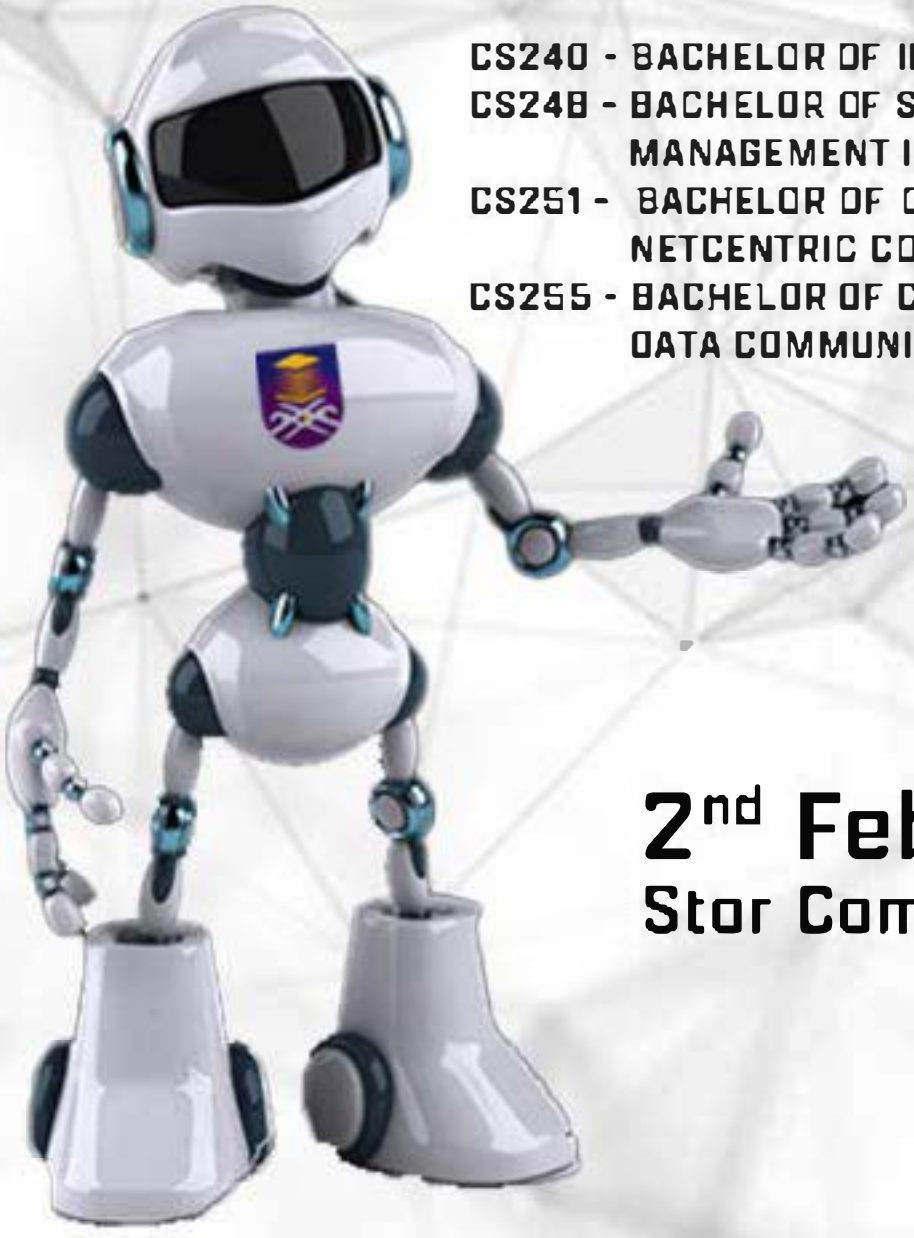
UNIVERSITI TEKNOLOGI MARA
Perlis Branch
Arau Campus

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)
NETCENTRIC COMPUTING
CS255 - BACHELOR OF COMPUTER SCIENCE (HONS)
DATA COMMUNICATION & NETWORKING

2nd Februory 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)
© 2023 College of Computing, Informatics and Media, UiTM Perlis Branch. Some Rights Reserved.

This work is licensed under the Creative Commons Attribution-ShareAlike 4.0 International License (CC-BY-SA 4.0). You are free to:

- Share - copy and redistribute the material in any medium or format
- Adapt - remix, transform, and build upon the material for any purpose, even commercially
- Under the following terms:

Attribution - You must give appropriate credit, provide a link to the license, and indicate if changes were made. You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use.

ShareAlike - If you remix, transform, or build upon the material, you must distribute your contributions under the same license as the original.

No additional restrictions - You may not apply legal terms or technological measures that legally restrict others from doing anything the license permits.

For more information on the Creative Commons Attribution-ShareAlike 4.0 International License, please visit: https://creativecommons.org/licenses/by-sa/4.0/

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

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://fskmperlis.uitm.edu.my/remacs50/

CONTENTS

Preface	**iii**
Committee	**iv**
Event Schedule	**v**
List of Papers	**vi-xxiii**
Articles	**1-278**

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.

COMMITTEE

PATRON

- PROF. MADYA Ts. DR SHUKOR SANIM MOHD FAUZI

ADVISORS

- Ts. DR SITI ZULAIHA AHMAD
- PN SUZANAWATI ABU HASAN
- PN NORA YANTI CHE JAN

PROGRAMME DIRECTOR

- EN MUHAMAD ARIF HASHIM

PROGRAMME DEPUTY DIRECTOR

- DR NURIZATUL SYARFINAS AHMAD BAKHTIAR

SECRETARY

- PN SITI SARAH RASELI
- CIK SITI SARAH MD ILYAS

TRESURER

- PN NORPAH MAHAT

PROMOTION

- PROF. MADYA DR RIZAUDDIN SAIAN
- DR RUZITA AHMAD
- PN NORWAZIAH MAHMUD

EXHIBITION

- DR AZNOORA OSMAN
- EN MOHAMAD HAFIZ ISMAIL
- EN ROS SYAMSUL HAMID
- PN RAIHANA ZAINORDIN
- DR HUDA ZUHRAH AB.HALIM

REGISTRATION COORDINATORS

- Ts. DR ABIDAH HJ MAT TAIB
- DR NUR FATIHAH FAUZI
- PN NOR HAYATI SHAFII
- PN WAN NURSHAZELIN WAN SHAHIDAN

TECHNICAL & LOGISTIC

- EN MOHD FARIS MOHD FUZI
- EN IMAN HAZWAM ABD HALIM
- EN MOHD FAZRIL IZHAR MOHD IDRIS
- EN MOHD HASBULLAH MOHD RAZALI

EVENT MGT & PROTOCOL

- PN ROMIZA MD NOR
- EN ABDUL HAPES MOHAMMED
- PN DIANA SIRMAYUNIE MOHD NASIR

CERTIFICATE

- EN ALIF FAISAL IBRAHIM
- EN HALIMI AB HALIM

PROGRAMME BOOK

- PN RAFIZA RUSLAN
- EN MOHAMAD NAJIB MOHAMAD FADZIL
- Ts. NOORFAIZALFARID MOHD NOOR

BANQUET

- CIK KU AZLINA KU AKIL
- DR NUR IZZATI KHAIRUDIN

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

Article Title	Page
WEB-BASED BLOOD DONATION MANAGEMENT WITH REWARDS SYSTEM Ahmad Syakir Mohd Sakeri and Nadia Abdul Wahab	1
FINAL YEAR PROJECT MANAGEMENT SYSTEM (FMS) Aimuni Nadhrah Yazit and Ros Syamsul Hamid	3
UNIBUKU: UiTM Book Reselling Web Application Anis 'Aisyah Md Nazri and Mohammad Hafiz bin Ismail	5
STUDENT INTERNSHIP PLACEMENT USING PERSONAL DECISION AID Anis Nabila Azizi and Azmi Abu Seman	7
INTERNSHIP MONITORING AND ASSESSMENT SYSTEM Ezza Liyana Jalaludin and Azmi Abu Seman	9
AR FOR PLANTATION AND AGROTECHNOLOGY AREA AT UITM PERLIS Faizah Ahmad Rodi and Nor Arzami Othman	11
MOBILE APPLICATION FOR COLLEGE LAUNDRY BOOKING SYSTEM IN UITM PERLIS Haizatul Zulaikha Annual and Siti Zulaiha Ahmad	13

SKIN CARE E-COMMERCE MOBILE PLATFORM WITH PRODUCT RECOMMENDATION BASED ON SKIN TYPE 15

Haziq Asyraf Abu Hanifah and Nadia Abdul Wahab

HEALER – MENTAL HEALTH PERSONAL DECISION AID 17

Huda Nabila Ishak and Norfiza Ibrahim

VETERINARY CLINIC MANAGEMENT SYSTEM 19

Mas Nur Alya Binti Mohd Yusof and Prof. Madya Ts. Dr. Shukor Sanim Bin Mohd Fauzi

SOCIAL MARKETPLACE WEB APPLICATION FOR UITM PERLIS STUDENTS 21

Mohamad Azimi Zakariah and Muhammad Nabil Fikri Jamaluddin

FASTBLOOD: BLOOD DONOR MOBILE APP INTEGRATED WITH QR CODE 23

Muhamad Saifullah Yussri and Nora Yanti Che Jan

MOBILE APPLICATION FOR HEALTHY SLEEP RECOMMENDATION WITH CALM TECHNOLOGY 25

Muhammad Arif Haikal Meli and Romiza Md. Nor

ROADMATE: IMPROVING RIDESHARING AND CARPOOLING VIA MOBILE APP 27

Muhammad Farid Muhammad Dahri, Arifah Fasha Rosmani

FELINERINARY: CAT HEALTH MANAGEMENT APP WITH APPOINTMENT REMINDERS USING PUSH-NOTIFICATION 29

Muhammad Hakimie Azraei Mahzir, Siti Sarah Md. Ilyas

MOBILE INTERVENTION FOR USED CLOTHING MANAGEMENT WITH GEOLOCATION 31

Muhammad Haziq Anuar, Siti Sarah Md Ilyas

UITM ARAU BICYCLE RESERVATION APP WITH IMPLEMENTATION OF QR CODES (UBIKE COLLEGE) 33

Muhammad Nur Hakimi Azman, Siti Zulaiha Ahmad

EASYRENT: A WEB BASED RECOMMENDATION SYSTEM FOR SHOP RENTAL – A CASE STUDY IN JITRA, KEDAH 35

Nur Azlina Ariffin, Nora Yanti Che Jan

MEDCARE: A WEB-BASED CLINIC APPOINTMENT SYSTEM WITH SHORT MESSAGE SERVICE (SMS) NOTIFICATION 37

Nur Elya Fhazlein Zamri, Mohd Nizam Osman

FASTPARK MOBILE APPLICATION USING GEOLOCATION 39

Nur Hazmiera Mohd Hazline, Nora Yanti Che Jan

AN ISLAMIC MULTIMEDIA LEARNING APPLICATION OF MENSTRUATION FOR ADOLESCENT GIRLS 41

Nur Irham Atikah Mohd Rafee @ Sukiman, Aznoora Osman

FUTSAL BOOKING WEB BASED SYSTEM INTEGRATE WITH TELEGRAM NOTIFICATIONS 43

Nur Izzat Hakim Bin Norazam, Mohd Nizam Bin Osman

HOUSE RENTAL MANAGEMENT SYSTEM FOR STUDENT IN UITM PERLIS 45

Nur Nadiah Husna Samsudin, Muhammad Nabil Fikri Jamaluddin,

PENANG TRAVEL SERVICE PROVIDER APPLICATION USING GEOFENCING 47

Nurezzatul Husna Ismail, Mohd Nizam Osman

MOBILE APPLICATION SYSTEM FOR CARDIOVASCULAR DISEASE PATIENT 49

Nurul Azwa Atikah Ahmad Tarmizy, Abdul Hapes Mohammed

WEB-BASED CARBON FOOTPRINT CALCULATOR FOR BAKERY FOOD WASTE 51

Nurul Fatihah Mohamed Yusof, Romiza Md Nor

FOOD TRUCK FINDER 53

Qistina Amirah Abdul Hadi, Iman Hazwam Abd Halim

RESPONSIVE WEB-BASED CAFE FOOD ORDERING SYSTEM USING BOOTSTRAP AND QR CODE 55

Siti Nadzirah Parsikun, Khairul Anwar Sedek

WHEELS4RENT: A WEB-BASED VEHICLE RENTAL AND MANAGEMENT SYSTEM WITH SHORT MESSAGE SERVICE (SMS) NOTIFICATION 57

Siti Zulaikha Zaidi, Mohd Nizam Osman

IMPLEMENTATIONS OF QR-CODE FOR BUS TRANSPORT PASS USING MOBILE APPS 59

Wajeehah Hamdzar Hamizan, Norziana Yahya

DEVELOPING A CATERING SERVICES MOBILE APPLICATION FOR LOCAL COMMUNITY 61

Masturina Binti Azmi, Ts Dr Norziana Binti Yahya

ON-DEMAND HOME SERVICES USING MOBILE APPS FOR DIGITAL HOUSEHOLDS 63

Sarah Nurhasya Abd Aziz, Norziana Yahya

FAKE NEWS CLASSIFICATION USING MACHINE LEARNING TECHNIQUES 65

Adib Farhan Ahmad Rashdi and Mohd Nizam Osman

DATA VISUALIZATION OF FAMILY INCOME AND EXPENSES 67

Aimi Amisha Ahmad Sabri and Mohd Nizam Osman

DATA VISUALIZATION : CAUSES AND RISK FACTORS OF DEATH 69

Amirah Mohd Yusof and Jiwa Noris Hamid

DEVELOPING GRAPHICAL VISUALIZATION FOR UNDERSTANDING THE PATTERN OF STUDENTS PERFORMANCE IN EXAM 71

Anisah Rosli and Norfiza Ibrahim

DIABETES RISK PREDICTION SYSTEM AND DATA VISUALIZATION 73

Azizah Mohamad Imran and Hawa Mohd Ekhsan

WEB-BASED APPLICATION FOR PLACES RECOMMENDER USING MACHINE LEARNING 75

Farah Nurshaziela, Ruzita Ahmad and Shukor Sanim Mohd Fauzi

DATA VISUALIZATION OF CHRONIC KIDNEY DISEASE SYMPTOMS 77

Hanif Ikmal Ahmad Akibi and Hawa Mohd Ekhsan

SMART SUPPLY CHAIN MANAGEMENT USING DATA VISUALIZATION 79

Hidayah Hushairi and Jiwa Noris Hamid

DATA VISUALIZATION OF BLOOD DONATION DURING CORONAVIRUS DISEASE (COVID-19) IN PERLIS 81

Maisarah Aisisa and Khairul Anwar Sedek

DIABETES PREDICTION USING MACHINE LEARNING 83

Muhammad Adib Mohd Nazri and Mahfudzah Othman

THE DEVELOPMENT OF DISEASES PREDICTION SYSTEM BASED ON SYMPTOMS 85

Muhammad Faiz Mohd Faisol and Mohd Nizam Osman

LUNG CANCER PREDICTION USING MACHINE LEARNING TECHNIQUES 87

Muhammad Muhaimin Mohd Fauzi and Mohd Nizam Osman

OBJECT DETECTION MODEL FOR MANGO LEAF DISEASES 89

Muhammad Norzakwan Mohd Sham and Mohammad Hafiz bin Ismail

ANALYZING ON HOW FOOD CONSUMPTION CAN AFFECT IN DIABETES 91

Muhammad Saiful Azim Mohd Ariff and Khairul Anwar Sedek

DASHBOARD : RISK PERCEPTION AND TRAVEL SATISFACTION USING PUBLIC TRANSPORT DURING COVID-19 93

Nafeis Sukaiynah Noor Azli and Jiwa Noris Hamid

DASHBOARD VISUALIZATION OF MOBILITY COVID-19 95

Noor Syarafana Nordin and Noorfaizalfarid Mohd Noor

DEVELOPING GRAPHICAL VISUALIZATION FOR ANALYZING STUDENT ADAPTABILITY LEVEL IN ONLINE EDUCATION 97

Nur Balqis Mohd Azuddin and Norziana Yahya

DATA VISUALIZATION ON STUDENT STRESS LEVEL 99

Nur Syifa Ramzi, Mohammad Hafiz bin Ismail and Tajul Rosli Razak

DASHBOARD: DATA VISUALIZATION OF COVID-19 CONFIRMED AND DEATHS IN MALAYSIA (COVIM) 101

Nurul Izzati Iddarus, Ruzita Ahmad and Shukor Sanim Mohd Fauzi

DATA VISUALIZATION OF HUMAN STRESS DETECTION LEVEL 103

Nurul Syahirah Md Saad and Hawa Mohd Ekhsan

DASHBOARD VISUALIZATION ON RENTAL HOUSE DATA IN PERLIS FOR UITM ARAU STUDENTS 105

Putera Mohd Aliff Bakhtiar Mohd Zahir and Khairul Anwar Sedek

DATA VISUALIZATION OF HIGHER EDUCATION STUDENTS' PERFORMANCE EVALUATION 107

Siti Nur Syahirah Osman and Hawa Mohd Ekhsan

FUZZY ANALYTIC HIERARCHY PROCESS TO STUDY THE IMPACTS OF OPEN DISTANCE LEARNING ON UiTM PERLIS STUDENTS 109

Adriana Nazihah Cha Ariff and Norpah Mahat

FORECASTING UNEMPLOYMENT RATE IN MALAYSIA: COMPARISON BETWEEN ARIMA AND FUZZY TIME SERIES 111

Ahmad Faidhi Amir Faisol and Nur Azriani Mohamad Nor

STAGNATION POINT FLOW OF NANOFLUIDS OVER STRETCHING/SHRINKING SURFACE WITH HEAT SOURCE/SINK AND CONSTANT WALL TEMPERATURE 113

Aifa Afrina Ahmed Rodzuan, Nur Fatihah Fauzi and Nurizatul Syarfinas Ahmad Bakhtiar

EVALUATION OF FORECAST PERFORMANCE OF COVID-19 WITH DIFFERENT TIME HORIZONS 115

Amirul Rashid Che Samsol and Azlan Abdul Aziz

SELECTION THE TYPE OF INVESTMENT IN MALAYSIA USING FUZZY ANALYTIC HIERARCHY PROCESS (AHP) 117

Ardini Athirah Mhd Munawar and Mohd Fazril Izhar Mohd Idris

PREDICTING STROKE USING ANT COLONY OPTIMIZATION ALGORITHM 119

Azfaruddin Azri and Rizauddin Saian

STAGNATION POINT FLOW OF HYBRID NANOFLUIDS OVER STRETCHING/SHRINKING SHEET WITH HEAT SOURCE/SINK AND CONSTANT WALL TEMPERATURE 121

Fatin Nur Ayuni Mohd Nor, Nur Fatihah Fauzi and Nurizatul Syarfinas Ahmad Bakhtiar

ANALYSING THE EFFICIENCY OF LOCAL AND FOREIGN CARS IN MALAYSIA USING DATA ENVELOPMENT ANALYSIS (DEA) 123

Khairul Sanusi Samuil and Anas Fathul Ariffin

APPLICATION OF VANILLA LONG SHORT-TERM MEMORY NETWORKS (LSTM) AND AUTO-REGRESSIVE INTEGRATED MOVING AVERAGE (ARIMA) ON EXCHANGE RATE FORECASTING 125

Mysarah Haslan and Nor Hayati Shafii

RANKING THE EFFECTIVE PREVENTION MEASURES AGAINST COVID-19 BY USING FUZZY AHP METHOD 127

Nur Afifah Zabidi and Teoh Yeong Kin

A NUMERICAL STUDY ON A HIV TRANSMISSION MATHEMATICAL MODEL 129

Nur Izyan Hasna Suhaili, Nur Izzati Khairudin and Nurizatul Syarfinas Ahmad Bakhtiar

APPLICATION OF FUZZY DELPHI ON THE FACTOR INFLUENCING BUYING BEHAVIOUR FOR ORGANIC FOOD 131

Nur Syafiqah Abdul Rashid and Mohd Halimi Ab Hamid

THE USE OF TRAPEZOIDAL RULE TO APPROXIMATE THE VOLUME OF CLODS OF SOIL AT GUNUNG PERLIS TAMAN NEGERI PERLIS 133

Nur'Afaf Zahiah Khairulfahmi, Mohamad Najib Mohamad Fadzil and Zaki Ahmad Dahlan

THE USE OF TRAPEZOIDAL RULE TO APPROXIMATE THE VOLUME OF CLODS OF SOIL AT GUNUNG PERLIS TAMAN NEGERI PERLIS 135

Nur'Afaf Zahiah Khairulfahmi, Mohamad Najib Mohamad Fadzil and Zaki Ahmad Dahlan

AN APPROACH OF FUZZY AHP TO ANALYZE THE FACTORS OF DOMESTIC VIOLENCE AMONG WOMEN IN MALAYSIA 137

Nurain Syahirah Mahusin and Norpah Mahat

THE USE OF SIMPSON'S RULE TO APPROXIMATE THE VOLUME OF CLODS OF SOIL AT GUNUNG PERLIS, TAMAN NEGERI PERLIS 139

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

FACTORS INFLUENCING THE SELECTION OF HALAL PRODUCTS AMONG PERLIS COMMUNITY USING FUZZY AHP 141

Nurul Asyqin Abu Bakar and Siti Nor Nadrah Muhamad

ANALYSING ON INFLUENCING FACTORS OF STUDENTS' CAREER CHOICE USING FUZZY ANALYTIC HIERARCHY PROCESS (FAHP) 143

Salsabila Saimuddi and Khairu Azlan Abd Aziz

APPLICATION OF FUZZY AHP ON THE SELECTION OF ONLINE SHOPPING PLATFORM IN MALAYSIA 145

Siti Nurmaisarah Zakaria and Khairu Azlan Abd Aziz

CLASSIFICATION OF DIABETIC PATIENTS WITH IMBALANCED CLASS DISTRIBUTION BY USING A COST-SENSITIVE FOREST ALGORITHM 147

Ummi Asyiqin Che Muhammad and Muhammad Hasbullah Mohd Razali

A FUZZY CONJOINT ANALYSIS APPROACH FOR EVALUATING CREDIT CARD SERVICES: A CASE STUDY OF MALAYAN BANK 149

Ummi Umira Mohd Akhir and Zurina Kasim

SELECTION THE BEST TYPE OF INVESTMENT IN MALAYSIA USING FUZZY TOPSIS 151

Muhamad Aizat Iman Roslan and Fazril Izhar Mohd Idris

ONLINE EMPLOYMENT PLATFORM SELECTION BY USING FUZZY ANALYTIC HIERARCHY PROCESS 153

Muhammad Iqbal Muhamidi and Mohd Halimi Ab Hamid

TOURIST TRIP DESIGN PROBLEM WITH USER PREFERENCE AND POPULARITY: A CASE STUDY OF LANGKAWI ISLAND 155

Nabilah binti Anuar Ahmad and Huda Zuhrah Ab. Halim

ANALYZING FACTORS AFFECTING TO E-LEARNING SUCCESS BY FUZZY ANALYTIC HIERARCHY PROCESS (FAHP) 157

Nor Syahazlin Mohd Zaki and Jasmani Bidin

EARLY DIABETES RISK PREDICTION USING ANT COLONY OPTIMIZATION ALGORITHM 159

Nur Aisyatul Husna Ahmad Yusri and Rizauddin Saian

COMPARISON BETWEEN ARIMA MODEL AND FUZZY TIME SERIES: FORECASTING ENDEMIC COVID-19 CASES IN MALAYSIA 161

Nur Atikah Mohd Razali and Nor Azriani Mohamad Nor

ANALYSING STUDENTS' PERCEPTIONS OF ONLINE MATHEMATICS LEARNING 163

Nur Izza Hazwani Azali Azman and Zurina Kasim

Reconstruction the Rational Quadratic Bezier Curve Using Properties of Rational Quadratic Bezier and Segmentation 165

Nur Nabilla Azmi and Siti Sarah Raseli

ANALYSING INFLUENTIAL FACTORS IN UNIVERSITY SELECTION USING FUZZY TOPSIS 167

Nurul Athilah Azaman and Jasmani Bidin

NUMBER OF STAFF OPTIMIZATION OF TOLLMAN SCHEDULING WITH INTEGER LINEAR PROGRAMMING 169

Nurul Athirah Syuhadah Ruslan and Diana Sirmayunie Mohd Nasir

A FUZZY PROMETHEE APPROACH FOR CHOOSING THE MOST PREFERABLE HEALTH INSURANCE COMPANIES 171

Nurul Qistina Mohd Kamal and Raihana Zainordin

THE NUMBER OF EMPLOYED PEOPLE AND TOURIST ARRIVAL IN MALAYSIA USING ARIMA AND FUZZY TIME SERIES MODEL: PRE, DURING AND POST COVID-19 173

Siti Norashikin Roslan and Siti Fatimah Abd Rahman

THE PREFERRED SOCIAL NETWORKING SITE (SNS) FOR INFORMATION DISSEMINATION AMONG UiTM STUDENTS USING FUZZY AHP METHOD 175

Siti Nuraisyah Syafiqah Abdullah and Noorzila Sharif

MATHEMATICAL MODELLING ANALYSIS OF DIET PLANNING FOR THALASSEMIA PATIENTS 177

Siti Sarah Md Zulkifli and Siti Nor Nadrah Muhamad

RANKING FIVE MODELS OF LAPTOPS USING FUZZY PROMETHEE 179

Wan Nur Syahirah Wan Muhammad Sukardi and Raihana Zainordin

PREDICTION OF BREAST CANCER DISEASE USING MACHINE LEARNING APPROACH 181

Wan Nashua Amira and Nor Hayati Shafii

HEAT SOURCE AND CONSTANT WALL TEMPERATURE OF MHD FERROFLUIDS ON EXPONENTIALLY STRETCHING AND SHRINKING SURFACE UNDER STAGNATION POINT REGION 183

Natasya Syafina Ismail, Nurizatul Syarfinas Ahmad Bakhtiar and Nur Fatihah Fauzi

WEB-BASED UITM BOOK STORE MANAGEMENT SYSTEM INTEGRATED WITH WHATSAPP API AND GOOGLE SERVICES 185

Amir Imran Ahmad and Mohd Nizam Osman

FACIAL EXPRESSION RECOGNITION USING DEEP LEARNING TECHNIQUES 187

Aznal Anas Azlan and Muhamad Arif Hashim

ANALYSIS ON RANSOMWARE CHARACTERISTICS USING STATIC ANALYSIS METHOD 189

Maryam Adreena Mohd Mokhtaruddeen and Mohd Faris Mohd Fuzi

WEB-BASED JEWELRY MANAGEMENT SYSTEM USING WEB SCRAPPING 191

Mohd Irfan Hafizi Bin Fakhrurrazi, Ts. Noorfaizalfarid bin Mohd Noor

EMPLOYEE ATTENDANCE SYSTEM USING FLUTTER 193

Muhamad Faiz Akmal Bin Mohamad Noor and Sir Alif Faisal Ibrahim

STAFF RESIDENT COLLEGE (SRK) REPORT MANAGEMENT SYSTEM USIGN FLUTTER 195

Muhammad ‘Atif Abdul Rahim and Ahmad Yusri Dak

UiTM PRIHATIN DONATION SYSTEM USING A RESPONSIVE WEB DESIGN APPROACH 197

Muhammad Aiman Bin Rosli and Zulfikri Paidi

FOOD COURT MANAGEMENT SYSTEM 199

Muhammad Alif Rusyaidi Bin Abdul Rashid and Alif Faisal Bin Ibrahim

INVENTORY MANAGEMENT SYSTEM FOR SMEs IN KULIM 201

Muhammad Bilal Hakim Bin Azmi and Muhammad Nabil Fikri Bin Jamaluddin

FINAL YEAR PROJECT SUPERVISOR ACCEPTANCE SYSTEM (FYPSA) 203

Muhammad Fikri Bin Mohd Firdaus and Ros Syamsul Hamid

UiTM ARAU STUDENT ORIENTATION APPLICATION EXTENDED ABSTRACT 205

Muhammad Hafiz Bin Ghazali and Nurzaid Mohd Zain

VOAS: VETERINARY ONLINE APPOINTMENT BOOKING SYSTEM 207

Muhammad Harith Bin Mokhtar and Arifah Fasha Binti Rosmani

ZAKAT MANAGEMENT SYSTEM WITH ELECTRONIC MAIL 209

Muhammad Najmi bin Othman and Noorfaizalfarid bin Mohd Noor

PINEAPPLE DISEASE DETECTION SYSTEM USING MOBILENETV2 MODEL 211

Muhammad Nu'man Hakim Abdul Aziz and Iman Hazwam Abd Halim

FIGHTING FISH IDENTIFICATION USING DEEP LEARNING 213

Muhammad NurSyafiq and Mohammad Hafiz bin Ismail

C++ RUSH: INTERACTIVE GAME IN LEARNING COMPUTER LANGUAGE FOR NOVICE 215

Muhammad Salman Hakim bin Shaiful Nizam and Arifah Fasha binti Rosmani

E-EXAMINATION SYSTEM FOR ANSWERING OBJECTIVE AND SUBJECTIVE QUESTIONS 217

Muhammad Yasir Zulfikri and Nurzaid Muhd Zain

SPORT FACILITIES AND EQUIPMENT BOOKING SYSTEM FOR UITM PERLIS 219

Musfira Mohd Azmir and Nurzaid Muhd Zain

ONLINE HOSPITAL APPOINTMENT CARD WITH QR CODE 221

Nabilatulwidad Binti Abdul Mueiz and Mahfudzah Binti Othman

MYBUKU PINK MOBILE APPLICATION USING ANDROID 223

NorHafizah Ayob, Mohammad Hafiz bin Ismail and Tajul Rosli Razak

MOBILE APPLICATION FOR ORDERING FOOD FROM UITM ARAU CAMPUS CAFETERIA 225

Norsyuhana binti Noordin and Nurzaid Mohd Zain

UITM WEB PRACTICAL LOGBOOK SYSTEM 227

Nur Arifa Najiha Bt Ahmad Zawawi and Mahfudzah Bt Othman

BLOOD BANK MANAGEMENT SYSTEM 229

Nur Syamimi Izzati Binti Zulkifli and Ros Syamsul Bin Hamid

WEB-BASED FOR UiTM ARAU FOOD ORDER 231

Nur Zahirah Izzati binti Mohd Zahir and Zulfikri Paidi

MASK AWARE: IOT FOR FACEMASK DETECTION AND MONITORING 233

Siti Nurfatin Binti Mohtar and Aznoora Osman

IOT-BASED FLOWER GARDEN CARE SYSTEM USING ESP8266 WIFI MODULE AND TELEGRAM APPLICATION 235

Syahida Atirah Binti Che Omar and Rashidah Binti Ramle

UITM STUDENT'S ATTENDANCE SYSTEM BASED ON BIOMETRIC FINGERPRINT WITH IoT IMPLEMENTATION 237

Wan Muhammad Rahimi bin Wan Fadzli and Abidah Hj Mat Taib

CORN LEAF DISEASE DETECTION SYSTEM USING CONVOLUTIONAL NEURAL NETWORK 239

Wan Nurul Izzah Binti Abd Hadi and Iman Hazwam Abdul Halim

HOMENETSEC: ENHANCING HOME NETWORK SECURITY BY SURICATA INTRUSION DETECTION SYSTEM USING RASPBERRY PI 241

Ahmad Shariff and Abidah Hj Mat Taib

MALWARE DETECTION IN WINDOWS USING DEEP LEARNING CLASSIFICATION APPROACH 243

Aishah Anuar and Mohd Faris Mohd Fuzi

E-VOTING SYSTEM PROJECT IN LARAVEL BASED ON WEB-BASED APPLICATION 245

Anis Natasha Zahimi and Ros Syamsul Hamid

WATER LEVEL MONITORING USING WIFI 247

Azizie Azizan and Iman Hazwam Abd Halim

FACE SKETCH RECOGNITION SYSTEM USING CLOUD-BASED DEEP LEARNING 249

Faiz Elmie Shah Izahar Shah and Muhamad Arif Hashim

AN ENHANCEMENT OF SMART TRAFFIC LIGHT IN LORA NETWORK FOR SMALL SCALE AREA 251

Lutfi Hadi Azizul Adry and Rafiza Ruslan

REMOTE CONTROL DESKTOP SYSTEM 253

Muhammad Akmal Idlan Hissamuddin and Ros Syamsul Hamid

IoT-Based Smart Chili Farm Monitoring Using Arduino and GSM Module 255

Muhammad Baihaqi Bakar and Rashidah Ramle

IMAGE AUTHENTICATION SYSTEM USING DEEP LEARNING 257

Muhammad Faisal Amer Faudzli and Muhamad Arif Hashim

NETWORK AUTOMATIONS ON ACCESS CONTROL LIST (ACL) FOR MULTIVENDOR DEVICES USING ANSIBLE AND NAPALM IN GNS3 259

Muhammad Haziq Ikhmal Suhaimi and Rafiza Ruslan

PERFORMANCE ANALYSIS OF HTTP FLOODING ATTACK AT APPLICATION LAYER IN MOBILE AD-HOC NETWORK (MANET) 261

Muhammad Hilmi Hafizi Muhamad and Ahmad Yusri Bin Dak

PERFORMANCE ANALYSIS OF DOS ATTACK AT MAC LAYER IN WLAN 263

Muhammad Naufal Abdul Rahim and Ahmad Yusri Dak

SMART IRRIGATION SYSTEM USING LORA-BASED IOT DEVICE 265

Muhammad Nizamuddin Abd Muttalib and Iman Hazwam Abd Halim

ANDROID MALWARE DETECTION USING DEEP LEARNING CLASSIFICATION APPROACH 267

Nur Amirah Amri and Mohd Faris Mohd Fuzi

STUDENT ATTENDANCE REGISTRATION SYSTEM USING QR CODE FOR TUITION CENTRE 269

Nur Farizah Ishak and Zulfikri Paidi

STUDENT ATTENDANCE SYSTEM USING FACIAL RECOGNITION BASED ON DEEP LEARNING 271

Syahila Aina Haris and Zulfikri Paidi

REDUCING DOS ATTACKS BY RUNNING MULTI INSTANCES OF NGINX WEB-SERVER IN DOCKER USING SHELL SCRIPT 273

Ismail Arif M. Zulkepli and Abidah Mat Taib, Nor Alifah Rosaidi

SMART CHICKEN FEEDER SYSTEM USING NODE MCU ESP8266 275

Ilham Syahmin Nasruddin and Mohd Nizam Osman

REMOTE MONITORING AND CONTROLLING OF LIGHTS USING IOT 277

Nurul Najihah Yusra Zolkarnain, Nurzaid Muhd Zain and Mahfudzah binti Othman

RESEARCH EXHIBITION IN MATHEMATICS & COMPUTER SCIENCES

REMACS 5.0

EXTENDED ABSTRACTS

A NUMERICAL STUDY ON A HIV TRANSMISSION MATHEMATICAL MODEL

Nur Izyan Hasna Suhaili, Nur Izzati Khairudin and Nurizatul Syarfinas Ahmad Bakhtiar
College of Computing, Informatics and Media, Universiti Teknologi MARA Perlis Branch, Malaysia

Abstract

In this paper, the numerical solution of the HIV transmission mathematical model by using improved Euler's method has been studied. The existence of HIV is dangerous because it is highly harmful and can worsen the human body's system. HIV will damage the immune system and weaken a person's immune system to fight infections. Therefore, we want to observe a system of ordinary differential equations as some parameters change to analyze the behavior of HIV transmission in HIV patients. In this study, P and β represent as the number of verified the removed rate and the average number of transmissions for an infected person in a time respectively has been varied. We observed the $S(t)$, $U(t)$ and $I(t)$ which are the number of susceptible individuals, the number of infected individuals, and the number of removed individuals, respectively. Therefore, we chose parameters value for P = 0.75, 5,1, 20, 0 and β = 0.25, 6, 0.5, 2, 0.1 as a_0, a_1, b, μ and N will be using the same as the value used by Suparyanto & Rosad (2020). By this choice of parameters, we were able to obtain the behavior of HIV transmission. The population of HIV transmission increased which refers to $S(t)$ however the condition of HIV patients becoming slower due to 100 days at $U(t)$. Meanwhile, the cell population during at $I(t)$ were under control after taking the medicines and treatment from doctors. Thus, this means that doctors can predict and develop the evolution of HIV in each patient.

Keywords: Ordinary differential equations, HIV transmission, improved Euler's method, Mathematical modeling

1. Introduction

HIV gives feelings of anxiety to the most thoroughly global of diseases. Statistics have been proven by the Ministry of Health Malaysia which in 1986 reported the first case of HIV (Aids & Progress, 2014). Approximately 6978 cases occurred in 2002, however, 3564 cases reported decreased in 2019. To better understand HIV transmission mathematical models governed by are used to help doctors to predict the behavior of the population number of HIV spreads according to the approximation solution. Furthermore, the study of the model is to study the propagations of HIV transmission mathematical model, to examine a system of ordinary differential equations by using improved Euler's method, and to analyze the behavior of the system of ordinary differential equations as some parameters vary.

2. Methodology

The behavior of HIV transmission mathematical models was used in this study. The method applied for this model is improved Euler's method with the step sizes of 50. The mathematical model of HIV transmission divides into groups of $S(t)$, $U(t)$ and $I(t)$ which are the number of susceptible individuals, the number of infected individuals, and the number of removed individuals, respectively. Parameters vary for P and β represent as the number of verified of the removed rate and the average

number of transmissions for an infected person in a time has been analyzed by using Wolfram Mathematica 13.0.

3. Results and Discussion

Parameters vary for the P and β for HIV transmission mathematical models are P = 0.75, 5, 1, 20, and 0 while β = 0.25, 6, 0.5, 2, and 0.1, respectively. According to the approximation solution of 100 days, the condition of $S(t)$ are growth drastically since HIV is actively transmitted among HIV patients and other persons. During the $U(t)$, some people have received affection such as flu-like symptoms. The virus attacks and destroys the infection-fighting white blood cells of the immune system as referred to $I(t)$. Based on the numerical solution of HIV transmission, the behavior of HIV transmission probability is high since the patient only takes the medicine and no vaccine is provided.

4. Novelty of Research / Product

Methods of Improved Euler's had been used in this study to explore and understand the variety of solutions and properties of the equation of HIV transmission. Our research is based on the Yau & On (2011) presented the mathematical model of HIV transmission dynamics using the classical Euler's method. Although, the author applied the SIR Model to compute the amount of susceptible, infected, and removed people in a population. Additionally, the research continues improvement by using improved Euler's method. The step size of 50 presents the numerical solution of HIV transmission with the help of mathematical software. The solution shows the approximation solution of HIV transmission through HIV patients over 100 days.

5. Conclusion

The study of HIV patients found that their population likely increased due to the active spreading the HIV transmission over a 100-day period. According to the approximate solution, where HIV patients simply depend on medications, the behavior of HIV patients will assist the doctors in preventing the condition of HIV patients from getting better.

REFERENCE LIST

Aids, G., & Progress, R. (2014). Malaysia. *GLOBAL AIDS RESPONSE PROGRESS*.

Suparyanto dan Rosad (2015. (2020). Effects of treatment and prevalence-dependent recruitment on the dynamics of a fatal disease. *Suparyanto Dan Rosad*, *5*(3), 248–253.

Yau & On. (2011). A Simulation of an Sir Mathematical Model of HIV Transmission Dynamics Using the Classical Euler's Method. *Shiras E-Medical Journal*, *12*.

Research Exhibition in Mathematics and Computer Sciences: REMACS 5.0
© 2023 College of Computing, Informatics and Media, UiTM Perlis Branch

e ISBN 978-629-97934-0-3