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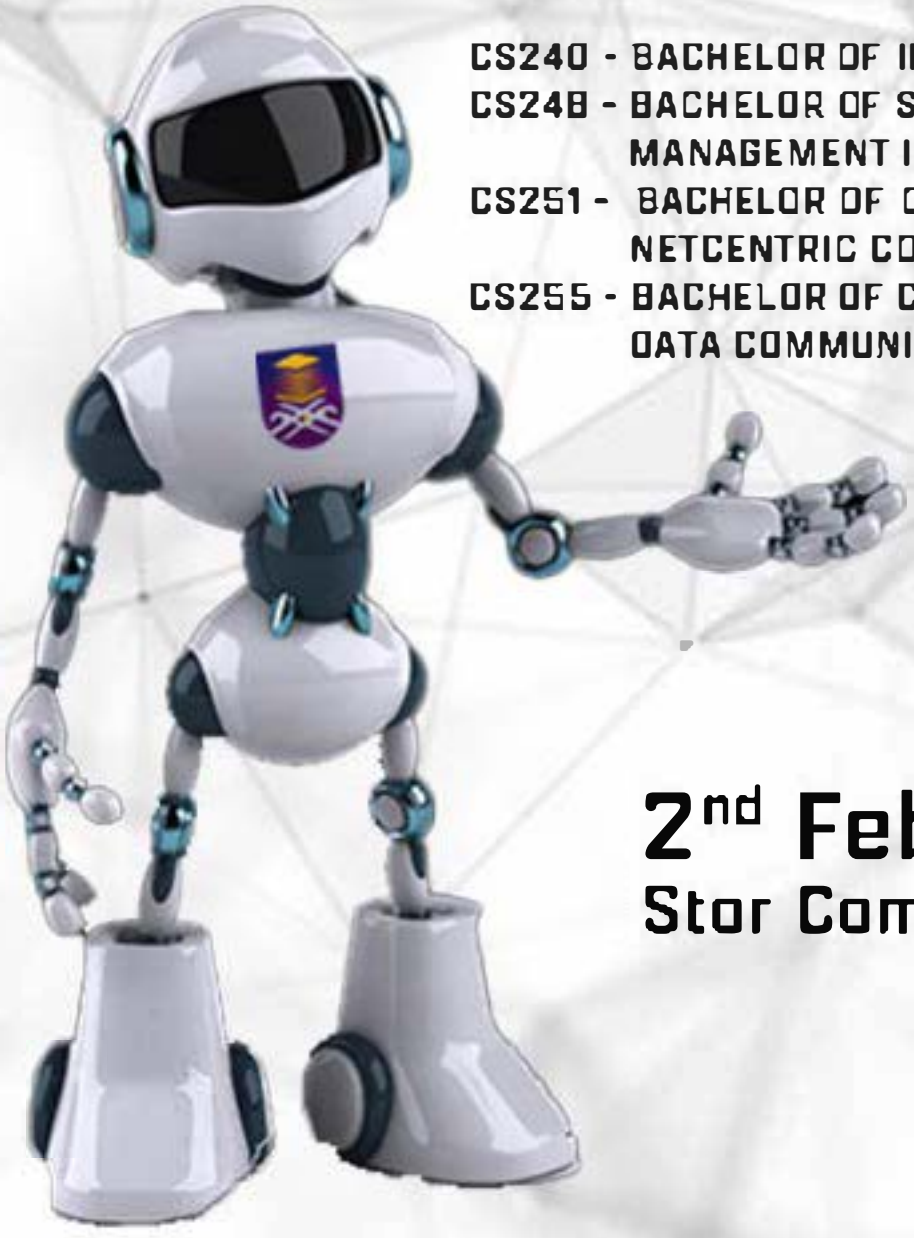
RESEARCH EXHIBITION IN MATHEMATICS & COMPUTER SCIENCES

REMACS 5.0



CS240 - BACHELOR OF INFORMATION TECHNOLOGY (HONS.)
CS248 - BACHELOR OF SCIENCES (HONS.)
MANAGEMENT IN MATHEMATICS
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CS255 - BACHELOR OF COMPUTER SCIENCE (HONS)
DATA COMMUNICATION & NETWORKING

2nd Februory 2023

Stor Complex, UiTM Perlis

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College of Computing, Informatics and Media
Universiti Teknologi MARA Perlis Branch

Research Exhibition in Mathematics and Computer Sciences (REMACS 5.0)

Research Exhibition in Mathematics and Computer Sciences (REMACS 5.0)

Editors
Rafiza Ruslan, Mohamad Najib Mohamad Fadzil, Noorfaizalfaird Mohd Nor, Mohammad Hafiz bin Ismail

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Preface

It is with great pleasure that we present this extended abstract book, titled "The 5th Research Exhibition in Mathematics and Computer Sciences (REMACS 5.0)". This book is a collection of research work in the fields of Computer Science and Mathematics, contributed by the final year students from Universiti Teknologi MARA, Perlis Branch. The aim of this book is to showcase the diversity and depth of research in these two interrelated fields.

Mathematics and Computer Science are two fields that have seen tremendous growth and advancement in recent years. With the rise of new technologies and the increasing demand for data-driven solutions, researchers in these fields have been working hard to develop new theories, algorithms, and models that can help solve some of the most pressing problems of our time. This book is a testament to their hard work and dedication.

The abstracts in this book cover a wide range of topics, including algebra, analysis, logic, computer architecture, algorithms, artificial intelligence, machine learning, computer network, netcentric computing and many more. The work presented here is both theoretical and practical, and has the potential to impact many areas of society, from finance and healthcare to education and security.

We hope that this book will serve as a valuable resource for future students in the fields of Mathematics and Computer Science. We also hope that it will inspire more students to pursue innovative and groundbreaking research in these two fields. Finally, we would like to express our gratitude to all the contributors for their hard work and dedication, without which this book would not have been possible.

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EVENT SCHEDULE

8:00 – 8:30 am
•Registration

8:00 am – 12:00 pm
•FYP Project Presentation

12:00 - 2:00pm
•Lunch Break

2:15 – 2:35 pm
•National & Wawasan Setia Anthems
•Doa Recitation

2:35 – 2:45 pm
•Welcoming Address by Director of REMACS 5.0

2:45 – 2:55 pm
•Officiating & Closing Remarks from Rector of UiTM Perlis

2:55 – 3:00 pm
•REMACS 5.0 Montage

3:00 – 4:00 pm
•Awarding of Winners:
•Best Poster
•Best Project Award

•Photo Session

•End of Ceremony

Dress Code: Formal / Corporate

List of Papers

RESEARCH EXHIBITION IN MATHEMATICS & COMPUTER SCIENCES

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EXTENDED ABSTRACTS

THE USE OF SIMPSON'S RULE TO APPROXIMATE THE VOLUME OF CLODS OF SOIL AT GUNUNG PERLIS, TAMAN NEGERI PERLIS

Nurliyana Najwa Husaini Failos, Mohamad Najib Mohamad Fadzil and Zaki Ahmad Dahlan
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Abstract

Landslides can occur at any time due to unpredictable weather and persistent heavy rains. The goal is to use Simpson's rules to calculate the approximate volume of soil clods. The goal is to use Simpson's rules to calculate the approximate volume of soil clods. This research focuses on the Gunung Perlis slope in Taman Negeri Perlis. Google Earth Map was used to obtain secondary data. Three sloped areas were examined to identify which have the potential to collapse. There are several steps involved in carrying out this project. After calculating the three lines using Simpson's Rule, which slope was most likely to collapse was determined. The greater the volume, the greater the chance of the slope collapsing.

Keywords*: Simpson's Rule, Volume, Clods of soil, Slope, Collapse, Landslides*

1. Introduction

In the humid tropics, particularly in Malaysia, landslides are frequently brought on by the occurrence of continuous, intense rainfall and Perlis state park is exception. Most of the rocks in the study area are fairly pointed and sharp. Climbers are forced to take adequate safety precautions and be extra cautious because to the rickety and damp surface of the rock when it rains. Unpredictable weather and prolonged heavy rains at any time can contribute to the occurrence of landslides. The aim is to find the approximate volume of clods of soil using Simpson's rules. This study focuses on the slope of Gunung Perlis, Taman Negeri Perlis.

2. Methodology

Secondary data were collected from Google Earth Map. Three areas with slopes were taken to determine which areas have the potential to collapse. The area has been labelled as Line 1, Line 2, and Line 3. There are several steps to conduct this project. Firstly, create a contour at Gunung Perlis to represent a topography. Then, create the cross-section based on the drawn contour. Established the location of the missing clods of soil and find the area. Use the area in step 3 to calculate the volume of clod of soil by using Simpson's Rule. Once all of three lines had been calculated, choose which slope have high possibility to collapse. The higher the volume, the higher possibility for the slope to collapse.

3. Results

Based on the volume calculation by using Simpson's Rule, Line 3 was chosen as the area that have high possibility to collapse. The volume of slope at Line 3 is 128012.6472 m3 compared to volume of Line 1 and Line 2 which are 111497.1964 m3 and 128006.8408 m3. Although the difference between the volume of slope Line 2 and Line 3 is only 5.8064 m3 but the higher the volume, the higher possibility for the slope to collapse. After determining the region at risk of landslides, any steps to avoid the occurrence of landslides can be done.

4. Novelty of Research / Product

There have been number of research that have investigated about contour line, landslide problem, land calculation by using Simpson's Rule. Unpredictable weather and prolonged heavy rains at any time can contribute to the occurrence of landslides. Damage to some older retaining walls encourages surface water concentration and drainage in specific areas and speeds up ground water seepage and erosion(Komoo & Lim, 2003). It might also negatively impact the climbers, visitors, and residents, such as causing death and damage. According to Mantey & Aduah (2021), various approaches can be used to estimate the volume of earthworks. When we know the area's volume, we can figure out how much material we will need for a certain job without guesswork. One of the formulas for calculating the approximate value of a definite integral is Simpson's rule(Gałaj & Wojciechowski, 2019). Simpson's rule provides the most precise approximation of a definite integral among these(Slavinić & Cvetković, 2016).

5. Conclusion

The estimated volume of earthwork is one of the most essential criteria in determining the potential of a landslide occurrence which saves time and money when an unanticipated event happens. Taman Negeri Perlis is a popular recreational location for the public, and resident's area are nearby. It is critical to measure the volume of clod of soil in the region to avoid landslides from happening. Landslides can occur at any time according to a variety of circumstances.

REFERENCE LIST

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