

Lecture Notes in Networks and Systems 322

Mostafa Al-Emran  
Mohammed A. Al-Sharafi  
Mohammed N. Al-Kabi  
Khaled Shaalan *Editors*

# Proceedings of International Conference on Emerging Technologies and Intelligent Systems

ICETIS 2021 Volume 2

 Springer

# Lecture Notes in Networks and Systems

Volume 322

## Series Editor

Janusz Kacprzyk, Systems Research Institute, Polish Academy of Sciences,  
Warsaw, Poland

## Advisory Editors

Fernando Gomide, Department of Computer Engineering and Automation—DCA,  
School of Electrical and Computer Engineering—FEEC, University of Campinas—  
UNICAMP, São Paulo, Brazil

Okyay Kaynak, Department of Electrical and Electronic Engineering,  
Bogazici University, Istanbul, Turkey

Derong Liu, Department of Electrical and Computer Engineering, University  
of Illinois at Chicago, Chicago, USA,  
Institute of Automation, Chinese Academy of Sciences, Beijing, China

Witold Pedrycz, Department of Electrical and Computer Engineering, University of  
Alberta, Alberta, Canada,  
Systems Research Institute, Polish Academy of Sciences, Warsaw, Poland

Marios M. Polycarpou, Department of Electrical and Computer Engineering,  
KIOS Research Center for Intelligent Systems and Networks, University of Cyprus,  
Nicosia, Cyprus

Imre J. Rudas, Óbuda University, Budapest, Hungary

Jun Wang, Department of Computer Science, City University of Hong Kong,  
Kowloon, Hong Kong

The series “Lecture Notes in Networks and Systems” publishes the latest developments in Networks and Systems—quickly, informally and with high quality. Original research reported in proceedings and post-proceedings represents the core of LNNS.

Volumes published in LNNS embrace all aspects and subfields of, as well as new challenges in, Networks and Systems.

The series contains proceedings and edited volumes in systems and networks, spanning the areas of Cyber-Physical Systems, Autonomous Systems, Sensor Networks, Control Systems, Energy Systems, Automotive Systems, Biological Systems, Vehicular Networking and Connected Vehicles, Aerospace Systems, Automation, Manufacturing, Smart Grids, Nonlinear Systems, Power Systems, Robotics, Social Systems, Economic Systems and other. Of particular value to both the contributors and the readership are the short publication timeframe and the world-wide distribution and exposure which enable both a wide and rapid dissemination of research output.

The series covers the theory, applications, and perspectives on the state of the art and future developments relevant to systems and networks, decision making, control, complex processes and related areas, as embedded in the fields of interdisciplinary and applied sciences, engineering, computer science, physics, economics, social, and life sciences, as well as the paradigms and methodologies behind them.

Indexed by SCOPUS, INSPEC, WTI Frankfurt eG, zbMATH, SCImago.

All books published in the series are submitted for consideration in Web of Science.

More information about this series at <https://link.springer.com/bookseries/15179>

Mostafa Al-Emran · Mohammed A. Al-Sharafi ·  
Mohammed N. Al-Kabi · Khaled Shaalan  
Editors

# Proceedings of International Conference on Emerging Technologies and Intelligent Systems

ICETIS 2021 Volume 2

 Springer

*Editors*

Mostafa Al-Emran  
The British University in Dubai  
Dubai, United Arab Emirates

Mohammed A. Al-Sharafi  
Universiti Teknologi Malaysia  
Johor, Malaysia

Mohammed N. Al-Kabi  
Al Buraimi University College  
Al Buraimi, Oman

Khaled Shaalan  
The British University in Dubai  
Dubai, United Arab Emirates

ISSN 2367-3370

ISSN 2367-3389 (electronic)

Lecture Notes in Networks and Systems

ISBN 978-3-030-85989-3

ISBN 978-3-030-85990-9 (eBook)

<https://doi.org/10.1007/978-3-030-85990-9>

© The Editor(s) (if applicable) and The Author(s), under exclusive license to Springer Nature Switzerland AG 2022

This work is subject to copyright. All rights are solely and exclusively licensed by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, expressed or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

This Springer imprint is published by the registered company Springer Nature Switzerland AG  
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

# Scientific Committee

## Conference General Chair

Prof. Khaled Shaalan, The British University in Dubai, United Arab Emirates.

## Conference Organizing Chair

Dr. Mostafa Al-Emran, The British University in Dubai, United Arab Emirates.

## Program Committee Chairs

Dr. Mohammed A. Al-Sharafi, Universiti Teknologi Malaysia, Malaysia.

Dr. Mohammed N. Al-Kabi, Al Buraimi University College, Oman.

## Publication Committee Chairs

Dr. Mohammed A. Al-Sharafi, Universiti Teknologi Malaysia, Malaysia.

Dr. Mostafa Al-Emran, The British University in Dubai, United Arab Emirates.

## Conference Tracks Chairs

Prof. Vitaliy Mezhuhev, FH JOANNEUM University of Applied Sciences, Austria.

Dr. Garry Tan Wei Han, UCSI University, Malaysia.

Dr. Ibrahim Arpaci, Gaziosmanpaşa University, Turkey.  
 Dr. AbdulRahman Al-Sewari, Universiti Malaysia Pahang, Malaysia.  
 Dr. Baraq Ghaleb, Edinburgh Napier University, UK.  
 Dr. Abdullah Nasser, Universiti Malaysia Pahang, Malaysia.

## Members of Scientific Committee

Abdallah Namoun, Islamic University of Medina, Saudi Arabia.  
 Abdualmajed Al-Khulaidi, Sana'a University, Yemen.  
 Abdulmajid Mohammed Abdulwahab Aldaba, International Islamic University Malaysia, Malaysia.  
 Abeer Dawood Salman Al-Nuaimi, Al Maarif University College, Iraq.  
 Ahmad Mohd Aziz Hussein, Umm Al-Qura Universit, Saudi Arabia.  
 Ahmed Jamal Ahmed, Al Maarif University College, Iraq.  
 Ahmed M. Mutahar, Management and Science University, Malaysia.  
 Aisyah Ibrahim, Universiti Malaysia Pahang, Malaysia.  
 Akhyari Nasir, University College TATI, Kemaman, Terengganu, Malaysia.  
 Alaa A. D. Taha, University of Mosul, Iraq.  
 Ali Ameen, Lincoln University, Malaysia.  
 Ali Nasser Ali Al-Tahitah, Universiti Sains Islam Malaysia, Malaysia.  
 Ali Qasem Saleh Al-Shetwi, Universiti Tenaga Nasional, Malaysia.  
 Ameen A. Ba Homaid, Universiti Malaysia Pahang, Malaysia.  
 Amir A. Abdulmuhsin, University of Mosul, Iraq.  
 Amr Abdullatif Yassin, Ibb University, Yemen.  
 Arwa Y. Aleryani, Independent Researcher, Canada  
 Azliza Jacob, University College TATI, Kemaman, Terengganu, Malaysia.  
 Bander Ali Saleh Al-Rimy, Universiti Teknologi Malaysia, Malaysia.  
 Basheer Mohammed Al-Haimi, Hebei University, Boading, China.  
 Bokolo Anthony Jnr., Norwegian University of Science and Technology, Norway.  
 Dalal Abdulmohsin Hammood, Middle Technical University, Iraq.  
 Eissa M. Alshari, Universiti Malaysia Kelantan, Malaysia.  
 Fadi A. T. Herzallah, Palestine Technical University, Kadoorie, Palestine.  
 Fathey Mohammed, Universiti Utara Malaysia, Malaysia.  
 Fuad Ali Mohammed Al-Yarimi, King Khalid University, Saudi Arabia.  
 Ghaleb H. Al-Gaphari, Sana'a University, Yemen.  
 Ghassan Saleh Hussein ALDharhani, Geomatika University College, Malaysia  
 Gonçalo Marques, Universidade da Beira Interior, Portugal.  
 Heider A. M. Wahsheh, King Faisal University, Saudi Arabia.  
 Hussam S. Alhadawi, Dijlah University College, Iraq.  
 Hussein Mohammed Esmail Abu Al-Rejal, University Utara Malaysia, Malaysia.  
 Ismail Ahmed Al-Qasem Al-Hadi, Universiti Malaysia Terengganu, Malaysia.  
 Joseph Ng, UCSI University, Malaysia.  
 Joshua A. Abolarinwa, Namibia University of Science and Technology, Namibia.

- Kamal Ali Alezabi, UCSI University, Malaysia.  
 Kamal Mohammed Alhendawi, Al-Quds Open University. Faculty of Management, Palestine.  
 Kauthar Mohd Daud, Universiti Malaysia Kelantan, Malaysia.  
 Majid Abdulateef Abdullah, University of Hafr Al Batin, Saudi Arabia.  
 Majid Salal Naghmarsh, Dijlah University College, Iraq.  
 Mohamed Elwakil, University of Cincinnati, USA.  
 Mohammed Ahmed Talab, Al Maarif University College, Iraq.  
 Muaadh Mukred, Universiti Kebangsaan Malaysia, Malaysia.  
 Muhammad Akmal Remli, Universiti Malaysia Kelantan, Malaysia.  
 Mustafa Musa Jaber, Dijlah University College, Iraq.  
 Nejoood Hashim Al-Walidi, Sanaa University, Yemen.  
 Noor Akma Abu Bakar, Universiti Malaysia Pahang, Malaysia.  
 Noor Al-Qaysi, Universiti Pendidikan Sultan Idris, Malaysia.  
 Noor Suhana Sulaiman, University College TATI, Kemaman, Terengganu, Malaysia.  
 Nooraida Samsudin, University College TATI, Kemaman, Terengganu, Malaysia.  
 Nur Ilyana Binti Ismarau Tajuddin, UCSI University, Malaysia.  
 Nur Sukinah Aziz, University College TATI, Kemaman, Terengganu, Malaysia.  
 Osama Al Sayaydeh, Universiti Malaysia Pahang, Malaysia.  
 Osama Mohammad Aljarrah, University of Massachusetts Dartmouth, USA.  
 Osamah A. M. Ghaleb, Almustaqbal University, Saudi Arabia.  
 Qasem Al-Tashi, Universiti Teknologi PETRONAS, Malaysia.  
 Qasim Al-Ajmi, A' Sharqiyah University, Oman.  
 Rayan Alanazi, Jouf University, Saudi Arabia.  
 Redhwan Al-Amri, Taylor's University, Malaysia.  
 Safwan Mahmood Yahya Ghaleb, University Malaysia Terengganu, Malaysia.  
 Salim M. Zaki, Dijlah University College, Iraq.  
 Samer Ali Alshami, Universiti Teknikal Malaysia Melaka, Malaysia.  
 Shahad Al-Yousif, Dijlah University College, Iraq.  
 Sinan Salih, Dijlah University College, Iraq.  
 Suhaila Zainudin, Universiti Kebangsaan Malaysia, Malaysia.  
 Sura Khalil Abd, Dijlah University College, Iraq.  
 Syahrul Fahmy Abdul Wahab, University College TATI, Kemaman, Terengganu, Malaysia.  
 Taha Hussein Rassem, Universiti Malaysia Pahang, Malaysia.  
 Tuty Asmawaty Abdul Kadir, Universiti Malaysia Pahang, Malaysia.  
 Vitaliy Mezhyuev, FH JOANNEUM University of Applied Sciences, Austria.  
 Waheed Ali Hussein Mohammed Ghanem, Universiti Malaysia Terengganu, Malaysia.  
 Yahya M. Al-Dheleai, Universiti Sains Malaysia, Malaysia.



**Publicity Committee**

Redhwan Al-Amri, Taylor’s University, Kuala Lumpur, Malaysia.

Noor Akma Abu Bakar, Universiti Malaysia Pahang, Kuantan, Malaysia.

# Preface

During the last decade, nobody denies the role of emerging technologies and intelligent systems in building digital societies and reshaping the knowledge-based economy. The number of experimental and theoretical findings is increasing rapidly due to the large number of successful emerging technologies. The role of those technologies has been witnessed across various domains, including healthcare, education, tourism, and industry, among others. The aim of the International Conference on Emerging Technologies and Intelligent Systems (ICETIS 2021) is to provide a forum for academics, scholars, and practitioners from academia and industry to share and exchange the recent developments in the domain of intelligent systems and emerging technologies. The ICETIS 2021 also aims to shed light on the emerging research trends in intelligent systems and their applications. Further, it attempts to concentrate on the recent design, developments, and modifications of intelligent systems and their applications. It also aims to provide a holistic view of the main theoretical models used to understand the adoption, acceptance, and continued use of intelligent systems and their applications.

The ICETIS 2021 was able to attract 249 submissions from 30 different countries across the globe. From the 249 submissions, we accepted 139 submissions, which represents an acceptance rate of 55.8%. Out of the 139 accepted submissions, 82 were selected to be published in this volume. The accepted papers were categorized under four different themes, including *Artificial Intelligence and Soft Computing*, *Information Security and Networking*, *Medical Informatics*, and *Advances in Information Systems*. Each submission is reviewed by at least two reviewers, who are considered experts in the related submitted paper. The evaluation criteria include several issues, such as correctness, originality, technical strength, significance, quality of presentation, interest, and relevance to the conference scope. The conference proceedings are published in *Lecture Notes in Networks and Systems Series* by Springer, which has a high SJR impact.

We acknowledge all those who contributed to the staging of the ICETIS 2021. We would also like to express our gratitude to the reviewers for their valuable feedback and suggestions. Without them, it was not possible to maintain the high quality and the success of the ICETIS 2021. As gratitude for their efforts, ICETIS

2021 is partnered with Publons to give an official recognition for the reviewers' contribution to peer review. This partnership means that reviewers can opt-in to have their reviews added to their Publons profile.

Dubai, United Arab Emirates  
Johor, Malaysia  
Al Buraimi, Oman  
Dubai, United Arab Emirates

Mostafa Al-Emran  
Mohammed A. Al-Sharafi  
Mohammed N. Al-Kabi  
Khaled Shaalan

# Contents

## Artificial Intelligence and Soft Computing

<b>ANN-Based Reference Evapotranspiration Estimation: Effects of Data Normalization and Parameters Selection</b> .....	3
Min Yan Chia, Yuk Feng Huang, and Chai Hoon Koo	
<b>Trend Analysis of the Effects of Climate Change on the Pan Evaporation Rate in Sabah, Malaysia</b> .....	13
Min Yan Chia, Yuk Feng Huang, Chai Hoon Koo, and Yeu Zhi Tan	
<b>Cow Image Segmentation Using Mask R-CNN Integrated with Grabcut</b> .....	23
Rotimi-Williams Bello, Ahmad Sufril Azlan Mohamed, and Abdullah Zawawi Talib	
<b>Forecasting of Reservoir Inflow Using Machine Learning—Case Study: Klang Gate Dam Reservoir</b> .....	33
Karim Sherif Mostafa Hassan, Yuk Feng Huang, Chai Hoon Koo, Tan Kok Weng, Ali Najah Ahmed, and Ahmed Hussein Kamel Ahmed Elshafie	
<b>An Unsupervised Semantic Model for Arabic/French Terminology Extraction</b> .....	49
Setha Imene and Aliane Hassina	
<b>Research on Improving E-commerce Logistics Service Customer Satisfaction Through Application of AGV in Intelligent Warehouse</b> .....	61
Ying Xi, Noorsiah Binti Ahmad, and Abdullah Al Mamun	
<b>Analyzing Tweet Data to Identify the Impact of Demonetization</b> . . . .	75
Kannan Suseelan Ummithan, Said A. Salloum, and Khaled Shaalan	

<b>Qualitative Study in Natural Language Processing: Text Classification</b> .....	83
Ahlam Wahdan, Said A. Salloum, and Khaled Shaalan	
<b>Heterogeneous Neural Collaborative Filtering for a Business Recommender System</b> .....	93
Vu Hong Quan and Phan Duy Hung	
<b>An Online Clustering Approach for Evolving Data-Stream Based on Data Point Density</b> .....	105
Md Kamrul Islam and Bishnu Sarker	
<b>Improving Sentiment Classification for Large-Scale Social Reviews Using Stack Generalization</b> .....	117
Lamees Abu Romman, Shaheen Khatoun Syed, Majed Alshhari, and Md Maruf Hasan	
<b>A Comparative Study on Autism Among Children Using Machine Learning Classification</b> .....	131
Ainie Hayati Binti Noruzman, Ngahzaifa Ab Ghani, and Nor Saradatul Akmar Zulkifli	
<b>The Role of Gear Grind Games in Creating a Motivating Learning Environment</b> .....	141
W. L. William Cheng, P. S. Joseph Ng, H. C. Eaw, and K. Y. Phan	
<b>Sensitivity Analysis of Intelligent Active Force Control Applied to a Quadrotor System</b> .....	153
Sherif I. Abdelmaksoud, Musa Mailah, and Ayman M. Abdallah	
<b>Scalable Smartification of Commercial Buildings HVAC Systems Using the Internet of Things and Machine Learning</b> .....	165
Mohammad Najah Mahdi, Taofiq Adeola Bakare, Abdul Rahim Ahmad, Adamu Muhammad Buhari, and Khalid Sheikhidris Mohamed	
<b>Features Extraction for Robust Face Recognition Using GLCM and CS-LBP</b> .....	175
Abeer D. Salman, Mohammed Ahmed Talab, and Ruqayah R. Al-Dahhan	
<b>Toward a Full Exploitation of IoT in Smart Cities: A Review of IoT Anomaly Detection Techniques</b> .....	193
Redhwan Al-Amri, Raja Kumar Murugesan, Eissa M. Alshari, and Hussam S. Alhadawi	
<b>Gaze Prediction Based on Convolutional Neural Network</b> .....	215
Abdulkader Helwan, Mohammad Khaleel Sallam Ma'aitah, Selin Uzelaltinbulat, Mohamad Ziad Altobel, and Manal Darwish	

**Stacked Autoencoders Deep Learning Approach for Left Ventricular Localization in Magnetic Resonance Slices** . . . . . 225  
 Abdulkader Helwan, Mohammad Khaleel Sallam Ma'aitah,  
 Selin Uzelaltinbulat, Bengi Sonyel, Mohamad Ziad Ziad Altobel,  
 and Manal Darwish

**Machine Learning Based Prediction of Edematous Malnutrition in Afghan Children** . . . . . 235  
 Ziaullah Momand, Mohammad Shuaib Zarinkhail,  
 and Mohammad Farhad Aryan

**Discrete Particle Swarm Optimization for User Grouping in 5G NOMA Networks** . . . . . 247  
 Hadhrami Ab. Ghani, Farah Najwa Roslim,  
 Eissa Mohammed Mohsen Al-Shari, Muhammad Akmal Remli,  
 Nurul Izrin Md Saleh, Nooraini Yusoff, Hasyiya Karimah Adli,  
 and Khairul Nizar Syazwan Wan Salihin Wong

**Ant-Colony Based User Grouping Modelling for Fast Cellular Networks** . . . . . 259  
 Ahmed Abdullah Ahmed Alhanik, Nur Asyiqin Hamzah,  
 Hadhrami Ab. Ghani, Mohammed Ahmed Salem, Azlan Abdul Aziz,  
 and Eissa Mohammed Mohsen Al-Shari

**A Systematic Approach to Transform Machine Learning Students' Performance Prediction Model into Preventive Procedures** . . . . . 269  
 Ijaz Khan, Abdul Rahim Ahmad, Nafaa Jabeur,  
 and Mohammed Najah Mahdi

**A Review on Intrusion Detection System Using a Machine Learning Algorithms** . . . . . 281  
 Huda Sirag and Sally Dafaallah Awadelkariem

**A Systematic Review for Sentiment Analysis of Arabic Dialect Texts Researches** . . . . . 291  
 Arwa A. Al Shamsi and Sherief Abdallah

**Crowdsourced NLP Retraining Engine in Chatbots** . . . . . 311  
 Mohammad Arif Nezami and Rakhshanda Rukham

**Early Detecting Students at Risk Using Machine Learning Predictive Models** . . . . . 321  
 Ahlam Wahdan, Sendeyah Hantooobi, Mostafa Al-Emran,  
 and Khaled Shaalan

**Chaotic Particle Swarm Optimization Based on Meeting Room Approach for Designing Bijjective S-Boxes** . . . . . 331  
 Hussam S. Alhadawi, Sinan Q. Salih, and Yasir Dawood Salman

## **Information Security and Networking**

<b>Performance of Effect for XPM and FWM in Fiber Optics</b> . . . . .	345
Mohammed Salah Abood, Mustafa Maad Hamdi, Bakr Ahmed Taha, Ahmed Shamil Mustafa, and Emad M. Alssaedi	
<b>Mobile 5G: Towards Technical View, Challenges and Issues</b> . . . . .	357
Ahmed Shamil Mustafa, Mustafa Maad Hamdi, and Mohammed Salah Abood	
<b>Federated Learning Approach for Privacy-Preserving on the D2D Communication in IoT</b> . . . . .	369
Tanweer Alam	
<b>A Performance Evaluation of Voice Over IP Protocols (SIP and H.323) in Wireless Network</b> . . . . .	381
Mustafa Sabah Noori, Ratna Kalos Zakiah Sahbudin, Mohammed Salah Abood, and Mustafa Maad Hamdi	
<b>Bringing Blockchain Technology in Innovating Industries: A Systematic Review</b> . . . . .	391
Daimler Benz, Muzaffar Hamzah, Mohd Fahmi Ghazali, and Mohammad Fadhli Asli	
<b>Improved Group-Based Signaling Scheme for Mobile Nodes in the Internet of Things Networks</b> . . . . .	417
Safwan M. Ghaleb, Mustafa Man, Baraq Ghaleb, Faizah Aplop, Mukhtar Ghaleb, and Ismail Ahmed Al-Qasem Al-Hadi	
<b>Design and Simulation a Patch Antenna for Dual-Band Frequencies</b> . . .	435
Mohammed Salah Abood, Ahmed Shamil Mustafa, Maha Fathy, Mustafa Maad Hamdi, and Mustafa Sabah Noori	
<b>Centroidal Polygon: A New Modified Euler to Improve Accuracy of Resistor-Inductor (RL) Circuit Equation</b> . . . . .	445
S. Nooraida, Z. Nur Shahirah, S. Noor Suhana, and N. Akhyari	
<b>Investigating the Relationship Between Medicine Student's Lifestyle and Their Academic Performance</b> . . . . .	455
Yahya Almuradha, Osama S. Mohammed, Hyder Mirghani, and Mukhtar Ghaleb	
<b>Improved Search Pattern with Discrete Wavelet Transform for Video Steganography</b> . . . . .	465
Hayfaa Abdulzahra Atee, Abidulkarim K. I. Yasari, and Dalal Abdulmohsin Hammood	
<b>Lightweight Cryptographic and Artificial Intelligence Models for Anti-smishing</b> . . . . .	483
Heider A. M. Wahsheh and Mohammed S. Al-Zahrani	

**Use of Multi Agent Knowledge Management System in Technology Service Providers . . . . . 1019**  
Fatma Ahmad Bazargan, Said A. Salloum, and Khaled Shaalan

**Impact of Knowledge Management on Organizational Performance . . . . . 1035**  
Reem Bayari, Arwa A. Al Shamsi, Said A. Salloum, and Khaled Shaalan



**Four-Port Wideband Circular Polarized MIMO Antenna for Sub-6 GHz Band** ..... 909  
 Alyaa S. Abdullah, Seham A. Hashem, Wisam S. Al-Dayyeni, Mahmood F. Mosleh, and Ihab Hassoun

**Cryptographic Pseudo-Random Bit Generator Based on New Combination Discrete Chaotic Systems** ..... 921  
 Muhammad Hamid, Musheer Ahmad, Hussam S. Alhadawi, and Shivam Chandhok

**E-Wallet Awareness: The Expansion of Knowledge in Rural Area in Terengganu Malaysia Due to Coronavirus** ..... 931  
 Nurul Izzah, Mazni Mohamed, Farah Dilaila, Siti Nur Fathiah, and Fify Syazwana Amelda

**MySimB’: An Interactive Learning Malay Idioms with Augmented Reality** ..... 945  
 Nur Sukinah Aziz, Azliza Yacob, Saadiah A. Rahman, Nur Liyana Zakaria, Noor Suhana Sulaiman, and Wan Nur Idayu Tun Mohd Hassan

**A Review of Cyber Security Awareness (CSA) Among Young Generation: Issue and Countermeasure** ..... 957  
 Noor Suhana Sulaiman, Azliza Yacob, Nur Sukinah Aziz, Nooraida Samsudin, Wan Ainul Alyani Wan Mohamed, Saadiah A. Rahman, Wan Nur Idayu Tun Mohd Hassan, Akhyari Nasir, Syahrul Fahmy Abdul Wahab, and Wan Roslina Wan Othman

**Extending UTAUT to Understand the Acceptance of Queue Management Technology by Physicians in UAE** ..... 969  
 Adi A. AlQudah and Khaled Shaalan

**The Mediating Effect of Competitive Advantage on the Relationship Between Human IT Resources and Performance** ..... 983  
 Ehsan Ali Salem Alqararah and Wan Mohd Nazri Bin Wan Daud

**A Comprehensive Analytical Case Study on Plisse Fashion Design L.L.C** ..... 993  
 Mohamed Abdulla, Omar Khalid, Said A. Salloum, and Khaled Shaalan

**Applying Knowledge Map System for Sharing Knowledge in an Organization** ..... 1007  
 Fatema Hamad Mezahem, Said A. Salloum, and Khaled Shaalan

**Implementing a Talent Management System in a Group of Companies—A Case Study from UAE** ..... 795  
 Abdulla M. Alsharhan, Said A. Salloum, and Khaled Shaalan

**Adoption of Picture Archiving and Communication System (PACS) by Healthcare Professionals** ..... 807  
 Ibrahim Arpaci, Saeed Barzegari, and Fatemeh Askarian

**Robotic Process Automation Technology Acceptance: A Case Study from Austrian Companies** ..... 815  
 Martin Tschandl, Vitaliy Mezhuyev, and David Möstl

**A Comprehensive Review of Innovation Adoption Types and Their Effects on the Project Performance** ..... 827  
 Majid G. Al-Nabae and Dania Sammani

**The Role of Digital Platforms in Alleviating the Fear of Entrepreneurial Failure: A New Conceptual Framework** ..... 837  
 Khalid Mady, Mohamed Elsotouhy, and Mohamed Battour

**The Soft Side of Technology Adoption: A Study of Customer Experience on Mobile Phone Usage** ..... 849  
 Yet Mee Lim, Tat-Huei Cham, Jason Wai Chow Lee, and Chuen Kee Pek

**Artificial Intelligence Applications in Halal Tourism to Assist Muslim Tourist Journey** ..... 861  
 Mohamed Battour, Khalid Mady, Mohamed Elsotouhy, Mohamed Salaheldeen, Israa Elbendary, Mohamed Marie, and Idris Elhabony

**Assistive Technology and Its Impact on Educational Achievement for Visually Impaired Students at SKPK Princess Elizabeth** ..... 873  
 Hussein Mohammed Esmail Abualrejal, Hassan Olayan Shtawi, Mohamad Ghozali Hassan, Amer Zaid Alqudah, and Amal Abdulwahab Alamrani

**University Parcel Centre Services Quality and Users’ Satisfaction in Higher Education Institutions: A Case of Universiti Utara Malaysia** ..... 885  
 Hussein Mohammed Abualrejal, Amer Zaid Alqudah, Ahmed Ali Atieh Ali, Oussama Saoula, and Tareq Khaled AlOrmuza

**Does the Capability of Information Management, Knowledge Management, Innovation and Technology Affect the Sustainable Competitive Advantage of SMEs in Malaysia?** ..... 897  
 Nurul Huda Md Yatim, Najatul Afiqah Mohd Affandi, and Hazila Timan

**Psychometric Characteristics of the Iranian Smartphone Addiction Inventory Short Form (SPAI-SF)** . . . . . 633  
 Ibrahim Arpaci, Saeed Barzegari, Hamed Mahmoodi, Elham Afrooz, and Avishan Zanganeh Ranjbar

**Diabetes Mellitus Prediction and Feature Importance Score Finding Using Extreme Gradient Boosting** . . . . . 643  
 Laboni Akter and Ferdib-Al-Islam

**Factors Influencing E-payment Adoption. Case Study: Pandemic COVID-19** . . . . . 655  
 Dounia Dahab and Fatine Bouqlila

**Adam Optimized Deep Learning Model for Segmenting ROI Region in Medical Imaging** . . . . . 669  
 Mustafa Musa Jaber, Sura Khalil Abd, and Saif Mohammed Ali

**Analyzing the Digital Pathology Images Using Optimized Generative Adversarial Deep Learning Networks** . . . . . 693  
 Sura Khalil Abd, Mustafa Musa Jaber, and Saif Mohammed Ali

**Critical Analysis of Electronic Health Readiness Assessment Factors for Development of e-Health Framework in Iraq** . . . . . 717  
 Saif Mohammed Ali, M. A. Burhanuddin, Ibrahem T. Nather, Mustafa Musa Jaber, and Sura Khalil Abd

**Toward Iraqi Healthcare System Framework** . . . . . 737  
 Saif Mohammed Ali, Sura Khalil Abd, Mustafa Musa Jaber, and Ali Taha Yaseen

**Advances in Information Systems**

**Adoption of Cloud-Based E-Government Services: A Bibliometric Analysis and Research Agenda** . . . . . 747  
 Atheer Al-Haideri, Ahmad Shukri Mohd Noor, and Ismail Ahmed Al-Qasem Al-Hadi

**Implementing Knowledge Management in an IT Startup: A Case Study** . . . . . 757  
 Dena Ahmed, Said A. Salloum, and Khaled Shaalan

**Managing Knowledge in Social Media** . . . . . 767  
 Mohamed Abdulla, Omar Khalid, Said A. Salloum, and Khaled Shaalan

**Overviews of Uncertainty: Concepts, Categories and Coping Strategies in Decision Making** . . . . . 783  
 Aisyah Ibrahim, Tuty Asmawaty Abdul Kadir, Hamdan Daniyal, and Adzhar Kamaludin

**URL Links Malicious Classification Towards Autonomous Threat Detection Systems** . . . . . 497  
 Mohammad Alsmadi, Izzat Alsmadi, and Heider A. M. Wahsheh

**Face Recognition Using Neural Network Technique and Binary Pattern Methods** . . . . . 507  
 Mousa K. Walli, Ali Mohammed Kadhim, and Mohammed Wajeih Hussein

**Performance Enhancements of the Indoor Localization System Based on Dynamic ToA and RSS Mechanisms** . . . . . 521  
 Zahraa Abbas, Faeza A. Abed, Nazar J. Alhyani, and Mahmood F. Mosleh

**An RPL Based Optimal Sensors Placement in Pipeline Monitoring WSNs** . . . . . 533  
 Isam Wadhaj, Craig Thomson, and Baraq Ghaleb

**Wireless Sensor Networks (WSN) in Oil and Gas Industry: Applications, Requirements and Existing Solutions** . . . . . 547  
 Isam Wadhaj, Craig Thomson, and Baraq Ghaleb

**Applying Human Behaviour Recognition in Cloud Authentication Method—A Review** . . . . . 565  
 Mohanaad Shakir

**An Intrusion Detection System Based on Hybrid of Particle Swarm Optimization (PSO) and Magnetic Optimization Algorithm (MOA)** . . . . . 579  
 Siti Norwahidayah Wahab, Noor Suhana Sulaiman, Noraniah Abdul Aziz, Nur Liyana Zakaria, and Ainal Amirah Abd Aziz

**Medical Informatics**

**An Enhancement of Succinate Production Using a Hybrid of Bacterial Foraging Optimization Algorithm** . . . . . 591  
 Shen Yee Siow, Mohd Saberi Mohamad, Yee Wen Choon, Muhammad Akmal Remli, and Hairudin Abdul Majid

**Analysis of Outpatient Visit Pattern and Waiting Time Prediction for Selected Public Health Clinics in Selangor** . . . . . 603  
 Suhaaila Zainudin and Dzulhusni Anjang Ab. Rahman

**Case Study: The Implications of Knowledge Management Tools on the Process of Overcoming COVID-19** . . . . . 613  
 Fatima Almatrooshi, Sumayya Alhammadi, Said A. Salloum, and Khaled Shaalan

**Sentiment Analysis of Arabic COVID-19 Tweets** . . . . . 623  
 Dena Ahmed, Said A. Salloum, and Khaled Shaalan