
RESEARCH EXHIBITION IN MATHEMATICS & COMPUTER SCIENCES

REMACS 5.0



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

2nd February 2023
Stor Complex, UiTM Perlis

Organized by:
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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e ISBN: 978-629-97934-0-3



Perpustakaan Negara Malaysia

Published by

MOHAMMAD HAFIZ BIN ISMAIL

Universiti Teknologi MARA

02600 Arau, Perlis

Tel: +604 988 2028

<https://fskmpерlis.uitm.edu.my/remacs50/>

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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.



RESEARCH EXHIBITION IN MATHEMATICS & COMPUTER SCIENCES
REMACS 5.0

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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

RESEARCH EXHIBITION IN MATHEMATICS & COMPUTER SCIENCES
REMACS 5.0

REMOTE MONITORING AND CONTROLLING OF LIGHTS USING IOT

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Abstract

As technology advances and improves to benefit the environment, daily living has become significantly easier and more convenient. Our lives are becoming increasingly intertwined with the Internet of Things (IoT) as a result of the technological advancement. IoT is a network of physical objects embedded with sensors, software, and other technologies that connect to and exchange data with other devices and systems via the internet. Since humans are prone to forgetting things, it's tough to steer clear of this predicament. As a result, electricity is wasted and the problem of forgetting to turn off the lights is not addressed. The rising cost of electricity is a result of this predicament. Smart lighting is used to conserve energy. This study discusses about developing a prototype of smart lighting system using IoT. The system is supported by Blynk application and Arduino. A smart phone app will be used to monitor and manage all of a house or office's lights remotely. Arduino will be the electronic prototyping platform utilized in this project. Blynk servers will be used to monitor and control remote devices.

Keywords: IoT, smart home, Blynk, Arduino, smart lighting system

1. Introduction

As technology advances and improves to benefit the environment, daily living has become becomes significantly easier and more convenient. Our lives are becoming increasingly intertwined with the Internet of Things (IoT) as a result of the technological advancement. This research aims to develop a prototype of remote monitoring and controlling of lights system which is smart lighting with the help of Arduino UNO, Arduino IDE and Blynk application as well as Blynk server. The objectives of the research are to develop a prototype of smart lighting system that able to control the lights remotely via smartphone using Arduino through Blynk application and to evaluate the functionality and network performance of the prototype. The research will be using ESP8266 WiFi module setup using Arduino Uno. The Blynk server will monitor and control the lighting system.

2. Methodology

There are 5 phases involved in developing the project which are initiation phase, planning phase, development phase, evaluation phase and documentation phase. The most critical and significant phase is development phase. This is where the prototype is developed. During this phase, hardware and software are acquired in order to develop the proposed prototype of smart lighting system. Then, the assembled prototype will be tested its functionality as a smart lighting system.

3. Results and Discussion

The prototype of a smart lighting system was successfully developed. The user can remotely control and monitor the lights using smart handphone through Blynk application. The functionality of the prototype also being tested to ensure that it can function well. The network performance of the prototype also is tested. There are several upgrades that can be done in order to improve the functionality of the prototype.

4. Novelty of Research / Product

There are various of research has been done regarding smart lighting system especially in regards of smart home system. Previous research has been done to control LED through Internet based on NodeMCU with Blynk application (Asmawati et al., 2019). There is also a previous research regarding IoT smart lighting system for university classrooms (Montalbo & Enriquez, 2020). SOA and IoT principles to smart home lighting in a research by merging Raspberry Pi with Python programming, a web server (database) with PHP and Android programming with Java programming also had been done previously (Irawan et al., 2021).

5. Conclusion

The proposed prototype still lacking in various aspects and open to enhancement and improvement to make it a better system. The smart lighting system can be enhanced in order to create a more efficient and cost-saving environment. Yet, the objectives of the research are successfully achieved.

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Research Exhibition in Mathematics and Computer Sciences: REMACS 5.0
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e ISBN 978-629-97934-0-3

