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8 – 10 December 2021**



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Beirut time	Wednesday, December 8
9:00 - 9:30 am	Open Ceremony:: <i>IMCET 2021</i>
9:30 - 10:30 am	KS-1:: <i>Bio-Impedance Measurement Systems</i>
10:30 - 11:00 am	BK:: <i>Break</i>
11:00 am - 12:30 pm	S1a: <i>Communications and Information Systems</i> S1b: <i>Power, Power Electronics, Industrial Electronics and Energy</i>
12:30 - 1:30 pm	LB:: <i>Break</i>
1:30 - 3:00 pm	S2a: <i>Computer Systems and Applications</i> S2b: <i>Control Systems, Instrumentation and Robotics</i>
3:00 - 4:00 pm	KS-2:: <i>SPACE MICROGRIDS - NANO SATELLITES, LUNAR BASES AND CLOSED ECOSYSTEMS</i>
4:00 - 5:30 pm	S3a: <i>Biomedical and Bioinformatics</i> S3b: <i>Power, Power Electronics, Industrial Electronics and Energy</i>

Wednesday, December 8

Wednesday, December 8 9:00 - 9:30

Open Ceremony: IMCET 2021 [zoom](#)

Welcome words by Conference Chair and Coordinator

Rooms: [Virtual room-I](#), [Virtual room-II](#)

Wednesday, December 8 9:30 - 10:30

KS-1: Bio-Impedance Measurement Systems [zoom](#)

Professor Ahmed Madian ()

Keynote Speaker

Rooms: [Virtual room-I](#), [Virtual room-II](#)

Chair: Abdallah Kassem

Impedance measurement is one of the most promising topics in research fields because of its wide range of applications such as, fruits growth monitoring, plants modelling, damage detect, and other applications, in this chapter we will discuss one of the embedded measurement devices for bioimpedance. Bio-impedance is the ability of a biological tissue to resist an AC current. Bio-impedance measurement values for biological tissue depends on many parameters such as tissue type, age, time variation, composition, water content, tissue structure, tissue damage and any other parameter that may affect the biological tissue. Bio-impedance body analysis has been widely used in biomedical applications to estimate body parameters such as fat content, fluid content, total body water and lean body mass. Recently, the ability to relate between electrical and physical properties of food products has gained focus on research. This approach will reduce the investigation time and increase the accuracy compared to conventional chemical methods. Different attempts have been applied to address a relation between physical and electrical properties. Bio-impedance analysis in food industry is relatively a new method for monitoring food properties change and its relation to food quality. Many attempts performed to study the relation between electrical and physical properties. In this tutorial, we will learn about different systems architectures used for bioimpedance measurements, performance parameters and measurements techniques.

Wednesday, December 8 10:30 - 11:00

BK: Break

Rooms: [Virtual room-I](#), [Virtual room-II](#)

Wednesday, December 8 11:00 - 12:30

S1a: Communications and Information Systems [zoom](#)

Room: [Virtual room-I](#)

Chair: Chadi Abou-Rjeily

11:00 A Modified RC-pLMS Adaptive Beamformer for Secure Digital Communication...1

Ghattas Akkad, Ali Mansour, Bachar ElHassan and Elie Naim Inaty

11:15 Performance of Narrowband IoT Link Adaptation with Rate and Energy Objectives...6

Farah Yassine, Oussama Bazzi, Melhem El Helou and Samer Lahoud

11:30 Fast Link Adaptation with Partial Channel State Information for Orthogonal Multiple Access Multiple Relay Channel (OMAMRC)...11

Ali Al Khansa, Raphael Visoz, Yezekael Hayel, Samson E Lasaulce and Rasha Al Khansa

11:45 Minimum UAV Fog Servers with Maximum IoT Devices Association Using Genetic Algorithms...17

Nadine Abbas, Rayan Abusrewil, Amir Najjar and Sanaa Sharafeddine

12:00 Detecting Mental Disorders through Social Media Content...23

Batoul Haidar, Rami Kanaan and Rima Kilany

S1b: Power, Power Electronics, Industrial Electronics and Energy

zoom

Room: Virtual room-II

Chairs: Mohamad Arnaout, Abdallah Kassem

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11:15 Model-Based Estimation for Improving the Resolution of the Pulsed Electroacoustic Method...33

Mohamad Arnaout and Khaled Chahine

11:30 Online Detection for Faults in Transmission Lines...37

Ali Reda, Imad Al Kurdi, Ziad Noun, Ali Koubayssi, Mohamad Arnaout and Rabih Rammal

11:45 A Review on Electric Vehicles Battery Chargers and AC/DC Converters for Fast Charging Stations...43

Sandy Atanalian, Kamal Al-Haddad, Rawad Zgheib and Hadi Y. Kanaan

12:00 A Comparative Study of Open-End Winding Drive Systems for Hybrid Fuel Cell-Battery Fed Electric Vehicles...49

Khaled Safsouf, Jean Sawma and Hadi Y. Kanaan

Wednesday, December 8 12:30 - 1:30

LB: Break

Rooms: Virtual room-I, Virtual room-II

Wednesday, December 8 1:30 - 3:00

S2a: Computer Systems and Applications zoom

Room: Virtual room-I

Chair: Mohamad Mostafa Awad

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Michael Wishon and [Georges Chahine](#)

1:45 *Trip-based prediction of hybrid electric vehicles velocity using artificial neural networks...*60

[Nay Abi Akl](#), Jawad Khoury and Charbel Mansour

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[Georges El Hajal](#), Roy Abi Zeid Daou and Yves Ducq

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[Mohamad Mostafa Awad](#)

2:30 *Rapid design and verification experience using flexible cycle-accurate NoC simulator...*77

[Mostafa Rizk](#), Jean-Philippe Diguët and Amer Baghdadi

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Guy Maalouf and [Marianne Awad](#)

S2b: Control Systems, Instrumentation and Robotics [zoom](#)

Room: Virtual room-II

Chairs: Naseem Daher, Flavia Khatounian

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[Abdel-Razzak Abdallah Merheb](#), Hassan M. Noura, Marc Anthony Mannah and Ahmad Haddad

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[Joseph Iskandar](#), Nabil Fares, Xavier Moreau and Roy Abi Zeid Daou

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[Hassan El Atwi](#) and Naseem Daher

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[Mohammad Lakis](#) and Naseem Daher

2:45 *Input-Output Stability Based Model Reference Adaptive Control of a Passive Pneumatic Teleoperation System...*119

[Leen Daher](#) and Naseem Daher

Wednesday, December 8 3:00 - 4:00

KS-2: SPACE MICROGRIDS - NANO SATELLITES, LUNAR BASES AND CLOSED ECOSYSTEMS [zoom](#)

Prof. Josep M. Guerrero

Keynote Speaker

Rooms: [Virtual room-I](#), [Virtual room-II](#)

Chair: Hadi Y. Kanaan

This talk will begin by introducing the control of microgrids, the parallelisms with the human brain and the research for possible sources of inspiration in last frontiers of neuroscience. Then, control in electric power systems of satellites and space platforms will be presented, showing approaches that are extended from terrestrial microgrids and explaining the differences and challenges when it comes to apply them out in the space. Further, multi-microgrid systems will be discussed for moon craters in future lunar manmade bases. Finally, the extension from the hierarchical control of microgrids to bioastronautics in the control of closed ecological systems to support with oxygen, water, and food to the astronauts and creating thus creating new ecosystems for the moon and future mars bases.

Wednesday, December 8 4:00 - 5:30

S3a: Biomedical and Bioinformatics [zoom](#)

Room: [Virtual room-I](#)

Chair: Mohamad O. Diab

4:00 *Design and Implementation of an Instrumented walking cane for Detection of Freezing of Gait...125*

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[Antoine Abi Zeid Daou](#), Christian Haddad and Roy Abi Zeid Daou

4:30 *On Data Bias and the Usability of Deep Learning Algorithms in Detecting COVID-19 based on Chest X-ray...136*

[Hassane Ezzeddine](#), Mariette Awad, Bassem Mourany and Alain Abi Ghanem

4:45 *Multi-Sensor Data Fusion for Smart Home Reliable Pedestrian Localization...144*

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5:00 *Adjusting Local Conformational Sampling For Fragment Assembly Protein Structure Prediction Based On Secondary Structure Complexity...150*

[Jad Abbass](#) and Jean-Christophe Nebel

S3b: Power, Power Electronics, Industrial Electronics and Energy

[zoom](#)

Room: [Virtual room-II](#)

Chair: Chantal Maatouk

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4:15 Dynamic Modeling of Energy Systems Adapted to Low Energy Buildings- Case study in Lebanon...161

[Nadine Yehya Yehya](#) and Chantal Maatouk

4:30 Examination and optimization of the design parameters for the thermal hysteresis phenomenon of the phase change material...167

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[Rayan Hammoud](#)

5:15 Integration of PV power plant through HVDC link...184

[Fadi El Awar](#) and Hadi Y. Kanaan