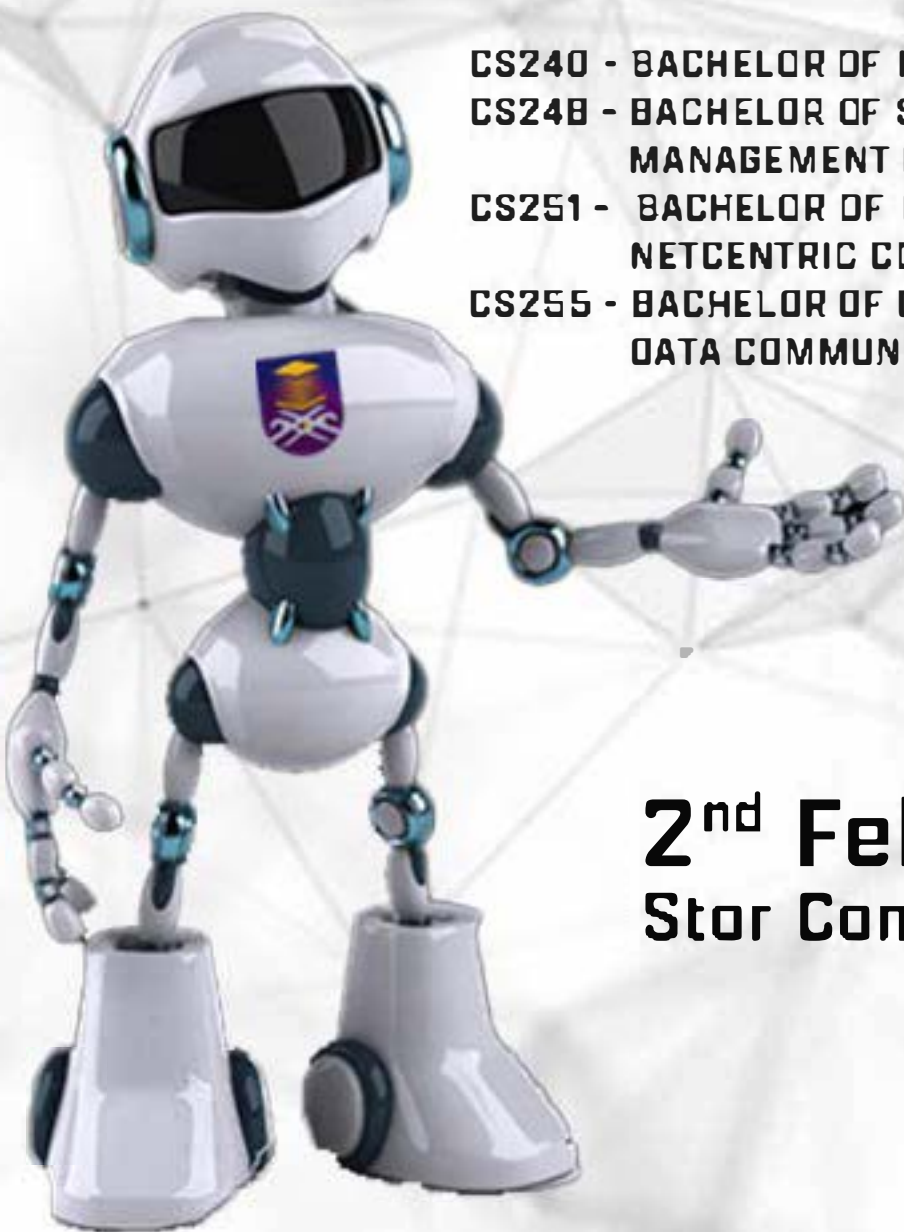

RESEARCH EXHIBITION IN MATHEMATICS & COMPUTER SCIENCES

REMACS 5.0



CS240 - BACHELOR OF INFORMATION TECHNOLOGY [HONS.]
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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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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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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
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UITM STUDENT'S ATTENDANCE SYSTEM BASED ON BIOMETRIC FINGERPRINT WITH IoT IMPLEMENTATION

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Abstract

The use of biometric technology in attendance systems has become increasingly popular in recent years, as it provides a convenient and secure way to record attendance. This project aims to develop a biometric fingerprint-based attendance system for students of Universiti Teknologi Mara (UiTM). The system will be integrated with IoT technology to improve its accessibility and data management capabilities. The current manual attendance system used for most universities is prone to errors and lacks efficient record keeping and monitoring capabilities. This results in difficulties for both the students and the lectures in tracking attendance records. As a result of this issue, the purpose of this research is to develop a student's attendance system with biometric authentication features more correctly without the need for lecturers to manually track attendance. Lecturers can collect all the attendance records of each user details as well as incoming & outgoing timing. The data can also be downloaded and exported to an excel sheet. The system will trace the absent user, and user who does not attend more than three times or six times without medical certificate (MC) will receive a warning. The system was evaluated by 30 respondents as a form of User Acceptance Testing (UAT) and the results show that the majority agreed that the system is achieved the perceived ease of use and perceived usefulness. The project includes the design, development, and testing of the system, as well as a user evaluation to assess its effectiveness.

Keywords: fingerprint, biometric, attendance, absenteeism, lecturer, student

1. Introduction

Traditionally, students' attendance is taken manually using an attendance sheet provided by the speaker in class rather than a system. With this manual approach, students can cheat by asking their peers to tick or sign for them. This arises because students are only concerned with meeting the 80 percent attendance requirement in order to sit for the final examination at the conclusion of the semester. This project aims to develop a biometric fingerprint-based attendance system for students of Universiti Teknologi Mara (UiTM) by using NodeMCU ESP8266. The system will be integrated with IoT technology to improve its accessibility and data management capabilities. The functionality, usefulness, and ease of use of the system will be tested from an end-user perspective, and satisfaction will be measured using the Technology Acceptance Model (TAM) in order to evaluate the system's effectiveness. This project will focus in Universiti Teknologi Mara (UiTM) Perlis classes.

2. Methodology

Data were collected from textual analysis by referring to and evaluating journals, articles, and existing concepts, such as others biometric authentication. The collected requirements will be used to design and develop the system. The system will be designed and developed using technologies such as biometric fingerprint authentication and IoT. The system will be designed to be user-friendly, efficient, and accurate. The development phase will conduct and providing ongoing maintenance and support to ensure the system is functioning properly. The system will be tested and evaluated to ensure it meets the requirements and specifications. The functionality, usefulness, and ease of use of the system will be tested from an end-user perspective, and satisfaction will be measured using the Technology

Acceptance Model (TAM) to evaluate the system's effectiveness. The data collecting the attendance will be analyzed to evaluate the system's effectiveness and ready for documentation.

3. Results and Discussion

The proposed UITM Student Attendance System based on Biometric Fingerprint with IoT Implementation was developed and tested successfully, showing that it was able to accurately record student attendance using biometric fingerprint technology. The user-friendly interface and real-time monitoring capabilities provided by IoT implementation was well received by both students and lecturer members, with high levels of satisfaction reported in the Technology Acceptance Model (TAM) survey. The system was able to achieve an accuracy rate of 98.5%. Overall, the system was able to improve the overall attendance management process at UiTM and provide a new level of convenience and accessibility for attendance management. The implementation of this system is expected to provide benefits to the UITM community in the long run.

4. Novelty of Research

The proposed research a biometric fingerprint-based attendance system for UITM students, with the integration of IoT technology. The integration of IoT technology in the proposed system will enable monitoring to attendance data, thereby addressing the limitations of traditional attendance systems that rely on manual data entry and retrieval (Khan et al., 2018; Al-Fuqaha, et al. 2015; Atzori et al. 2010). This will improve the overall attendance tracking process by reducing human errors and increasing the accuracy and speed of attendance data collection and analysis (Yin and Yang, 2019; Zhang and Li, 2018). The system will also include a web-based interface lecturers and to access and manage attendance records (Kassim et al. 2012; Gupta et al. 2017). The proposed research will contribute to the existing literature by providing a practical implementation of an IoT-enabled biometric fingerprint attendance system for the education sector.

5. Conclusion

The proposed research aims to develop UITM Student Attendance System based on Biometric Fingerprint with IoT Implementation. The objectives has been achieved by the user perspective and satisfaction and system results that prove the overall attendance tracking process has improvising the management of attendance data collection and extraction.

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