



نقابة المهندسين الأردنيين  
Jordan Engineers Association



**JIBEC**  
2nd Jordanian International Biomedical  
Engineering Conference



المجتمع الأردني للمهندسين الطبيين  
Jordanian Society of Biomedical Engineering



**IEEE**  
Jordan Section

# 2<sup>nd</sup> Jordanian International Biomedical Engineering Conference

27 - 28 November, 2024, Amman, Jordan



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## Program for 2024 Second Jordanian International Biomedical Engineering Conference (JIBEC)

Wednesday, November 27

09:00 am - 10:00 am	<b>Registration</b>	
10:00 am - 10:30 am	<b>Opening Ceremony</b> <i>Room: Ishtar</i>	
10:30 am - 11:00 am	<b>Coffee Break</b>	
11:00 am - 12:00 am	<b>Keynote-Speaker-1: EEG and Cognitive Analysis</b> <b>Prof. Hasan Al-Nashash, American University of Sharjah</b> Chair: Bassam Al-Naami <i>Room: Ishtar</i>	
12:00 am - 12:35 pm	<b>Workshop-1: Latest Technologies used to Elevate Orthopedic Surgery</b> <b>Dr. Mahmoud Mousa Odat, Senior consultant orthopedic and trauma surgeon</b> Chair: Dr Iyad Malkawi <i>Room: Ishtar</i>	
12:45 pm- 02:00 pm	<b>S11(A): Bioinstrumentation and Biosensors</b>  <b>Room: Ishtar</b>	<b>Chair: Dr. Firas Abu Dalo</b>
		<ul style="list-style-type: none"> <li>• Jamal Al-Nabulsi and Mohammad AL-sayed Ahmad <b>“Diagnosis of Knee Osteoarthritis Using Bioimpedance &amp; Deep Learning”</b></li> <li>• Jamal Al-Nabulsi and Jude Haddad <b>“A Low-Cost Non-Contact Patient Vital Signs Monitoring Device”</b></li> <li>• Amjed Al-Fahoum and Ghadeer Al Omari <b>“Comparative Analysis of PPG Signal Capturing Using Piezoelectric, Photosensor, and Earlobe Devices”</b></li> <li>• Roberto de Fazio, Ilaria Cascella, Massimo De Vittorio and Paolo Visconti and Bassam Al-naami <b>“EEG Signal Acquisition From the Forehead and Ears Through Textile-Based 3D-Printed Electrodes to Be Integrated Into a Sensorized Face-Mask for Astronauts' Sleep Monitoring”</b></li> </ul>



نقابة المهندسين الأردنيين  
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<p>12:45 pm- 02:00 pm</p>	<p><b>S11(B):</b> Bioinformatics, Healthcare Information Systems, e-Health, and AI (1)</p> <p><b>Room: Garacia</b></p>	<p><b>Chair: Dr Areen Al-Basher</b></p> <ul style="list-style-type: none"> <li>• Amani Al-Ghraibah, Ali Al-Abbas , Mohamed Bayan Emad Kmainasi, Ismaeel Emad Mustafa and Khaled Brmo <b>“Automated Detection of Lung Cancer Levels Based on Patient's Lifestyle Information”</b></li> <li>• Wassan Adnan Hashim and Shahab Kareem <b>“Smart Material Selection: Leveraging Machine Learning for Sustainable and Cost-Effective Building Design”</b></li> <li>• Lara Hamawy ,Yehia Ismail Amin , Mark G. Fenianos , Mohamad Abou Ali , Fatima Sbeity and Mohamad Hajj-Hassan <b>“Microscopic Urinary Sediments Detection Using Deep Learning”</b></li> <li>• Fatima Sbeity , Lara Hamawy ,Mostafa Ftouni and Sara Kassem <b>“Enhanced ECG Arrhythmia Detection Through Deep Learning Techniques”</b></li> <li>• Amjed Al-Fahoum , Rahma Ziad Al-Awamreh , Reman Jamal Asad and Farah Eyad Saleh <b>“A None-Invasive Diabetes Detection Machine Learning-Based Tongue Image Analysis Tool”</b></li> </ul>
<p>02:00 pm - 02:15 pm</p>	<p><b>Coffee Break</b></p>	
<p>02:15 pm - 03:00 pm</p>	<p><b>Workshop-2: Pharmacokinetic Modelling &amp; Pharmacokinetic/Pharmacodynamic Modelling</b> <b>Dr Mohammed Atari, Principal Non-clinical PK/PD Scientist, UCB Pharma, UK</b></p> <p>Chair: Areen Al-Bashir Room: Ishtar</p>	
<p>03:00 pm - 04:00 pm</p>	<p><b>Keynote-Speaker-2: Neuroengineering</b> <b>Prof. Nitish V. Thakor, Johns Hopkins University</b></p> <p>Chair: Jamal Al-Nabulsi Room: Ishtar</p>	
<p>04:00 pm - 05:00 pm</p>	<p><b>Lunch Break</b></p>	



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**Thursday, November 28**

<p>10:00 am - 11:00 am</p>	<p align="center"><b>Keynote-Speaker-3: Cancer Care Informatics</b> <b>Prof. Mohammed Odeh, Cancer Care Informatics, King Hussain Cancer Center (KHCC), Jordan and UWE Bristol, UK.</b> Chair: Eng Naser Al-Zoubi Room: Ishtar</p>	
<p>11:00 am - 11:45 am</p>	<p align="center"><b>Workshop-3: Role of Health Technology Assessment (HTA) in Healthcare Systems</b> <b>Dr. Hashem Alfadel, TEMOS International, Germany</b> Chair: Dr Iyad Malkawi Room: Ishtar</p>	
<p>11:45 am - 12:00 pm</p>	<p align="center"><b>Coffee Break</b></p>	
<p>12:00 pm - 12:35 pm</p>	<p align="center"><b>Workshop-4: Role of Clinical Engineering in Improving Quality of Patient Care</b> <b>Dr. Iyad Mobarek Malkawi</b> Chair: Eng Mohammad Daabs Room: Ishtar</p>	
<p>01:00 pm - 02:15 pm</p>	<p align="center"><b>S21(A): Biomedical Signal and Image Processing (2)</b> <b>Room: Ishtar</b></p>	<p align="center"><b>Chair: Dr Sameh Al-Sharaa</b></p> <ul style="list-style-type: none"> <li>• Anas Yousef Saleh and Eng. An-Najah National University Hospital, Palestine) <b>“COVID-19 Diagnosis From Chest X-Ray Images Using Machine Learning Approach”</b></li> <li>• Samer I. Awad, Yazan Gharaibeh, Abeer Obeid and Sari Awwad <b>“Optimizing Retinal Fundus Images for the Automated Diabetic Retinopathy Diagnosis”</b></li> <li>• Bassam Al-naami, Awad Al-Zaben, Paolo Visconti and Roberto de Fazio , Yahia Z Rawash <b>“ECG Signal-Based Feature Identification of Obstructive Sleep Apnea Using Dual-Tree Complex Wavelet Transform and Adaptive Neuro-Fuzzy Inference System”</b></li> <li>• Kateryna Muzyka , Lorena Redondo-Morata and Ignacio Casuso-Paramo <b>“Exploring Artifacts in Nanoscale AFM Imaging Using Quantitative Imaging Mode: a Comparison With Lipid Corrugations”</b></li> </ul>



01:00 pm - 02:15 pm	<p><b>S21(B):</b> Bioinformatics, Healthcare Information Systems, e-Health, and AI (2) <b>Room: Gracia</b></p>	<p><b>Chair: Dr. Amani Al-Ghraibah</b></p> <ul style="list-style-type: none"> <li>Vanessa Miled Barakat and Simona Semaan Antonios , Ahmad Diab , Lara Hamawy ,Firas Zakaria and Marwan AlHawat <b>“Detection of the Source of Parkinson Treatment Inefficiency Using Machine Learning Based on Tremor Signals”</b></li> <li>Nivine Sultan Al Kassem , Jana Al Kassar Ahmad Diab , Marwan AlHawat , Lara Hamawy and Firas Zakaria <b>“Physiological Age Detection Using ECG: A Machine Learning-Based Framework”</b></li> <li>Jana Sleiman , Mohamad Daher , Mohamad Khalil, Ahmad Diab and Abdallah Kassem <b>“Biological Age Estimation From ECG Using Artificial Intelligence Approaches”</b></li> <li>Mohammad AL-sayed Ahmad and Jude Haddad <b>“An Explainable AI Model for Predicting the Recurrence of Differentiated Thyroid Cancer”</b></li> </ul>
02:15 pm - 02:30 pm	<b>Coffee Break</b>	
02:30 pm - 03:45 pm	<p><b>S22(A):</b> Biomaterials, BioMEMS, Bionanotechnology, and Clinical Engineering <b>Room: Ishtar</b></p>	<p><b>Chair: Prof Jamal Al-Nabulsi</b></p> <ul style="list-style-type: none"> <li>Ruba Khnouf, Esra'a Alshawwa and Enas Abdulhay <b>“Microfluidic Device for the Continuous Separation of Circulating Tumor Cells Using Dielectrophoresis”</b></li> <li>Areen Al-Bashir, Lamis R. Banylssa and Ruba Khnouf <b>“ A New Technique for Blood Cell Staining in Suspension “</b></li> <li>Tala Ibrahim Abdelhadi , Mashhour Bani Amer, Layan AbdulSamad, Seba Alomari and Diaa Alawam <b>“ Autonomous Ultraviolet Sterilization: A WiFi-Enabled Robot With Video Monitoring”</b></li> <li>Ali Rababah , Jamal Al-Nabulsi , Jess Tate , Beáta Ondrušová , machteld boonstra , Jana Svehlikova and Rob MacLeod <b>“Evaluation of Computed Epicardial Potentials, Activation Times, and Pacing Site Localization in Electrocardiographic Imaging”</b></li> <li>Alaa Eleyan, Bilel Neji, Barrak Alwazzan, Hamad Alshammari, Thamer Mubarak, Khaled Alsubaie and Saleh Alajmi <b>“Brain Activity Monitoring Using Machine Learning and Dry-EEG Signals</b></li> </ul>



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02:30 pm - 03:45 pm	<p><b>S21(B):</b> Bioinformatics, Healthcare Information Systems, e-Health, and AI (2) <b>Room: Gracia</b></p>	<p><b>Chair: : Dr Ahmad Borine</b></p> <ul style="list-style-type: none"> <li>• Nour Jamal Abu and Luay Fraiwan “<b>Automated Identification of Alzheimer's Disease Stages Based on Magnetic Resonance Imaging Scans Using Artificial Intelligence Techniques</b>”</li> <li>• Fatima Sbeity , Lara Hamawy , Rita Samir Abboud , Ali Hage-Diab, Hawraa Alawieh and Muhammad Rasheed “<b>Mental Illnesses Detection Employing Features Extracted From EEG Signals Using Deep Learning</b>”</li> <li>• Areen Al-Bashir, Lamia I. Darwish, Mohannad Othman Abu Shawimeh and Rand Bawwab “<b>A Mobile Application for Improving Emergency Response Times and Patient Outcomes With Real-Time Data Sharing</b>”</li> <li>• H Owida and Jamal Al-Nabulsi , Nour Al Hawamdeh , Suhaila Abuowaida ,Esraa Abu Elsoud and Zaher Salah “<b>Deep Learning-Based Kidney Disease Classification Using ResNet50: Enhancing Diagnostic Accuracy</b>”</li> </ul>
04:00 pm - 05:00 pm	<b>Lunch Break</b>	
	<b>Closing</b>	

## JIBEC Program at a Glance

	Wednesday, November 27			Thursday, November 28	
09:00 am - 10:00 am	Registration		10:00 am - 11 :00 am	Keynote-Speaker-3: Cancer Care Informatics Prof. Mohammed Odeh, <i>Ishtar</i> Chair: Eng. Naser Al-Zoubi	
10:00 am - 10 :30 am	Opening Ceremony, <i>Ishtar</i>		11:00 am - 11 :45 am	Workshop-3: Role of Health Technology Assessment (HTA) in Healthcare Systems, Dr. Hashem Alfadel , <i>Ishtar</i> Chair: Dr. Iyad Malkawi	
10:30 am - 11 :00 am	Coffee Break		11:45 am - 12:00 pm	Coffee Break	
11:00 am - 12:00 pm	Keynote-Speaker-1: EEG and Cognitive Analysis Prof. Hasan Al-Nashash, <i>Ishtar</i> Chair: Prof. Bassam Al-Naami		12:00 pm - 12 :35 pm	Workshop-1: Latest Technologies used to Elevate Orthopedic Surgery, Dr Mahmoud Odat, <i>Ishtar</i> Chair: Dr. Iyad Malkawi	
12:45 pm – 02:00 pm	S11(A): Bioinstrumentation and Biosensors, <i>Ishtar</i> Chair: Dr Firas Abu Dalo	S11(B): Bioinformatics, Healthcare Information Systems, e-Health, and AI, <i>Gracia</i> Chair: Dr Areen Al-Bashir	12:00 pm – 12:35 pm	Workshop-4: Impact of Clinical Engineering on Quality of Patient Care, Dr. Iyad Mobarek Malkawi, <i>Ishtar</i> Chair: Eng. Mohammad Daabs	
02:00 pm – 02:15 pm	Coffee Break		1:00 pm - 02:15 pm	S21(A): Biomedical Signal and Image Processing (2), <i>Ishtar</i> Chair: Dr Sameh Al-Sharaa	S21(B): Bioinformatics, Healthcare Information Systems, e-Health, and AI (2), <i>Gracia</i> Chair: Dr Amani Gharaebh
			02:15 pm - 02:30 pm	Coffee Break	
02:15 pm - 03:00 pm	Workshop-2: Pharmacokinetic Modelling & Pharmacokinetic/Pharmacodynamic Modelling, Dr Mohammed Atari, <i>Ishtar</i> Chair: Dr Areen Al-Bashir		02:30 pm - 03:45 pm	S22(A): Biomaterials, BioMEMS, Bionanotechnology, and Clinical Engineering, <i>Ishtar</i> Chair: Prof Jamal AL-Babulsi	S22(B): Bioinformatics, Healthcare Information Systems, e-Health, and AI (3), <i>Gracia</i> Chair: : Dr Ahmad Borine
03:00 pm - 04:00 pm	Keynote-Speaker-2: Neuroengineering, Prof. Nitish V. Thakor, <i>Ishtar</i> , Chair: Prof. Jamal Nabulsi		04:0 pm	Lunch	
04:00 pm	Lunch			Closing	