كليات الخليج
Gulf Colleges

ICoESAT
International Conference on Emerging Systems and Advanced Technology

PROGRAMME BOOK 2025

THE 1ST INTERNATIONAL CONFERENCE ON EMERGING SYSTEMS AND ADVANCED TECHNOLOGY (ICOESAT 2025)

"Creativity of Information Technology for Sustainable Future"

14th - 15th April 2025

Gulf Colleges, Hafar Al-Batin, Kingdom Saudi Arabia

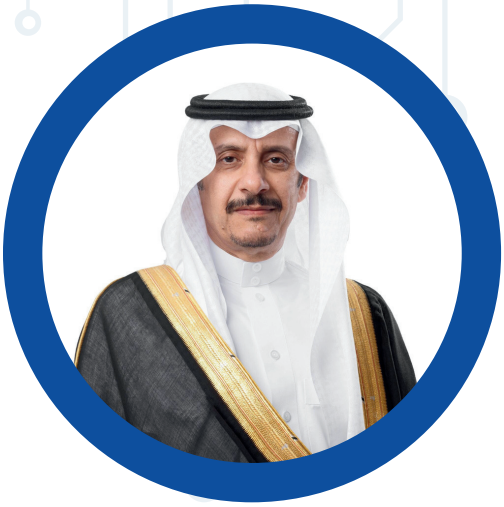
AIP Conference Proceedings

Scopus

TABLE OF CONTENTS

INTRODUCTION

The 1st International Conference on Emerging Systems and Advanced Technology (ICoESAT 2025) is an international forum that provides researchers, scholars, and professionals with a platform to share and discuss cutting-edge advancements and innovative research in the fields of applied computer science, electronics, and information technology. This conference will provide an excellent opportunity for knowledge sharing and exchanging research ideas in the aforementioned disciplines to enhance the quality of life and meet future challenges. This conference is open to all researchers, postgraduate students, and postdoctoral students from around the world. ICoESAT 2025 will be held in a hybrid format on April 14-15, 2025. ICoESAT 2025 hosted by Gulf Colleges, Saudi Arabia.



"Scientific research and education are the cornerstones of development and innovation. Through education, minds are enlightened, and through research, societies progress by uncovering solutions to their most pressing challenges. Together, they pave the way for sustainable growth, knowledge-based economies, and empowered generations prepared to lead the future.

In recognition of these values, we extend our heartfelt thanks and deep appreciation to His Royal Highness the Emir of Hafar Al-Batin Province Abdul Rahman bin Abdullah Al Saud for his unwavering support and dedication to
advancing education and scientific research in the region."

FOREWORD BY Board of Trustees Chairman

"Esteemed guests,

Peace, mercy, and blessings of Allah be upon you.

It is my pleasure on this auspicious day to address your esteemed gathering at an occasion that embodies the vision of a nation and the ambition of a people towards scientific and intellectual excellence. The convening of this educational meeting is not merely an academic event, but rather a conscious step towards building a future we take pride in, one based on knowledge work, creativity and innovation.

Education has become the cornerstone of the advancement of nations and the key to real change. In the Governorate of Hafar Al Batin, we believe that investing in people is the noblest choice, and that building minds is no less important than building cities.

Hence, the importance of such events that enrich thought and deepen the partnership between universities, researchers, and decision-makers, ensuring the transfer of knowledge and its transformation into a tangible reality that serves the nation and elevates its standing.

I thank those in charge of this meeting and appreciate the efforts made to organize it, wishing you enriching scientific sessions and outcomes that meet all our aspirations.

Dr. Mohammed bin Dhafir Al-Dosari

Board of Trustees Chairman

FOREWORD BY CHAIR

Today, during the 1st International Conference on Emerging Systems and Advanced Technology (ICoESAT 2025), it is a great pleasure to extend a warm greeting to our participants who were fortunate enough to be with us either online or physically at Hafar Al-Batin, KSA. This proceeding contains the papers presented at ICoESAT 2025, the premier forum for the presentation of new advances and research results in the fields of computer science, electrical engineering, and technology. The conference brings together leading researchers, engineers, and scientists from around the world in the domain of interest. The conference covers topical issues, including computer networks and security, Software Engineering, Robotics and Automation, Artificial Intelligence and data science, Modern Communication Technology and Broadcasting, and Sustainable and Renewable Energy. The technical program of this conference includes three keynote speakers and 33 fully accepted papers out of 69 received papers from different countries around the world, which were accepted and presented physically or in an online presentation format with 4 sessions taking place in the main hall at Gulf Colleges and virtual Microsoft Team meeting rooms.

All papers were rigorously peer-reviewed by reviewers drawn from a large pool of technical committee members and other international experts in related fields. The proceedings of ICoESAT 2025 will be published in AIP Conference Proceedings. We are indebted to the organizing committee, the reviewers, our honored keynote speakers, and the volunteers, who deserve much credit for all the time and effort put in for the successful run of the conference, which culminated with the publication. Without their relentless efforts, this conference would not be possible. We also wish to express our appreciation to all the authors whose papers and presentations make the event a very exciting forum to add value to learning, discussing, and exchanging ideas, and meeting old or new people from different countries and interacting with them. We owe a great deal of gratitude to the organizing committee, reviewers, esteemed keynote speakers, and volunteers for their tireless work and dedication, which resulted in the successful execution of the conference and its publication. We could not have this conference without their unwavering efforts. We would also want to thank all of the authors whose papers and presentations contribute to making the event an interesting platform for learning, discussion, and idea exchange, as well as for meeting and interacting with new and old international friends.

thanks

Dr. Samir Salem Al-Bawri
Chair
ICoESAT 2025

FOREWORD BY GULF COLLEGES DEAN

Assalamu alaikum wa rahmatullahi wa barakatuh

Dear partners, colleagues, presidents of public and private universities, distinguished guests, presenters and participants.

Peace be upon you

In the name of God, the Most Gracious, the Most Merciful.

It is my pleasure and honor to welcome you all to this distinguished scientific conference dedicated to information technology, one of the most important pillars of progress in our contemporary world. The convening of this conference stems from our deep belief in the importance of keeping pace with the rapid developments in the field of information technology and the role of higher education institutions in leading these transformations through scientific research, innovation, and building qualified young competencies.

We at Al-Khaleej College are proud to organize this event, which brings together a panel of researchers, specialists, and students to exchange visions and review the latest developments in this vital field.

We hope that this conference will be a platform for enriching knowledge and strengthening cooperation between academic and industrial institutions in a way that contributes to serving our society and developing our digital economy.

I thank everyone who contributed to the organization of this conference, and I especially thank the organizing committee and the supporting entities, wishing everyone a fruitful and successful participation.

Peace, mercy, and blessings of God be upon you.

Dr. Badr bin Ali Al-Shehri

Dean of the College

COMMITTEE MEMBERS

Patron

Prince Abdul Rahman bin Abdullah Al Saud

Advisor

Dr. Mohammed bin Dhafir Al-Dosari

Dean

Dr. Badr bin Ali Al-Muaaf

Vice Dean

Dr. Sultan bin Saad Al-Harbi

Chairman

Dr. Samir Salem Al-Bawri

Technical Programme and Publication Committee

Dr. Samir Salem Al-Bawri

Ts. Dr. M. Rokonuzzaman , Monash University, Malaysia Dr. Syed Muzahir Abbas, Macquarie University, Australia Dr. Samera Barraood, HU, YemenDr. Bahaa Al-Din Hamouda, Gulf Colleges, KSAMr. Abdullah Ashor, UNITEN, MalaysiaDr. Shafinah Farvin Packeer Mohamed,UUM, Malaysia Dr. Dalal Al-Alimi, Gulf Colleges, KSADr. Samia Larguech, Princess Nourah bint Abdulrahman University, KSA Dr. Hamza Mashagba, UniMAP, Malaysia

Treasurer

Majed Farraj Al MutairiKacem Med Abdelkader

Local Arrangement and Logistics

Ms. Raneem Alfuhaid

KEYNOTE SPEAKER 1

Professor Dr. Hmood Al-Dossari
King Saud University, Riyadh, Saudi Arabia

Dr. Hmood is a Full Professor at the College of Computer and Information Sciences, King Saud University. He holds an MS and PhD in Computer Science from King Saud University and Cardiff University. His research focuses on Data Mining, Big Data Analytics, Machine Learning, and Data Governance, with over 50 published papers in international conferences and journals. He has served as a consultant for major Saudi organizations and has worked on AI-driven business and analytics projects. Dr. Hmood has also led training programs at MIT, Essex University, and SIGCOMM and is an active member of Big Data Analytics and Information Systems Engineering research groups

Title: Revolutionizing Education: The Impact of AI on User Experience in Learning

Abstract:

Artificial Intelligence (AI) is transforming the educational landscape by redefining user experiences in learning environments. From personalized learning pathways to intelligent tutoring systems, AI-driven solutions are enhancing engagement, accessibility, and efficiency in education. This talk

explores the intersection of AI and user experience, highlighting how adaptive technologies, natural language processing, and machine learning algorithms are reshaping the way students interact with educational platforms. We will discuss key advancements such as AI-driven content recommendation, automated assessment, and conversational AI for student support. Additionally, we will examine the ethical implications and challenges of integrating AI in education, ensuring inclusivity and fairness.

KEYNOTE SPEAKER 2

Professor Emerita Dr. Ku Ruhana Ku-Mahamud
Universiti Utara Malaysia (UUM), Malaysia

Prof. Emerita Dr. Ku Ruhana holds a Bachelor's degree in Mathematical Sciences and a Master's degree in Computing, both received from Bradford University, United Kingdom, in 1983 and 1986, respectively. Her PhD in Computer Science was obtained from Universiti Pertanian Malaysia in 1994. Prof. Dr. Ku Ruhana's academic career began with her appointment as a teacher after receiving her Postgraduate Diploma in Teaching from Universiti Kebangsaan Malaysia in April 1984. She was later appointed as a Universiti Utara Malaysia (UUM) tutor and lecturer in August 1984 and January 1987, respectively, and as a professor in 2003. Dr. Ku Ruhana has held several administrative posts at UUM. In 1994, she was appointed the Deputy Dean of the Faculty of Information Technology, and later became Director of the Centre for Innovations in Education in 1997. From 1998 until 2000, she led UUM's Centre for Professional and Continuing Education. In 2003, she was appointed as Dean for the Faculty of Information Technology, as Dean of the Centre for Graduate Studies in 2005, and as Dean for Academic Development in 2008. She returned as the Dean to Awang Had Salleh Graduate School in 2019. Currently, she serves as a Professor Emerita in the Department of Computer Science, School of Computing, UUM. Additionally, she is an Adjunct Professor at Shibaura Institute of Technology, Japan, and Asia e-University, Malaysia. She also holds Visiting Professor positions at Universitas Islam Indragiri and Universitas Muhammadiyah Yogyakarta, Indonesia.

As an academic, her research interests include computer systems performance modelling, ant colony optimization, computational intelligence, and wireless sensor networks. Her book on 'C Programming' won the Best Publication Award in the academic book category in 1999. In 2002, she published another academic book, 'Mathematics for Business'. She served as the Chief Editor of the Journal of Information and Communication Technology for 21 years and as an associate editor for several other refereed journals.

Title: Hybrid metaheuristic approaches for feature selection in classification

Abstract:Feature selection plays a critical role in enhancing the performance of classification algorithms by identifying the most relevant features from datasets. Traditional feature selection methods often struggle with the complexity of large datasets, where irrelevant or redundant features can degrade model accuracy and increase computational cost. Metaheuristic algorithms are the most effective techniques for managing features. Recent studies have focused on using hybrid metaheuristics to solve feature selection problem due to their ability to explore large solution spaces efficiently. Hybrid metaheuristic approaches, which combine the strengths of multiple optimization techniques are used to overcome problems of single metaheuristics such as premature convergence or insufficient exploration of the solution space. Various hybrid metaheuristic algorithms for feature selection related to single and multi-objectives, balancing the exploration and exploitation of the solution space, improving the quality of selected feature subsets and performance metrics will be explored.

KEYNOTE SPEAKER 3

Professor Dr. Himdi Mohamed
University of Rennes 1, France

MOHAMED HIMDI received the Ph.D. degree in signal processing and telecommunications from the University of Rennes 1, France in 1990. Since 2003, he has been a Professor with the University of Rennes 1, and the Head of the High Frequency and Antenna Department until 2013, and from 2024 of IETR. He has authored or co-authored 173 journal papers and over 350 papers in conference proceedings. H-index 39 He has also co-authored 12 book chapters. He holds 49 patents. His research activities concern passive and active millimeter-wave antennas. His research also includes the development of new architectures of antenna arrays, and new three-dimensional (3-D) antenna technologies. He was Laureate of the 2d National Competition for the Creation of Enterprises in Innovative Technologies in 2000 (Ministry of Industry and Education). In March 2015 he received the JEC-AWARD at Paris on Pure composite material antenna embedded into a motorhome roof for the Digital Terrestrial Television reception. He received the Innovation Trophy 2021 from University of Rennes 1. In 2024, he received with student Nur Biha the Gold Award for thr invention/Innovation category from iMTC 9.0 in Universiti Putra Malaysia.

Title: Reconfigurable Artificial Material for RF Circuits and Antennas

Abstract: As next-generation wireless telecommunication systems continue to evolve, researchers are increasingly investigating technologies that enable the reconfiguration of critical front-end components. This study focuses on reconfigurable passive devices, presenting innovative approaches developed by various research teams. Here, we propose the use of reconfigurable artificial materials for RF circuits and antennas based on the "Field-Programmable Microwave Substrate (FPMS)". This solution enables a wide range of reconfigurable microwave functions—including attenuation, power division, phase shifting, and antenna arrays—through an ultra-reconfigurable FPMS matrix. Additionally, we explore "Half-Mode Substrate Integrated Waveguide (HMSIW) antennas" with two key designs: the first utilizes varactor diodes for beam steering at a fixed frequency. In contrast, the second integrates advanced FPMS technology to achieve fixed beam directions over a broad bandwidth.

This study demonstrates the feasibility of integrating these capabilities into a single antenna system, opening the door to more flexible and adaptive applications in modern wireless communications. Several examples of RF circuits, antennas, and inhomogeneous lenses across different frequency bands will be presented during the conference.

CONFERENCE SCHEDULE

14th April 2025 Monday	
Event	KSA Time (GMT+3)
Registration	08:00-08:30
Opening Ceremony	08:30-08:35
Video about the college /queraan	08:35-08:45
Officiating Remarks **His Excellency** Dr/ Mohammed El-Dossari	08:45-08:55
His Excellency Dr/ Badr Al-Moaafa	08:55-09:00
His Excellency Dr/ Bahaa El-din Hamood	09:00-09:05
Honouring the conference supporters	09:05-09:10
Group photo	09:10-09:15
Keynote 1: Revolutionizing Education: The Impact of AI on User Experience in Learning **Professor Dr. Hmood Al-Dossari** King Saud University, Riyadh, Saudi Arabia **Chair: Dr. Samir Salem Al-Bawri**	09:15-09:55
Break	09:55-10:30
Session 1: Computer Networks & Security (CNS), Artificial Intelligence and data science (AID)	10:30-12:15
Pray/Lunch Time	12:15-13:30
Keynote 2: Hybrid metaheuristic approaches for feature selection in classification **Professor Emerita Dr. Ku Ruhana Ku-Mahamud** Universiti Utara Malaysia (UUM), Malaysia **Chair: Dr. Bahaa Al-Din Hamouda**	13:30-14:15
Session 2: Artificial Intelligence and data science (AID), Robotics and Automation (R&A)	14:20-16:20
Tea Break	

15th April 2025 Tuesday	
Event	KSA Time (GMT+3)
Registration	08:00-09:15
Keynote 3: Modern Technologies for Medical Waste Management, from an Environmental Perspective **Professor Dr. Himdi Mohamed** University of Rennes 1, France **Chair: Dr. Samir Salem Al-Bawri**	09:20-10:05
Session 3: Software Engineering (SoE), Modern Communication Technology and Broadcasting (MCT)	10:10-12:10
Pray/Lunch Time	12:10-13:10
Session 4: Modern Communication Technology and Broadcasting (MCT), Sustainable and Renewable Energy (SRE)	13:10-16:40
Tea Break	14:45-15:00
END CERMONY	15:00:15:30

TECHNICAL PROGRAMME

Monday. April 14, 2025		
SESSION 1	:	**Computer Networks & Security (CNS), Artificial Intelligence and data science (AID)**
Venue	:	Main Hall + Online
Session Chair	:	Dr. Samera Obaid Barraood, Dr. Bahaa Al-Din Hamouda
Time	:	10:30-12:15 (KSA Time, GMT+3)
S1: CNS-1		*Factors Shaping the Adoption of Cloud Computing Service Models in SMEs: a Systematic Literature Review and Theoretical Framework* **Ammber Nosheen**; Kamarul Faizal Hashim; Mohd. Adan Bin Omar; Samera Obaid Barraood **(Online)**
S1: CNS-2		*A Rapid and Intelligent Framework for Cybersecurity: Feature Optimization and Hybrid Deep Learning* **Dalal AL-Alimi** and Hael Al-bashiri **(Present)**
S1: CNS-3		*Advancing Aquaculture with Acoustic Technology: Sustainable Strategies for Intelligent Fisheries Management* Ahmad Anwar Zainuddin; Krishnan Subramaniam; Mohd Izzuddin Mohd Tamrin; Dini Handayani; Saidatul Izyanie Kamarudin; Siti Maisarah Abdul Aziz; Nur Aqila Zawana Mohamad; Nur Aqilah Mumtaz Binti Anuar; **Siti Aishah Abdul** and Aziz; Hani Manoj (**Online**)
S1: CNS-4		*Modularity for Open-Source Project Desertion: Evidence from the Public Blockchain Software Development* **Sarkin Tudu Shehu Malami Shehu Malami**; Alawiyah Abd Wahab; Huda Ibrahim; Samera Obaid Barraood; Naseer S Ajoge **(Online)**
S1: CNS-5		*Lightweight Blockchain Solutions for IoT Overcoming Resource Constraints, Scalability, and Interoperability Challenges* **Yassine Maadallah**; Younès EL Bouzekri El Idrissi; Youssef Baddi **(Online)**
S1: AID-1		*Proactive Predictive Analytics in Cybersecurity Using Machine Learning Models: a Review Study* Salwa Awad; **Hosamaldeen Hamd Abdallah (Present)**
S1: AID-2		*Machine Learning Base Surface Water Standard Measurement: Case Study on Buriganga River Dhaka Bangladesh* **AKM Ahasan Habib**; Sadia Parvin Sanchita; Fouzia Kabir; Samir Salem Al-Bawri; Md Rokonuzzaman **(Online)**

TECHNICAL PROGRAMME

Monday. April 14, 2025		
SESSION 2	:	**Artificial Intelligence and data science (AID), Robotics and Automation (R&A)**
Venue	:	Main Hall + Online
Session Chair	:	Dr. Shafinah Farvin Packeer Mohamed and Dr. Mohammed Farooque Kkhalil
Time	:	14:20-16:20 (KSA Time, GMT+3)
S2: AID-3		*Increasing Hyperspectral Image Classes Separation* **Dalal AL-Alimi (Present)**
S2: AID-4		*Adaptive Binary Grey Wolf Optimization and Particle Swarm Optimization Algorithm for Heart Disease Classification* **Manal Othman**; Ku Ruhana Ku-Mahamud **(Online)**
S2: AID-5		*A Review of Hybrid Movie Recommendation Systems Integrating Machine Learning Techniques* **Hael Al-bashiri**; Zaynab Almutairi; Dalal AL-Alimi; Faten Ameen Saif; Hosamaldeen Hamd Abdallah **(Present)**
S2: AID-6		*Logistics Infrastructure Classification Using CNN and Transfer Learning* Hamza Ahmad Mashagba; Putra Sumari; **Lara A AL-Mashagba**; Fathiya Al Abri; Samir Salem Al-Bawri **(Online)**
S2: AID-7		*Enhanced Wind Speed Prediction with Deep Learning Models Optimized by Metaheuristic Algorithms* **Abdullah Ashoor Subih**; Jagadeesh Pasupuleti **(Online)**
S2: R&A-1		*AZOLLAHUB: Automated Azolla Hydroponic System* Ariel M Lorenzo; Marvin S Silva; Ryan Jhes Tolentino; Zyrus Matias; Reu Angelo Miguel; Francis Jan Placido; Aira Jane Cuntapay Bassig **(Online)**
S2: R&A-2		*AI-Powered Multi-Functional Prosthetic Hand for Amputees* **Motab T Almousa**; Mohammed Al-Salmi; Abdulaziz Al-Obaidi; M. Jawad Khan **(Online)**
S2: R&A-3		*Advancing Karyogram Classification Through Vision Transformers and Explainable AI* **Motab T Almousa**; M. Jawad Khan; Sumaira Tabassum **(Online)**

TECHNICAL PROGRAMME

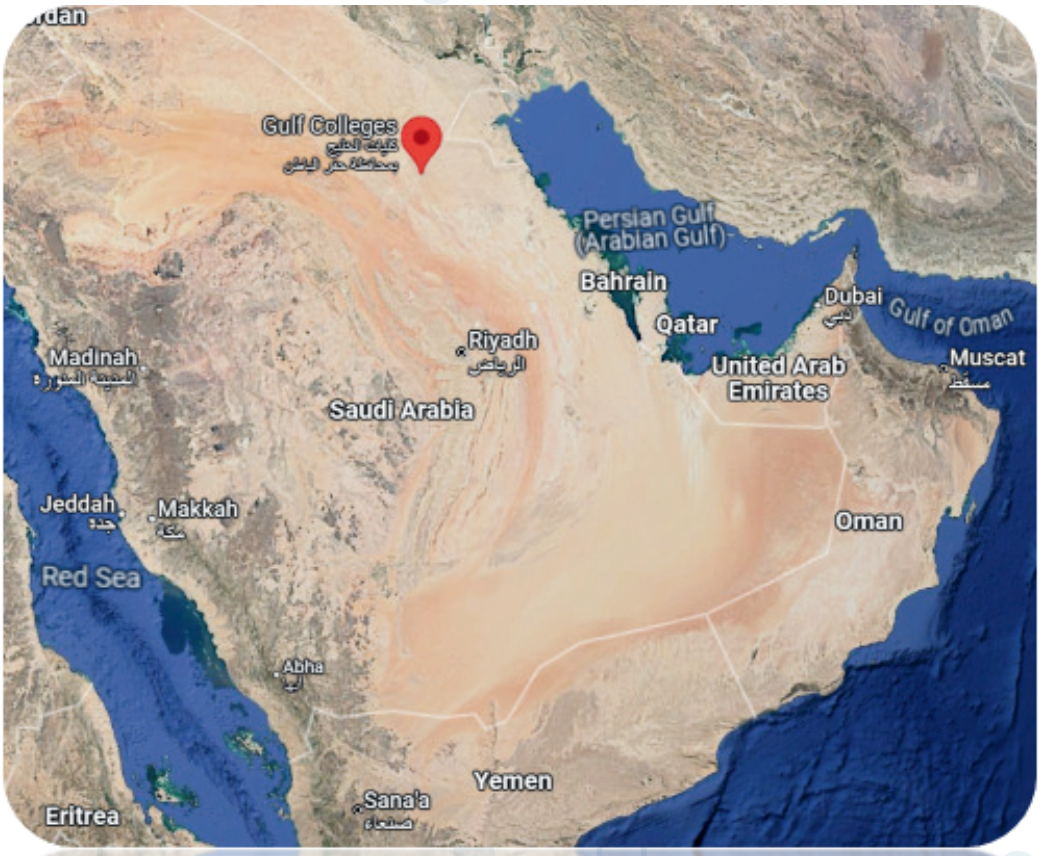
Tuesday, April 15, 2025		
SESSION 3	:	**Software Engineering (SoE), Modern Communication Technology and Broadcasting (MCT)**
Venue	:	Main Hall + Online
Session Chair	:	Dr. Samir Salem Al-Bawri and Dr. Hael El-Beshiri
Time	:	10:10-12:10 (KSA Time, GMT+3)

S3: SoE-1	*Metrics for the Design and Evaluation of Learner Experience of LMS Platforms* **Emmanuel Mkpojiogu**; Munya Saleh Ba Matraf; Salah Mortada; Mohd Zhafri Mohd Zukhi **(Online)**
S3: SoE-2	*A Novel Approach for Software Quality Prediction with Deep Learning Method* **Mohammed Farooque Kkhalil (Present)**
S3: SoE-3	*A Usability Evaluation Model for Mobile Learning for Hearing-Impaired Children* **Nor Hanina Zainal Abidin**; Nor Laily Hashim; Munya Saleh Ba Matraf; Norhanisha Yusof **(Online)**
S3: SoE-4	*YUAN: an Interactive Mobile Application for Chinese Language Learning Through Engaging Pedagogical Strategies and Adaptive Feedback* **Norhanisha Yusof**; Kong Ivan; Ding Le and Ung Ye; Nor Laily Hashim; Nor Hanina Zainal Abidin; Munya Saleh Ba Matraf **(Online)**
S3: SoE-5	*Effect of Software Refactoring on Code Complexity: an Exploratory Study* **Abdullah Almogahed**; Hairulnizam Mahdin; Samera Obaid Barraood; Abdulwadood Alawadhi; Mazni Omar; Mustafa Moosa Qasim; Manal Othman; Abdul Rehman Gilal **(Online)**
S3: SoE-6	*Documentation Quality for Effective and Reusable Test Cases: an Expert's Perspective* **Samera Obaid Barraood**; Sarkin Tudu Shehu Malami Shehu Malami; Haslina Mohd; Fauziah Baharom; Abdullah Almogahed; Wafa Zubair Abdullah **(Online)**
S3: SoE-7	*Development and Evaluation of an Educational Mobile Game to Raise Awareness of Waste Separation* **Derian Ardenichson**; Jonathan Kurniawan and Muhamad Fajar **(Present)**
S3: MCT-1	*Design and Development of Helix Antennas Using Artificial Intelligence and Machine Learning* Jiayi Wang; Hijab Zahra; Falak Naz; Mahyar Shirvanimoghaddam; Samir Salem Al-Bawri; **Syed Muzahir Abbas (Online)**

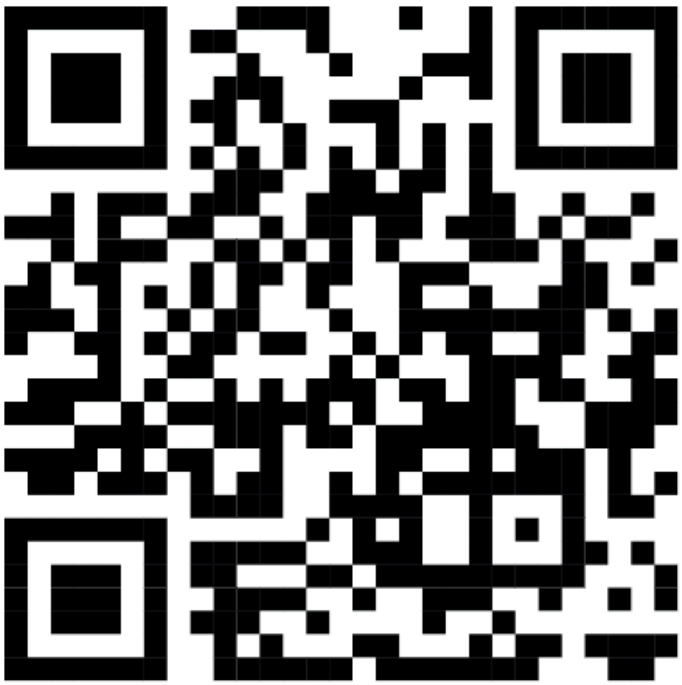
TECHNICAL PROGRAMME

Tuesday. April 15, 2025		
SESSION 4	:	**Modern Communication Technology and Broadcasting (MCT), Sustainable and Renewable Energy (SRE)**
Venue	:	Main Hall + Online
Session Chair	:	Dr. Syed Muzahir Abbas and Dr. Faten Mohammed
Time	:	13:10-16:40 (KSA Time, GMT+3)
S4: MCT-2		*Sensitivity Analysis of Electrical Impedance Measurement Techniques for Enhanced Probing of Deeper Regions in the Human Body* **Mahjabin Mobarak**; Md. Moniruzzaman; Samir Salem Al-Bawri **(Online)**
S4: MCT-3		*Broadband Metamaterial Absorber with near-Unity Absorption for Radar Cross-Section Reduction* **Md. Murad Kabir Nipun**; Md. Jahedul Islam; Md. Moniruzzaman; Samir Salem Al-Bawri **(Online)**
S4: MCT-4		*Bending-Resilient Dual-Band MIMO Textile Antenna with Decagonal C-Shaped CSRR Metamaterial for WBAN and 5G Applications* **Hamza Ahmad Mashagba**; Samir Salem Al-Bawri; Hasliza ARahim; Mohd Najib Mohd Yasin; Mohd Haizal Jamaluddin; Sarun Choocadee; Md. Moniruzzaman **(Online)**
S4: MCT-5		*Enabling 320Gb/s FSO-WDM for Ubiquitous 6G-IoT Based on Optical Networks* Rafidh Hamad Khalaf; **Essa Ibrahim Essa**; Mishary Asker; Ihsan H. Abdulqadder; Ali Hussein Oleiwi
S4: SRE-1		*Mapping Rooftops for Potential Solar Panel Installation* Ariel M Lorenzo; Claire Anne Gamiao; Deahn Mark Osorio; Anthony Bryan Pasion; May Valdez and **Donnah Elaine Jurado** **(Online)**
S4: SRE-2		*Advances in Bio-Electrochemical Fuel Cell-Based Five-Level Cascade H-Bridge Inverter for Bioreactor Applications* Tawfikur Rahman; Md. Moniruzzaman; Nibedita Deb; **Mohammad Golam Mostafa**; Samir Salem Al-Bawri **(Online)**
S4: SRE-3		*Microbial Electrolysis Fuel Cell-Based Seven-Level Inverter for Enhanced Power System Efficiency* Nibedita Deb; **Tawfikur Rahman**; Md. Moniruzzaman; Murad Kabir Nipun; Samir Salem Al-Bawri **(Online)**
S4: SRE-4		*Optimizing Solar E-Hub Structures with Fused Deposition Modeling and PLA: a CAD-Driven Approach* MD Helal Uddin; Samir Salem Al-Bawri; Md Rokonuzzaman; **Dallatu Abbas Umar**
S4: SRE-5		*Digital Analysis and Verification of Solar Panel Diagnosis System Using Verilog Implementation for FPGA* Shuza Binzaid; **Abhitej Divi**; Md Rokonuzzaman
S4: SRE-6		*Renewable Energy Optimization in Distribution Systems: A Bibliometric Study of Planning, Sizing, and Strategies* **Abdullah Ashoor Subih**; Jagadeesh Pasupuleti

GULF COLLEGES MAP



Scan here for the Conference website



https://icoesat.gulf.edu.sa/