

2023 IEEE 4th International Multidisciplinary Conference on Engineering Technology
(IMCET)

Program

Time	Room-B	Room-A
Tuesday, December 12		
09:00 am-09:30 am		Open Ceremony: <i>IMCET 2023</i>
09:30 am-10:30 am		KS-1: <i>The Energy Transition Agenda: A Techno-Economic Perspective</i>
10:30 am-11:00 am	BK: <i>Break</i>	
11:00 am-12:30 pm	S1b: <i>Control Systems, Instrumentation and Robotics</i>	S1a: <i>Communications and Information Systems</i>
12:30 pm-01:30 pm	LB:: <i>Break</i>	
01:30 pm-03:00 pm	S2b: <i>Power, Power Electronics, Industrial Electronics and Energy</i>	S2a: <i>Computer Systems and Applications-I</i>
Wednesday, December 13		
09:00 am-10:00 am		KS-2: <i>How Intent Based Management and AI can unleash the full potential of Autonomous Networks</i>
10:00 am-10:15 am	BK: <i>Coffee Break</i>	
10:15 am-12:00 pm	S3b: <i>Electronics, Industrial Electronics and Robotics</i>	S3a: <i>Biomedical and Bioinformatics</i>
12:00 pm-01:00 pm	LB2: <i>Lunch Break</i>	
01:00 pm-02:15 pm	S4b: <i>Antennas, Microwave, Magnetics and RF circuits</i>	S4a: <i>Computer Systems and Applications-II</i>
02:15 pm-02:45 pm		

Tuesday, December 12

Tuesday, December 12 9:00 - 9:30

Room-A: Open Ceremony: IMCET 2023 

Welcome words by Conference Chair and Coordinator

Tuesday, December 12 9:30 - 10:30

KS-1: The Energy Transition Agenda: A Techno-Economic Perspective 

Room-A: Chair: Hadi Kanaan

Prof. Amjad Anvari-Moghaddam

Keynote Speaker

Abstract: Most trajectories of energy demand and supply to 2050 anticipate significant new system challenges as we incorporate more low carbon generation, and meet increases in peak demand, driven largely by the extent to which transport and heating become increasingly electrified. At the same time, the energy landscape is changing rapidly with far-reaching implications for the global energy industry and actors. Some changes are already happening. Changes to energy grid management are underway and utility companies are developing commercial platforms that will make it easier for them to trade in flexibility with generators and consumers, even at very small scale. Renewables are also becoming key players. Harvesting renewable energies implies decentralization, where many consumers also become producers, who at times export electricity to the grid. To accommodate large numbers of renewable resources, energy distribution and transmission networks need to be adapted and expanded to avoid network congestion and failures. Flexibility options and services have to be also enabled not only at the supply side but also through responsive loads and suitable means of energy storage to maximize the security of supply and the quality of service in the most efficient way. Accelerating the energy transition also requires a rethinking of electricity markets in many aspects, a key one being the adaptation of their design and operation to support higher shares of variable renewables as well as distributed power generation. This talk covers the aforementioned promising areas in green energy transition and discusses the current and future opportunities and challenges exist in this context.

Bio: Amjad Anvari-Moghaddam is an Associate Professor and Leader of Intelligent Energy Systems and Flexible Markets (iGRIDS) Research Group at the Department of Energy (AAU Energy), Aalborg University where he is also acting as the Vice-Leader of Power Electronic Control, Reliability and System Optimization (PESYS) and the coordinator of Integrated Energy Systems Laboratory (IES-Lab). His research interests include planning, control and operation management of microgrids, renewable/hybrid power systems and integrated energy systems with appropriate market mechanisms. He has (co)authored more than 300 technical articles, 8 books and 17 book chapters in the field. Dr. Anvari-Moghaddam is the Editor-in-Chief of Academia Green Energy journal and serves as the Associate Editor of several leading journals such as the IEEE TRANSACTIONS ON POWER SYSTEMS, IEEE Systems Journal, IEEE Open Access Journal of Power and Energy, and IEEE Power Engineering Letters. He is the Vice-Chair of IEEE Denmark, Member of IEC SC/8B- Working Group (WG3 & WG6) as well as Technical Committee Member of several IEEE PES/IES/PELS and CIGRE WGs. He was the recipient of 2020 and 2023 DUO – India Fellowship Awards, DANIDA Research Fellowship grant from the Ministry of Foreign Affairs of Denmark in 2018 and 2021, IEEE-CS Outstanding Leadership Award 2018 (Halifax, Nova Scotia, Canada), and the 2017 IEEE-CS Outstanding Service Award (Exeter-UK).

Tuesday, December 12 10:30 - 11:00

BK: Break Rooms: Room-A, Room-B

Tuesday, December 12 11:00 - 12:30

S1b: Control Systems, Instrumentation and Robotics 

Room-B

Chair: Roy Abi Zeid Daou

11:00 *Upgraded Version of Angry Birds Game Using PC-Connected Controller*

Mohammad Zinati, Elio Ghaoui, Roy Abi Zeid Daou, Ali Hayek and Josef Boercsoek

11:15 *Energy Efficiency and Power Management Strategies in Robots*

Wajih-Georges El Tayar, Sary Yehia, Noel Maalouf and Nagham El Ghossein

11:30 *Products Allocation to Minimize Shipping Using Jellyfish Search Optimization*

Ali Kalakech and Ahmad Hashem Yahya

11:45 *Fuzzified Model Predictive Control Allocation for Integrated Control of Ground Vehicles*

Rawan Hoteit and Naseem Daher

12:00 *Enhancing Human Cobot Interaction using Natural Language Processing*

Gautam Siwach and Cheryl Q Li

12:15 *Design and Control of a Diameter-Adaptable In-Pipe Inspection Robot*

Ahmed Zeid, Amer Al-Yahmadi, Riadh Zaier and Issam Bahadur

S1a: Communications and Information Systems 

Room-A

Chairs: Nadine Abbas, Jacques Bou Abdo

11:00 *CTXDQ: An Automated Context-Driven Data Quality Assessment*

Hadi Fadlallah, Rima Kilany, Mitri Haber and Ali Jaber

11:15 *User to Access point Distribution: Coded caching approach*

Mirna Hamad Haidar, Yasser Fadlallah, Hadi Edmond Sawaya and Abed Ellatif Samhat

11:30 *Home Automation System with IoT Stack and ChatGPT for People with Reduced Mobility*

Joseph Azar, Teresa Khoury, Abdallah Makhoul and Raphaël Couturier

11:45 *Detection and Prevention of TCP DoS/DDoS Attacks in Software Defined Network*

Saeddin Kalash, Norma Makarem, Lara Issa, Ayman Tajeddine and Nadine Abbas

12:00 *Energy-Efficient UAV-Assisted Cluster-Based Control Messages Relay System in IoT Networks*

Baneen Ayyad and Nadine Abbas

12:15 *A Multi-Armed Bandit Game for Multi-Tenant RAN Slicing*

Zeina Awada, Melhem El Helou, Kinda Khawam and Samer Lahoud

Tuesday, December 12 12:30 - 1:30

LB: Break

Tuesday, December 12 1:30 - 3:00

S2b: Power, Power Electronics, Industrial Electronics and Energy 

Room-B

Chairs: Mohamad Arnaout, Jean Sawma

1:30 *The Modified hybrid Multi-Objective Genetic Algorithm and Loss Sensitivity Factor for Optimal Siting and Sizing of PV-Based Distributed Generation in Distribution Networks*

Jessica Joseph Korkmaz and Raymond Ghajar

1:45 *Life Cycle Assessment of A Pico Hydro Generator Made of E-Waste Components Based on Frugal Innovation*

Abdulrahman Olaniyan, Catherine Azzaro-Pantel, Stéphane Caux and Pascal Maussion

2:00 *Design of Low Cost Mini CNC Laser Engraver*

Mustapha Barakat, Nour Aridi and Jad Moadad

2:15 *Neural Network to predict Energy Efficiency for Space Heating in Residential Buildings*

Mohamad Moussa Naim, Rafic Younes and Hassan Moussa Nahim

2:30 *Design and Simulation of Electric Vehicle Regenerative Brake Control*

Mohamad Arnaout, Ali Koubayssi and Haidar Hamdan

2:45 *Advanced Phase-Locked Loop Synchronization Techniques for Utility Interface Converters Under Highly Distorted Operating Conditions*

Nizar Daou, Jean Sawma and Flavia Khatounian

S2a: Computer Systems and Applications-I 

Room-A

Chair: Mohamad Mostafa Awad

1:30 *Addressing the Velocity Challenge of Big Data in Radiation Pollution Monitoring: Implementation and Demonstration*

Hadi Fadlallah, Rima Kilany, Mitri Haber and Ali Jaber

1:45 *Phoenician Corpus in the Eshmun Project*

Elie Aouad and Maroun Chamoun

2:00 *Statistics on Phoenician Inscriptions in the Eshmun project*

Elie Aouad and Maroun Chamoun

2:15 *Traffic Sign Detection in the Digital Era: Leveraging Convolutional Neural Networks*

Kothai G, Anna Anbumozhi, R Abirami and T Kalyani

2:30 *Pose Estimation Keypoints in Age Recognition of Full Body Image*

Rachad Lakis, Joseph Constantin, Ibtissam Constantin, Vinh Truong Hoang and Yassine Ruichek

2:45 *New Algorithms to Monitor and Estimate Electricity Provision and Consumption from Nighttime Satellite Images*

Mohamad Mostafa Awad

Wednesday, December 13 9:00 - 10:00

KS-2: How Intent Based Management and AI can unleash the full potential of Autonomous Networks 

Prof. Nazim Agoulmine

Keynote Speaker

Room-A

Chair: Mohamad Khalil

Abstract: Intent-Based Networking (IBN) is a technology that aims to simplify the way administrators interact with an autonomous networks. Administrators could easily express their business goals (preferably in natural language), and then IBN interprets these goals and translate them into operational configurations of the IT infrastructure and into appropriate autonomous mechanisms that enable the implementation of intentions in the event of a change in the operations with full understanding of the execution context of the infrastructure. This concept has been successfully implemented to some extent in the ONOS SDN (Software Defined Network) controller and is already used in operational networks. However, recent advances in artificial intelligence predict further progress in providing greater flexibility and agility to IT and network infrastructures reducing further the human interventions. This presentation is intended to introduce this new concept and how how IBN leverages previous approaches such as goal based management. In particular, it shows how closed-loop network automation instrumented with intents can address the challenges of modern system and network dynamics.

Bio: Nazim Agoulmine is a full professor at the university of Evry Val d'Essonne/ Paris Saclay University since 2000 and the director of the IBISC Research Laboratory and the vice director of the International Relation of the Graduate School of Computer Science of the University of Paris-Saclay. Prof N.Agoulmine has leaded several National and European research projects in the area of Networking and Multimedia Systems. He also published numerous research papers and books in the area. He also contributed to several books and book chapters in the areas of network management, autonomic networking and multimedia networking. He acts as expert for several organizations in Europe, North America and Asia.

Wednesday, December 13 10:00 - 10:15

BK: Coffee Break

Rooms: Room-A, Room-B

Wednesday, December 13 10:15 - 12:00

S3b: Electronics, Industrial Electronics and Robotics 

Room-B: Chair: Naseem Daher

10:15 *Faults Detection in PV Panels Using an Artificial Neural Network*

Bechara Nehme, Nakhle Badawi, Jad Nawfal, Eddy El Hachem and Tilda Akiki

10:30 *SVPWM Inverters for Photovoltaic Systems Applications*

Mohamed Tarnini, Abdallah El Ghaly and Nazih Moubayed

10:45 *Thermo-Economic Comparison of Solar Thermal Cooling and Solar Photovoltaic Cooling Systems for a Typical Residential Building - Lebanese Case Study*

Christy Lahoud, Chawki Lahoud, Marwan Brouche and Mohammed Hmadi

11:00 *Cascaded Sliding Mode Voltage Controller and Model Reference Adaptive Current Controller for Regulating MIMO DC-DC Boost Converter*

Aman El Masri and Naseem Daher

11:15 *Mapping, Path Optimization, and Motion Control of a Robotic Seawater Waste-Management System*

Amanda L. Saliba, Naseem Daher, Sadek Zaher and Dany Youssef

11:30 *Mixed-sensitivity Controller Design for a Tethered UAV-buoy System*

Amanda L. Saliba and Naseem Daher

11:45 *Motion Control of Hexacopters: A Comparative Study of Adaptive Backstepping and Sliding Mode Control With Control Allocation*

Hassan Khanafer, Jad Bhamdouni, Dany Abou Jaoude and Naseem Daher

S3a: Biomedical and Bioinformatics 

Room-A: Chairs: Mohammad Ayache, Amira J. Zaylaa

10:15 *Mechanical behavior of titanium foams for dental implants: experimental, theoretical and numerical studies*

Hussein Farroukh, Fouad Kaddah and Toufic Wehbe

10:30 *Comparing the Effectiveness of EMG and Electrical Impedance myography Measurements for Controlling Prosthetics*

Saad Abdullah, Abdelakram Hafid and Hira Shahid

10:45 *Estimating Physiological Parameters in Various Age Groups: Windkessel 4 Element Model and PPG Waveform Analysis Approach*

Abdelakram Hafid and Saad Abdullah

11:00 *Exploring the Efficacy of Deep CNN Algorithms for Pulmonary Infections Detection using X-rays: Case Study COVID-19*

Ali Kalakech and Thamer Ibrahim

11:15 *Detecting Cardiovascular Disease From PPG Signals using Machine Learning*

Tamara Sadek, Julia Ahmad, Fadi Khoury, Heba Badawe and Massoud Khraiche

11:30 *Optimizing Wrist-Based Bioimpedance: The Role of Electrode Type, Positioning and Signal Frequency in Health Monitoring*

Helen W Najjar, Fadi Khoury, Sahera Saleh and Massoud Khraiche

11:45 *ICU admission medical triage of COVID19 patients using Artificial Intelligence*

Sandy Rihana, Christelle Bou Rjeily, Joseph Matar and Walid Hleihel

Wednesday, December 13 12:00 - 1:00

LB2: Lunch Break

Wednesday, December 13 1:00 - 2:15

S4b: Antennas, Microwave, Magnetics and RF circuits



Room-B: Chairs: Usamah O. Farrukh, Ernst Huijjer

1:00 *A Compact UWB antenna with Dual-Reject Band*

Hanein Akila and Heba El-Halabi

1:18 *Enhancing Transistor Sizing in Analog IC Design using a Circuit-Focused Semi-Supervised Learning*

Rayan Mina, George E. Sakr and Houssam Nassif

1:37 *Hexagonal Patch Antenna for Ultra Wide Band Applications*

Heba El-Halabi, Ahmad Itani, Malek Al Khatib and Karim Kahwaji

1:56 *Measurement of the interaction of radiated electromagnetic waves with biological phantoms and their relation to phantom density using a microstrip antenna*

Abraham Hernandez-Jimenez, Jesús F Córdova-Manzo, Gibran Segovia-Cristiani and Alejandro Rodriguez-Peña

S4a: Computer Systems and Applications-II



Room-A

Chairs: Walid P Karam, Mohamad Kassab

1:00 *Securing academic certificate verification with blockchain-based algorithmic rules*

Sandeep Joshi and Manoj R

1:15 *Gamifying Digital Logic Education: A Super Mario World Approach*

Ahmad Kobeissi

1:30 *A Disruptive Blockchain Framework for Notary: Smart Contract and Digital Record Keeping*

Elie Nasr, Farid Nakhleh, Joe Nasr, Omar El Khatib and Lyne El Khatib

1:45 *Impact of Crypto Art Sentiment on Art Valuation*

Elie Nasr, Mohamed Othman, Joe Nasr and Liliane Karam

2:00 *Cost-Effective Tweet Classification through Transfer Learning in Low-Resource NLP Settings*

Elio Sarkis, Anthony Tannoury and Rony Darazi

2:15 *Towards Safer Wi-Fi Networks: Leveraging Neural Networks for Intrusion Detection*

Mustafa El Bizri, Ali Massoud Haidar and Ahmad El-Hajj

2:30 *Utilizing Vision-based Depth-Mapping for Indoor Fire Detection & Localization*

Ahmad Kobeissi and Majd Boulos