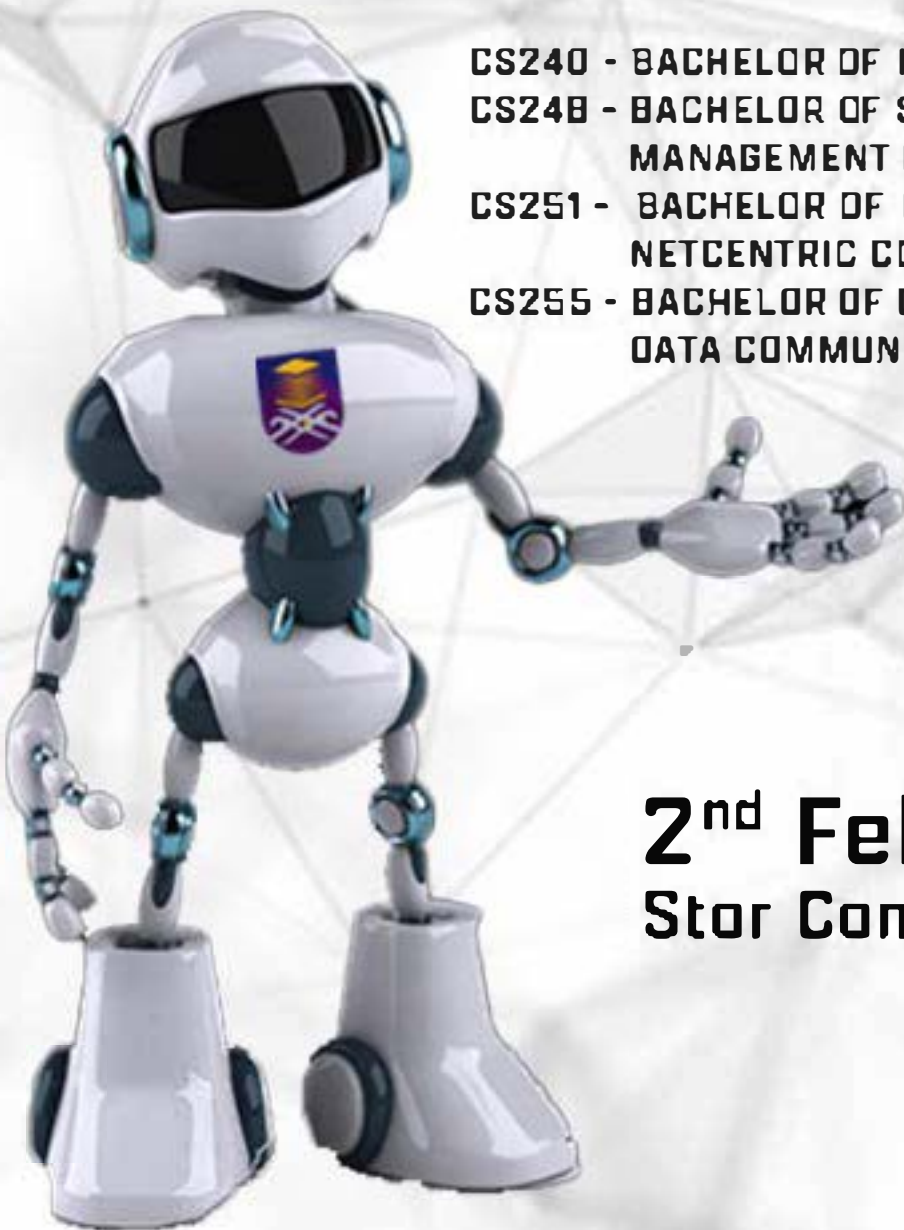


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RESEARCH EXHIBITION IN MATHEMATICS & COMPUTER SCIENCES

# REMACS 5.0

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CS240 - BACHELOR OF INFORMATION TECHNOLOGY [HONS.]  
CS248 - BACHELOR OF SCIENCES [HONS.]  
MANAGEMENT IN MATHEMATICS  
CS251 - BACHELOR OF COMPUTER SCIENCE [HONS]  
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DATA COMMUNICATION & NETWORKING

**2<sup>nd</sup> February 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)

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# Preface

It is with great pleasure that we present this extended abstract book, titled "The 5<sup>th</sup> 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*

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# EXTENDED ABSTRACTS

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# DATA VISUALIZATION : CAUSES AND RISK FACTORS OF DEATH

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## **Abstract**

Human mortality data visualization can assist higher-up organizations in the medical profession or governmental departments in dealing with death trends, which advise that different countries take suitable measures to minimize their death rate. The objectives of this study are to analyze the retrieved datasets on mortality causes and its risk factors that effect the death rate, to construct a dashboard and visualize the death rate and the relationship between death rate and death causes and also risk factors of the death and lastly, to assess the dashboard's performance in visualizing the relationship of death rate based on the causes and also the risk factors that lead to the death. Therefore, data visualization is needed in give insight for higher up to make a decision. The data set for this project is obtain from Kaggle and Our World In Data website. Firstly, the planning and preliminary phase will be conducted to gather information about project area. The second phase is analysis phase where the process data preparation for the retrieved data set will be going in acquire cleaning data set. The next phase for the project will be development phase. This phase include the process of constructing data visualization and designing dashboard and lastly testing phase. The finding of this project will help in minimizing the death rate in the country. The higher up could get insight from this data visualization for the country and make differences with other country death rate in reducing the number for their country. This analysis shows how important geographical and economic factors are in affecting the death patterns.

*Keywords: Data visualization, Dashboard, Causes Of Death, Risk Factors Of Death*

## **1. Introduction**

The dashboard might show the causes of death, as well as associated risk factors, in a number of charts, such as line charts, maps, and bar charts, to explore the relationship, trends, or distribution, which could help narrow down which concerns to focus on. The objectives of this study is to analyze the retrieved datasets on mortality causes and its risk factors that effect the death rate, to construct a dashboard and visualize the death rate and the relationship between death rate and death causes and also risk factors of the death and also to assess the dashboard's performance in visualizing the relationship of death rate based on the causes and also the risk factors that lead to the death. The datasets regarding number of death and causes of death have obtained from Kaggle while Our World In Data website provided four datasets: mortality rates by country, causes of death, death risk factors and the death rate by age group. **The causes of mortality are classified into three categories which is communicable diseases (infectious and parasitic diseases, as well as maternal, perinatal, and nutritional disorders), non-communicable diseases (chronic), and injuries caused by car accidents, homicides, war deaths, drowning, fire-related accidents, natural disasters, and suicides (WHO, 2020).** Additionally, the investigated data is cleaned using the data cleaning integration function to ensure that the visualization process is as efficient as feasible. This dashboard can be used by the higher up, medical experts, individuals working in top management of the health field, and the government to plan and implement more effective ways to decrease the rate of death due to the categories of causes examined in this project.

## **2. Methodology**

After creating the dashboard with the data visualization of the causes and risk factors of death, usability testing will be carried out to assess the case study. Several professionals will do the usability testing.

The experts will include those in positions of authority, medical professionals, those in top positions of the healthcare industry, as well as members of the government. They will test the system in order to evaluate it. Participants in a test will essentially try to finish tasks while observers watch, listen, and take notes. The purpose is to identify any usability difficulties, collect qualitative and quantitative data, and determine participant satisfaction with the final product. The results of the usability testing will be used to develop the validation criteria. After the system testing, the participants will receive questionnaires for the usability testing through Google Form to complete. The information gathered in accordance with the suggestions and comments made by the participants will be examined and reported.

### **3. Results and Discussion**

According to the usability testing results, 82.1% of respondents are satisfied with the dashboard data visualization, while the remaining 17.9% are neutral on the scale of satisfaction with the dashboard data visualization. 71.4% of respondents willing to recommend this dashboard to their department and colleagues, while 21.4% are unsure. As a result of this usability testing, the dashboard data visualization met the objectives that were specified in the beginning of the project. By giving higher-ups in the global medical community information and insight, this dashboard may prove beneficial and useful in the future.

### **4. Novelty of Research / Product**

This study is focused on data visualization dashboards because no relevant work has been found that employs data visualization dashboards for all causes and risk factors of death. There is only study about the project that uses data visualization, but it is more about prediction that uses machine learning to determine the outcome of mortality prediction. The significance of mortality data visualization stems from both the personal significance of death and their ability to improve public health when used to systematically analyse and monitor a community's health state. Death data visualization is frequently used as a basis in establishing health plans and strategies to prevent or reduce early mortality and improve quality of life in the field of public health. However, national statistics systems in many developing nations are inadequate. Even in countries with well-functioning systems. The visualization of mortality data assists in tracking the characteristics of individuals dying in the country and allows comparisons of death patterns with other countries. It can also be used to calculate the population's annual life expectancy.

### **5. Conclusion**

This research study includes the introduction, literature review, methodology, the development of the dashboard data visualization about mortality causes and risk factors, as well as the results and findings from the usability testing evaluation through questionnaire. The aim to visualize the rate of death based on the causes and risk factor of the death using dashboard was achieved by accomplishing all three objectives which are to analyze the retrieved datasets on mortality causes and its risk factors that effect the death rate, to construct a dashboard and visualize the death rate and the relationship between death rate and death causes and also risk factors of the death and to assess the dashboard's performance in visualizing the relationship of death rate based on the causes and also the risk factors that lead to the death.

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