



2023 IEEE Jordan International Joint Conference on Electrical Engineering and Information Technology (JEEIT)

May 22–24, 2023

Landmark Hotel, Amman, Jordan

<https://www.jeeit.net/>

Conference Contents

Welcome Message	3
Program Overview	5
Organizers	6
Sponsors	7
Important Information	8
Conference Committees	9
Day 1: Mon – May 22, 2023	11
Day 2: Tue – May 23, 2023	15
Day 3: Wed – May 24, 2023	19

This page is intentionally left blank

Welcome Message

On behalf of the conference organizing committee, it gives me a great pleasure to welcome you to the 2023 IEEE Jordan International joint conference on Electrical Engineering and Information Technology (JEEIT). I am honored to be the General Chair of the organizing team of such an important and interesting event, which is taking place in Landmark Hotel, Amman, Jordan, during May 22–24, 2023. JEEIT 2023 is organized by IEEE – Jordan Section and Jordan Engineers Association. JEEIT 2023 merges the following two conferences in one big conference with one organizing committee, one program and one proceedings.

1. The 7th IEEE Jordan Conference on Applied Electrical Engineering and Computing Technologies ([AEECT 2023](#))
2. The 13th Jordanian International Electrical and Electronic Engineering Conference ([JIEEEEC 2023](#))

The theme of this conference is embracing innovating technologies to enhance people's lives. Innovative technologies are shaping our lives and are creating new solutions for solving our daily problems and challenges. This conference provides participants' opportunities of exchanging ideas, creating new collaborative connections, exploring new research directions and avenues in recent technologies such as: artificial intelligence, data science, communication technologies, cybersecurity, renewable and clear energy, power engineering, control and robotics, etc.

JEEIT 2023 has received papers in its eight tracks that cover the various aspects of the electrical engineering and information technology. Each of these papers was sent to three expert reviewers or more. The conference has 53% acceptance rate where out of the 103 received papers from 23 countries, only 55 papers are included in the conference proceedings and are presented in the 14 technical sessions of this conference. The papers that are successfully presented are also submitted for publication to the IEEE Xplore digital library and indexed in Scopus.

We are proud to have in this conference program four distinguished keynote speakers, who deliver interesting speeches titled: "Software Variability in Service Robots Architectures", "Has Cancer Care Been Evolving Contextually as Reflective Learning Systems of Systems?", "Monster Artificial Intelligence Models: Architectures, Trends and Applications" and "Technical Challenges and Solutions in Power Networks with the Net-Zero Initiatives".

We would like to thank the IEEE – Jordan Section, Jordan Engineers Association, and IEEE – Region 8 for organizing, sponsoring, and supporting this conference, as well as IEEE conference operations for publishing the conference proceedings. Moreover, we would like to thank the main conference supporters and sponsors: Jordan Islamic Bank, Zain and Experia for their valuable contributions and support.

Finally, yet importantly, we would like to express our deepest appreciation to the members of the organizing committees for their valuable efforts in making JEEIT 2023 a successful event, as well as our Steering Committee, the Track Chairs, the Scientific Committee, and the student volunteers.

We are looking forward to an exciting, vibrant assembly in our venue and we welcome the JEEIT 2023 participants in Amman, Jordan.

Ala' Khalifeh
JEEIT 2023, General Chair
IEEE – Jordan Section, Chair
German Jordanian University



Program Overview

	Rum 1	Rum 2
Day 1: Monday - May 22, 2023		
8:30 - 16:00	Registration	
9:30 - 10:30	Opening (Royal Hall)	
10:30 - 11:00	Coffee Break	
11:00 - 12:00	Keynote Speech 1	
12:00 - 14:00	BME	EPS1
14:00 - 15:00	Lunch	
15:00 - 16:00	Keynote Speech 2	The Road of Success by YEEC
16:00 - 16:30	Coffee Break	
16:30 - 18:00	CYB	CRM1
Day 2: Tuesday - May 23, 2023		
9:00 - 16:00	Registration	
9:30 - 11:30	DAI1	EPS2
11:30 - 12:00	Coffee Break	
12:00 - 13:00	Keynote Speech 3	
13:00 - 14:00	CST1	CRM2
14:00 - 15:00	Lunch	
15:00 - 16:00	Keynote Speech 4	
16:00 - 16:30	Coffee Break	
16:30 - 18:00	DAI2	SES1
18:00 - 18:30	Awarding Ceremony	
Day 3: Wednesday - May 24, 2023		
9:00 - 10:30	Registration	
9:30 - 11:00	CST2	COM
11:00 - 12:30	DAI3	SES2
12:30 - 13:00	Closing and Coffee Break	

BME	Biomedical Eng.	CRM	Control, Robotics, and Mechatronics
COM	Communications	CYB	Cybersecurity
CST	Computing Sciences Trends	DAI	Data Science and Artificial Intelligence
EPS	Electric Power Systems		
SES	Sustainable Energy Systems and Smart Grids		

Keynote Speeches

1. Software Variability in Service Robots Architectures, **Davide Brugali**
2. Has Cancer Care Been Evolving Contextually as Reflective Learning Systems of Systems?, **Mohammed Odeh**
3. Monster Artificial Intelligence Models: Architectures, Trends and Applications, **Gheith Abandah**
4. Technical Challenges and Solutions in Power Networks with the Net-Zero Initiatives, **Zia Emin**

Organizers



Jordan Section



نقابة المهندسين الأردنيين
Jordan Engineers Association

Technical Co-sponsors



Jordan Joint Chapter of the IEEE
CS and CIS

Sponsors



شركة صناعة المعدات الكهربائية
Electrical Equipment Co.Ltd

Important Information

- **Parking** for the conference participants is available for free by the hotel.
- **The accepted papers' abstracts** are posted on <https://jeeit.net/accepted-papers/>
- **Authors' presentations** in the technical sessions are 20 minutes including discussion.

Conference Committees



Steering Committee

Ala' F. Khalifeh	JEEIT General Chair, IEEE Jordan Section Chair	German Jordanian University
Ali Al-Khawaldeh	JEEIT Co-Chair, Electrical Engineering Division Board Chair	Jordan Engineers Association
Mohammad Salah Omar Barbarawi	IEEE Jordan Section Vice Chair Electrical Engineering Division Board Member	The Hashemite University Jordan Engineers Association
Marwan Alkhresat	Electrical Engineering Division Board Vice Chair	Jordan Engineers Association

International Advisory Committee

Ljubo Vlacic	Griffith University, Australia
Haiping Du	University of Wollongong, Australia
Cajetan Akujuobi	Prairie View A & M University, USA
Ikhlas Abdel-Qader	Western Michigan University, USA
Mihaela Albu	Politehnica University of Bucharest, Romania

Organizing Committee

Ala' Khalifeh	General Chair	German Jordanian University
Ali Al-Khawaldeh	JEEIT Co-Chair	Jordan Engineers Association
Iyad Jafar	Technical Program Chair	The University of Jordan
Mohammad Salah Sami Aldalahmeh	Technical Program Chair Publications Chair	The Hashemite University Al-Zaytoonah University of Jordan
Abdullah Al-Odienat	Member	Amman Arab University
Awad Al-Zaben	Member	Yarmouk University
Eyad Taqieddin	Member	Al-Hussein Technical University
Omar Daoud	Member	Philadelphia University
Jamal Al-Nabulsi	Member	Al-Ahliyya Amman University
Tarek Tutunji	Member	Al-Hussein Technical University
Mahmoud Awwad	Member	Al-Balqa' Applied University
Mohammed Haj-Ahmad	Member	The University of Jordan
Khalid Jaber	Member	Al-Zaytoonah University of Jordan
Abdallah Qusef	Member	Princess Sumaya University for Technology
Hisham ElMoaqet	Member	German Jordanian University

Anas Al-Majali	Member	The Hashemite University
Jumanah	Member	Tafila Technical University
Alshawawreh		
Luae' Al Tarawneh	Member	Princess Sumaya University for Technology
Emad Awada	Member	Al-Balqa' Applied University
Wael Al-Qassas	Member	Al Albayt University
Mohamad Barakat	Member	Al-Balqa' Applied University
Maha Mouasher	Member	IEEE Jordan Section
Mahmoud Salameh	Member	Jordan Engineers Association
Ali Al-Jallad	Member	Jordan Engineers Association
Naser Zoubi	Member	King Hussain Cancer Center
Hani Ghanem	Member	Techno Group
Eid Al-Assaf	Member	Cigre
Sawsan Qteashat	Conference Coordinator	Jordan Engineers Association

Track Chairs

Biomedical Engineering	Awad Al-Zaben and Jamal Al-Nabulsi
Communications	Sami AlDalahmeh and Luae' Al Tarawneh
Computer Networks	Omar Daoud and Eyad Taqieddin
Computing Sciences Trends	Abdullah Qusef
Control, Robotics, and Mechatronics	Tarek Tutunji and Hisham ElMoaqat
Cybersecurity	Anas AlMajali
Data Science and Artificial Intelligence	Mohammad Azzeh and Wael Al-Qassas
Sustainable Energy Systems and Grids	Mohammed Haj-Ahmed and Emad Awada
Electric Power Systems	Abdullah AL-Odienat and Jumana Alshawawreh

Scientific Committee is listed on <https://jeeit.net/about/#committees>



Day 1: Monday

May 22nd, 2023

* Indicates a Presenting Author

Time	Item	Place
08:30-16:00	Registration	
09:30-10:30	Opening Ceremony <ul style="list-style-type: none">The Royal Anthem of the Hashemite Kingdom of JordanRecitation from the Holy QuranWelcoming RemarksAla' Khalifeh, General Chair, JEEIT 2023, Chair, IEEE – Jordan SectionAli Al-Khwaladeh, Chair, Electrical Engineering Division Board, Jordan Engineers AssociationAhmad Samara Alzoubi, President, Jordan Engineers AssociationRepresentative of the Prime Minister	Royal Hall
10:30-11:00	Coffee Break	
11:00-12:00	Keynote Speech 1 Davide Brugali Department of Management, Information, and Production Engineering, University of Bergamo, Bergamo, Italy Software Variability in Service Robots Architectures Session Chair: Mohammad Salah	Rum 1
12:00-14:00	Biomedical Engineering (BME) Session Chair: Jamal Al-Nabulsi and Awad Al-Zaben Paper 1 Biomimetic Grasp Control of Robotic Hands Using Deep Learning Yazan Al Dweiri (Jordan University of Science and Technology, Jordan); Mohammad M. AlAjlouni (Jordan Design and Development Bureau (JODDB), Jordan); Alaa Yasin Al-Zeer*; Jawdat R Ayoub and Ali H Hejazi (Jordan University of Science and Technology, Jordan) Paper 2 Deepfake Image Generation for Improved Brain Tumor Segmentation Roa'a Al-Emaryeen* and Sara Al-Nahhas (University of Jordan, Jordan); Fatima Himour (Zarqa University,	Rum 1

Jordan); Waleed Mahafza (Jordan University Hospital, Jordan); Omar Al-Kadi (University of Jordan, Jordan)

Paper 3 **Diagnosis of Obstructive Sleep Apnea Using Machine Learning**

Alaa F. Sheta* (Southern Connecticut State University, USA); Alaa Sheta (Southern CT State University, USA); Shyam Subramanian (Cheif, USA); Salim Surani (Clinical Professor of Medicine and Pharmacology, USA); Malik Braik (Al-Balqa Applied University, Jordan)

Paper 4 (Virtual) **The Impact of Flat Foot on the Clinical Measurement of Foot Posture and Dynamic Balance**

Mariam Ahmed A Muhsin*; Aseel Ghazwan (Al-Nahrain University, Iraq)

Paper 5 (Virtual) **Features Selection for Force Myography Based Hand Gesture Recognition**

Malak Fora* and Manar Jaradat (Binghamton University, USA); Bilel Atitallah (Technische Universität Chemnitz & National Engineering School of Sfax, Germany); Congyu Wu (Binghamton University, USA); Olfa Kanoun (Chemnitz University of Technology, Germany)

12:00-14:00 **Electric Power Systems (EPS1)**

Rum 2

Session Chair: Abdullah AL-Odienat and Jumana Alshawawreh

Paper 1 **The Impact of Using STATCOM for PV Farms Connected with Grid**

Tasneem T Al-Daboubi* and Hussein AL-Majali (Mutah University, Jordan)

Paper 2 **Disturbances Identification by Using Machine Learning Algorithms**

Mohammad Al-Amareen* (Mutah University & EDCO, Jordan); Hussein AL-Majali (Mutah University, Jordan)

Paper 3 **Optimal Location of PMUs to Enhance State Estimation of Power Systems**

Atallah Ahmad Al Qaralleh (Faculty Of Engineering Mutah University Karak Jordan, Jordan); Khaled Mohammad Alawasa (Sultan Qaboos University); Abdullah Al-Odienat* (Amman Arab University)

Paper 4 **The Application of Synchronverter for the Enhancement of Power System Stability**

Basel T Alkhamis* (Mutah University, Jordan); Abdullah Al-Odienat (Mutah University, Jordan)

Paper 5 **Solar Photovoltaic Forecasting Using ANN Network for Central and Southern Regions of Jordan**

Rafi Al-Rawashdeh* (Mutah University, Jordan); Mohammad Alsarayreh (Princess Sumaya University for

14:00-15:00

Lunch

15:00-16:00 **Keynote Speech 2**

Rum 1

Mohammed Odeh

King Hussain Cancer Center and University of the West of
England, Bristol UK

**Has Cancer Care Been Evolving Contextually as
Reflective Learning Systems of Systems?**

Session Chair: Awad Al-Zaben

15:00-16:00 **The Road of Success**

Rum 2

An event organized by JEA Youth Electrical Engineers
Committee (YEEC) with the following talks:

- **Voluntary Work** by *Eng. Wesam Alhalalah*
- **Entrepreneurship** by *Eng. Omar Arabyat*
- **Comfort Zone** by *Eng. Ghaith Alkhatib*

16:00-16:30

Coffee Break

16:30-18:00 **Cybersecurity (CYB)**

Rum 1

Session Chair: Anas AlMajali

Paper 1 **Android Stalkerware Detection Techniques: A Survey
Study**

Ruba Taha EyalSalman* (Princess Sumaya University for
Technology, Jordan)

Paper 2 **Design and Implementation of a Malware Detection
Tool Using Network Traffic Analysis in Android-Based Devices**

Areen Abdelwahab Eltaher* and Dania Amer Abu-juma'a
and Dania Raed Hashem (Princess Sumaya University of
Technology, Jordan); Heba Alawneh (Al Hussein
Technical University, Jordan)

Paper 3 **Vulnerability Exploitation Using Reinforcement
Learning**

Anas AlMajali*, Loiy Al-Abed, Ruba Mutleq, Zaid
Samamah, Anas Abu Shhadeh, Bassam Jamil Mohd and
Khalil M. Ahmad Yousef (Hashemite University, Jordan)

Paper 4 (Virtual) **VulDefend: A Novel Technique Based on
Pattern-Exploiting Training for Detecting Software
Vulnerabilities Using Language Models**

Marwan Omar* (Illinois Institute of Technology, USA)

Session Chair: Tarek Tutunji and Hisham ElMoaqat

Paper 1 Low-Cost Wireless Monitoring and Control: A Case Study for Industrial Implementation

Amin Yousef (Quartz for Control Systems and Home Automation, Jordan); Osama Albayari* (Ideal Concepts Company, Jordan); Ramzi Albawab (TAL group, Jordan); Bahaa Jibrini (The University of Jordan, Jordan); Mohammad H Salah (The Hashemite University, Jordan)

Paper 2 SLAM Algorithm for Omni-Directional Robots Based on ANN and EKF

Ahmad Derbas (Technology Strategy, Germany); Tarek A. Tutunji* (Al Hussein Technical University, Jordan)

Paper 3 Dynamical Modeling and Control of Motion System of the Gantry Crane to Minimize Swing Angle of the Payload

Jehad Saleh Radaideh* and Musa K. AlAjlouni (Al-Balqa Applied University, Jordan)

Day 2: Tuesday

May 23rd, 2023

* Indicates a Presenting Author

Time	Item	Place
09:00-16:00	Registration	
09:30-11:30	Data Science & Artificial Intelligence (DAI1) Session Chair: Mohammad Azzeh and Wael Al-Qassas Paper 1 A Machine Learning Dataset for Enhancing Energy Efficiency in WSN Walaal Alshamat; Moath Alsafasfeh* and Abdullah Alhasanat (Alhussien Bin Talal University, Jordan) Paper 2 Fine-Tashkeel: Fine-Tuning Byte-Level Models for Accurate Arabic Text Diacritization Bashar Eid Al-Rfooh* and Gheith A. Abandah (The University of Jordan, Jordan); Rami Eid Al-Rfou (Google, Jordan) Paper 3 A Neuro-Symbolic Approach for Marine Vessels Power Prediction Under Distribution Shifts Ahmad Hammoudeh* (University of Mons, Belgium); Ibrahim Ghannam (RWTH Aachen University, Germany); Hamza Akram Musbah Mubarak (University of Malaya, Malaysia); Emmanuael Jean (Multitel, Belgium); Virginie Vandenbulcke and Stephane Dupont (University of Mons, Belgium) Paper 4 Analyzing and Forecasting the Weather Conditions in Jordan Using Machine Learning Techniques Laith O. Bani Khaled* and Gheith A. Abandah (The University of Jordan, Jordan)	Rum 1
09:30-11:30	Electric Power Systems (EPS2) Session Chair: Abdullah AL-Odienat and Jumana Alshawawreh Paper 1 Study of Power Factor Corrector Operating at Multiple Switching Frequencies Deniss Stepins, Janis Zakis, Annamneni Subbarao and Alexander Suzdalenko (Riga Technical University, Latvia); Kamal Khandakji* (Tafila Technical University, Jordan & Bonn University of Applied Sciences, Germany); Jaroslavs Zarembo (Riga Technical University, Latvia) Paper 2 Integration of Helix Wind and Archimedes Screw Turbines for Renewable Energy Generation from Wind and Rainwater	Rum 2

Hiba Jamal Altatar*, Noura Azzam Almaghareez, Raed Abed and Joud Alsarayra (AL Hussain Technical University, Jordan); Hassan Qandil (University of North Texas, USA); Emad AbdelSalam (Al Hussein Technical University, Jordan)

Paper 3 (Virtual) A Comparison of GWO and PSO for MPPT in Solar Photovoltaic Stand Alone System

Ali Haider Fawzi*, AHF and Naseer Yasin (Middle Technical University, Iraq); Zuhair Sameen Shuker (Middle Technical University & Baquba Technical Institute, Iraq)

Paper 4 (Virtual) ANN-Based Fault Location in 11 kV Power Distribution Line Using MATLAB

Hamza Abdulkhaleq Najj*, Rashid Ali Fayadh (Middle Technical University, Iraq & College of Electrical Engineering Techniques, Malaysia); Ammar Hussein Mutlag (University Kebangsaan Malaysia, Malaysia)

Paper 5 (Virtual) High Impedance Fault Detection in Distribution Feeder Based on Frequency Spectrum and ANN

Mohammed Naisan Allawi* and Ali Hussain (Middle Technical University, Iraq); Mousa Wali (College of Technical Electrical Engineering, Iraq)

11:30-12:00

Coffee Break

12:00-13:00 **Keynote Speech 3**

Rum 1

Gheith Abandah

Department of Computer Engineering, The University of Jordan, Amman, Jordan

Monster Artificial Intelligence Models: Architectures, Trends and Applications

Session Chair: Wael Al-Qassas

13:00-14:00 **Computing Sciences Trends (CST1)**

Rum 1

Session Chair: Abdullah Qusef

Paper 1 Mobile Application Testing Strategies and Challenges: A Case Study in Jordan

Diala Othman Qatanani (Independent Researcher, Jordan); Abdallah Qusef* (Princess Sumaya University for Technology, Jordan)

Paper 2 Evaluation of Existing Virtual Tour Studies and Their Applicability to Jordanian Universities

Mohammad Abdallah; Ayman M. Abdalla* and Mosa Salah (Al-zaytoonah University of Jordan, Jordan)

Paper 3 The Role of Software Architecture in Business Model Transformability

Tarek M.F. Kiblawi; Muhanna Muhanna and Abdallah Qusef* (Princess Sumaya University for Technology, Jordan)

13:00-14:00 Control, Robotics, and Mechatronics (CRM2)

Rum 2

Session Chair: Tarek Tutunji and Hisham ElMoaqat

Paper 1 Modeling and Simulating the Transition of an Old Vehicle from (ICE) to an Electric Vehicle (EV)

Jamil Khalil Izraqi* (Istanbul Okan University, Turkey)

Paper 2 Intelligent Solution for Inverse Kinematic of Industrial Robotic Manipulator Based on RNN

Areej Ahmad Shaar* and Jasim Ghaeb (Philadelphia University, Jordan)

Paper 3 Genetic Algorithm-Based Path Planning for Autonomous Mobile Robots

Areej Alabbadi and Awos Kanan* (Princess Sumaya University for Technology, Jordan)

14:00-15:00

Lunch

15:00-16:00 Keynote Speech 4

Zia Emin

Power Systems Consultants, Kenilworth, United Kingdom

Technical Challenges and Solutions in Power Networks with the Net-Zero Initiatives

Session Chair: Abdullah AL-Odienat

16:00-16:30

Coffee Break

16:30-18:00 Data Science & Artificial Intelligence (DAI2)

Rum 1

Session Chair: Mohammad Azzeh and Wael Al-Qassas

Paper 1 Sentiment Analysis of Tweets: A Machine Learning Approach

Wael Qassas* (AABU & Information Technology Faculty, Jordan); Ammar Badarneh and Omar AlZoubi (Jordan University of Science and Technology, Jordan); Mohammad AlBasheer (Al Albayt, Jordan); Suhaib Al-Darwesh (Jordan University of Science and Technology, Jordan)

Paper 2 Diagnosis of Polycystic Ovary Syndrome Using Random Forest With Bagging Technique

Amjed Al-Mousa*, Badr Mansour and Hamsa Al-Dabbagh and Mohammad Radi (Princess Sumaya University of Technology, Jordan)

Paper 3 Tuning the Parameters of Cutting Machines Using Particle Swarm Optimization: A Comparison Study

Alaa F. Sheta* (Southern Connecticut State University, USA); Malik Braik and Abdelkarim Baareh (Al-Balqa Applied University, Jordan)

Paper 4 A Case Study of IoT-Based Water-Energy Nexus Monitoring Platform for Household Applications in Smart Cities

Ashraf Ali* and Mohammad H Salah (The Hashemite University, Jordan)

16:30-18:00

Sustainable Energy Systems and Smart Grids (SES1)

Rum 2

Session Chair: Mohammed Haj-Ahmed and Emad Awada

Paper 1 Single-Axis Solar Tracker System for Maintaining Southward Orientation of Solar Cells in Solar Cars

Ziyad Almajali* and Sana Aldmour (Mutah University, Jordan)

Paper 2 Potentials of Utilizing Berkeley-Bioreactor Pile Composting as Heat Recovery System in Domestic and Small-Scale Applications

Talal Tareq Enaya*, Jamila Husan and Ghazi Tareq Sharqawi, Malek Alkasrawi and Yousef Okour (Al Hussein Technical University, Jordan)

Paper 3 Impact of Grid-Connected Photovoltaic Systems on Low Voltage Distribution Network

Dareen Habash* (Al Hussein Technical University, Jordan); Ahmad Ra'ed Azzam (The University of Jordan & HTU, Jordan); Reda Issa (The University of Jordan, Jordan); Emad AbdelSalam (Al Hussein Technical University, Jordan); Hassan Qandil (University of North Texas, USA)

Paper 4 (Virtual) Community Energy Storage System for Cost Benefits

Augustine Ikpehai and Sunkanmi Olajide (Sheffield Hallam University, United Kingdom (Great Britain)); Kelvin Anoh* (University of Chichester, United Kingdom (Great Britain))

18:00-18:30

Awarding Ceremony

Rum 1

Day 3: Wednesday

May 24th, 2023

* Indicates a Presenting Author

Time	Item	Place
09:00-10:30	Registration	
09:30-11:00	Computing Sciences Trends (CST2) Session Chair: Abdullah Qusef Paper 1 A Hardware-Based Approach to Determine the Frequently Accessed DRAM Pages for Multi-Core Tareq Alawneh* and Ahmed Sharadqh (Al- Balqa Applied University, Jordan); Mutsam Jarajreh (Fahad Bin Sultan University, Jordan); Jawdat Alkasassbeh (Al- Balqa Applied University, Jordan) Paper 2 (Virtual) Multisource Indoor Positioning System Based on Edge Computing Umba Ilunga Jeannick* and Hui Wang (Zhejiang Normal University, China); Maode Ma (Qatar University, Qatar) Paper 3 (Virtual) Applying Smart Contract in Blockchain Technology to Manage the Ticketing Issuance and Ticketing Traceability Quang Huu Nguyen* (Industrial University of Hochiminh City, Vietnam); Nguyen Tuong Huynh and Thiet Thi Pham (Industrial University of Ho Chi Minh City, Vietnam)	Rum 1
09:30-11:00	Communications (COM) Session Chair: Sami Aldalahmeh and Luae' Al Tarawneh Paper 1 Narrowband IoT Network Self Localization Anas Alashqar and Ala Khalifeh* (German University of Jordan, Jordan); Raed Mesleh (Princess Sumaya University for Technology, Jordan) Paper 2 Power Load Estimation in Smart Grids via k-Means Clustering Using Sensor Networks Sami A Aldalahmeh* (Al-Zaytoonah University of Jordan & University, Jordan); Ali M Hayajneh (The Hashemite University, Jordan); Mahmoud Zeidan and Ashraf Al-Shawabkeh (Al-Zaytoonah University of Jordan, Jordan); Feras Alasali (The Hashemite University, Jordan) Paper 3 A Compact 2×1 MIMO Microstrip Patch Antenna with Enhancing Gain for UWB Applications Amjad Hindi (Al-Balqa Applied University, Jordan); Essam Trrad (Jadara University, Jordan); Majed Dwairi* (Al-Balqa Applied University, Jordan)	Rum 2

Paper 4 (Virtual) Design Wideband MIMO Antenna for UWB Applications

Hussein Mohammed Naser*, Mahmood Farhan Mosleh and Oras Ahmed Al-Ani (Middle Technical University, Iraq)

11:00-12:30 Data Science & Artificial Intelligence (DAI3)

Rum 1

Session Chair: Mohammad Azzeh and Wael Al-Qassas

Paper 1 Using Context Specific Generative Adversarial Networks for Audio Data Completion

Marina Maayah* (Computer Science and Engineering, Qatar); Abdulaziz Al-Ali (KINDI Center for Computing Research & Qatar University, Qatar); Abdelhak Belhi (Joaan Bin Jassim Academy for Defence Studies, Qatar)

Paper 2 Arabic Sentiment Analysis of Food Delivery Services Reviews

Dheya Mustafa (Hashemite University, Jordan); Safaa M. Khabour (Yarmouk University, Jordan); Ahmed Shatnawi and Eyad Taqieddin* (Jordan University of Science and Technology, Jordan)

Paper 3 Explainable Machine Learning-Based Cybersecurity Detection Using LIME and Secml

Sawsan Alodibat (Princess Sumaya University, Jordan); Ashraf Qaddomi (Graphics Animations, Jordan); Mohammad Azzeh* (Princess Sumaya University for Technology, Jordan)

Paper 4 Multiclass Diabetes Detection Using Random Forest Classification

Amjed Al-Mousa and Laith AlKhdour*, Hatem Bishawi and Fares AlShubeliat (Princess Sumaya University of Technology, Jordan)

11:00-12:30 Sustainable Energy Systems and Smart Grids (SES2)

Rum 2

Session Chair: Mohammed Haj-Ahmed and Emad Awada

Paper 1 Use of Convolutional Neural Networks and Long Short-Term Memory for Accurate Residential Energy Prediction

Hani Jamleh and Hafiz Mohd Al-Alami* (The University of Jordan, Jordan)

Paper 2 (Virtual) A New Five-Level Transformerless Boost Inverter for Renewable Energy Applications

Aseel K. Rashid* and Nabil Kadhim Al-Shamaa (Middle Technical University, Iraq); Mousa Wali (College of Technical Electrical Engineering, Iraq)

Paper 3 (Virtual) Battery Energy Storage Planning in Distribution Network with Renewable Resources

Ahmed Ali Alguhi* (King Saud University, Saudi Arabia); Majed A. Alotaibi (King Saud University & University of

Waterloo, Saudi Arabia); Essam A. Al-Ammar and Ahmed A. AL Katheri (King Saud University, Saudi Arabia)

Paper 4 (Virtual) Management Framework for Energy Crisis & Shaping Future Energy Outlook in Pakistan

Jamshaid Iqbal Janjua* (Al-Khwarizimi Institute of Computer Science & University of Engineering & Technology, Lahore, Pakistan); Osman Anwer (University of Central Punjab, Pakistan); Atique Saber (University of Engineering & Technology, Lahore, Pakistan & Al Khwarizmi Institute of Computer Science University of Engineering & Technology, Lahore, Pakistan)

12:30-13:30

Coffee Break and Closing