenon that occurs when materials on a slope deform due to natural forces like gravity. It is one of the major natural disasters, second only to earthquakes in terms of the number of fatalities and significant economic losses. As a result, they are simple to identify using fuzzy logic in optical or multispectral UAV photos. The combination of fuzzy logic and multispectral UAV image extraction increases the effectiveness of spatial data for landslide identification.

COMMERCIALIZATION



RECOGNITIONS

Participation | 2022
Geomatic Research Innovation Competition 2022 (GRIC2022)

CONFERENCES & PUBLICATION

1. Landslide Hazard Analysis using Landsat-8 OLI and AHP Technique in Tanjung Bungah, Penang
N Saad, NA Bahari, N Talib, NAM Zaki, ARA Rasam
IOP Conference Series: Earth and Environmental Science 767 (1), 012023
2. Slope Effect on The Vertical Accuracy of Spatial Information Using Multi Rotor UAV
N Talib, AA Subri, RH Narashid, MF Pa'suya, SA Anshah
IOP Conference Series: Earth and Environmental Science 540 (1), 012089



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