

2016 3rd Middle East Conference on Biomedical Engineering (MECBME 2016)

**Beirut, Lebanon
6-7 October 2016**



**IEEE Catalog Number: CFP1688J-POD
ISBN: 978-1-5090-2556-5**

**Copyright © 2016 by the Institute of Electrical and Electronics Engineers, Inc
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

******This publication is a representation of what appears in the IEEE Digital Libraries. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP1688J-POD
ISBN (Print-On-Demand):	978-1-5090-2556-5
ISBN (Online):	978-1-5090-2555-8
ISSN:	2165-4247

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

Program

2016 3rd Middle East Conference on Biomedical Engineering (MECBME)

Neuroscience, Rehabilitation, and Therapeutic Systems; Healthcare Information Systems and e-Health

A System Identification Approach for Recognition of Personalized User Motion Patterns from Mobile Sensing Data

Reem Mahmoud (American University of Beirut, Lebanon), Fadi Karameh (American University of Beirut, Lebanon), Hazem Hajj (American University of Beirut, Lebanon) 1

Can The Damage Caused by Anthropogenic Activities on Urginea Maritima in Bentael Natural Reserve Be a Signal of Health Problems?

Yara Khayrallah (Beirut Arab University, Lebanon), Tarek Houri (Beirut Arab University, Lebanon), George Haddad (LARI Fanar, Lebanon), Rajaa Fakhoury (Beirut Arab University, Lebanon), Bilal Osta (BAU, Lebanon), Danny Romanos (Lebanese Agricultural Research Institute LARI, Lebanon) 6

Integration of Monte Carlo Simulation Tool for Forecasting Medical Equipment Risks in HIQMA System

Sahar Ismail (Lebanese International University, Lebanon), Hassan Nehme (Lebanese International University, Lebanon), Mohamad Hajj-Hassan (Lebanese International University, Lebanon), Bassam Hussein (Lebanese International University, Lebanon) 10

Recognition of different daily living activities using Hidden Markov Model Regression

Khaled Safi (Center AZM, EDST Lebanese University & LISSI Laboratory Paris-Est University, Lebanon), Samer Mohammed (University of Paris-Est Creteil Val de Marne, France), Ferhat Attal (Paris-Est University, Lebanon), Mohamad Khalil (Lebanese University & Doctoral School of Sciences and Technology, Lebanon), Yacine Amirat (LISSI Laboratory, France) 16

Low Cost Foot Plantar-Pressure Scanning Pad

Faris Mattar (University Of Jordan, Jordan), Hala Qudaimat (University of Jordan, Jordan), Bashar Al Qaroot (The University of Jordan, Jordan), Musa Al-Yaman (University of Jordan, Jordan) 20

On-line Optimal Design of Process Noise Covariance in Nonlinear Kalman Filters: A Hemodynamic Model Application

Mahmoud Madi (American University of Beirut, Lebanon), Fadi Karameh (American University of Beirut, Lebanon) 25

Design and Development of a Rehabilitative Eye-Tracking Based Home Automation System

Ziad O. Abu-Faraj (American University of Science and Technology, Lebanon), Georges Boustany (American University of Science & Technology, Lebanon), Alaa El Deen Itani (American University of Science & Technology, Lebanon), Rayan Youssef (American University of Science & Technology, Lebanon), Omar Chami (American University of Science & Technology, Lebanon) 30

Brain network modules of meaningful and meaningless objects

Jennifer Rizkallah (Université de Rennes 1 & Lebanese University, France), Pascal Benquet (Université de Rennes 1, France), Fabrice Wendling (INSERM, France), Mohamad Khalil (Lebanese University & Doctoral School of Sciences and Technology, Lebanon), Ahmad Mheich (University of Rennes1, France), Olivier Dufor (Télécom Bretagne, Institut Mines-Télécom & UMR CNRS 6285 Lab-STICC, France), Mahmoud Hassan (University of Rennes1, France) 34

Biomedical Signal Processing (I)

ECG Classification for Sleep Apnea Detection

Amanda Hachem (IUL, Lebanon), Mohammed Ayache (UIL, Lebanon), Lina ELkhansa (IUL, Lebanon), Ali Jezzini (IUL, Lebanon) 38

Estimation and Compensation of Biomedical Sensors Response Delays Using Extended Kalman Filter

Awad Al-Zaben (Yarmouk University, Jordan), Ismail Arafat (Salaman University, Saudi Arabia) 42

A Comparison of Post-Processing Techniques on the Performance of EMG based Pattern Recognition System for the Transradial Amputees

Ali H. Al-Timemy (Centre for Robotics and Neural Systems (CRNS) & University of Plymouth, United Kingdom), Rami Khushaba (Visiting Fellow, University of Technology, Sydney (UTS), Australia), Javier Escudero (University of Edinburgh, United Kingdom) 46

Polar coded MIMO wireless EEG system

Hussein Kamel Chaiel (Iraq, University of Thi-Qar, Jordan) 50

A Micro-Embolic Energy Detector based on Sub-band Decomposition

Maroun Geryes (Lebanese University, Lebanon), Sébastien Ménigot (Université François-Rabelais de Tours & Inserm U930, France), Walid Hassan (Thomson Reuters & Lebanese University, USA), Ali Mcheick (Lebanese University, Lebanon), Marilys Almar (ATYS Medical, France), Benoit Guibert (ATYS Medical, France), Corinne Gautier (CHU de Lille, France), Jamal Charara (Lebanese University & Faculty of Sciences, Lebanon), Jean-Marc Girault (Université François Rabelais - Tours, France) 54

Channel combination selection for EHG bivariate analysis

Dima Alamedine (Lebanese University & UTC, Lebanon), Mohamad Khalil (Lebanese University & Faculty of Engineering, Section 1, Lebanon), Catherine Marque (Université de Technologie de Compiègne, France) 59

An Adaptive Nonlinear Autoregressive Approach for Modeling Biological Signals

Ursula Eid (American University of Beirut, Lebanon), Fadi Karameh (American University of Beirut, Lebanon) 63

A 2D Clustering Approach Investigating Inter-hemispheric Seizure Flow by Means of a Directed Transfer Function

Elie Bou Assi (Polytechnique Montréal, Canada), Dang Nguyen (Notre-Dame Hospital, Centre Hospitalier de l'Université de Montréal, Canada), Sandy Rihana (Holy Spirit University of Kaslik, Lebanon), Mohamad Sawan (Polytechnique Montréal, Canada) 68

Biomedical Circuits, Systems, Instrumentation, and Nanomedicine; Biomechanics, Biomaterials, and Tissue Engineering

Impaired Hand Movement Tracking Device with Real-Time Visual Feedback

Houssam Hneineh (Lebanese International University, Lebanon), Alaa Moselmani (Lebanese International University, Lebanon), Ali Hage-Diab (Lebanese International University, Lebanon), Soha Saleh (Kessler Foundation & Lebanese International University, USA) 72

Differential R-to-I Conversion Circuit for Gas Sensing in Biomedical Applications

Zeinab Ibrahim Hijazi (University of Genova Italy & Lebanese University EDST, Italy), Daniele Caviglia (University of Genoa, Italy), Hussein Chible (Lebanese University, Lebanon), Maurizio Valle (University of Genova, Italy) 76

Portable EEG recording system for BCI application

Sandy Rihana (Holy Spirit University of Kaslik, Lebanon), Tony Azzar (UESK, Lebanon), Elie Bitar (UESK, Lebanon) 80

Wearable Fall Detection system

Sandy Rihana (Holy Spirit University of Kaslik, Lebanon), Joseph Mondalak (UESK, Lebanon) 84

Reduction of Parkinsonism Disorder Symptoms Using Passive Dual Absorbers

Sarah Gebai (Lebanese International University, Lebanon), Mohamad S Hammoud (Lebanese International University (LIU), Lebanon) 88

Design of a multifunctional universal mask for patients

Roy Abi Zeid Daou (Lebanese German University, Lebanon), Rami Daccache (Lebanese German University, Lebanon), Gerges Andary (Lebanese German University, Lebanon), Ali Hayek (University of Kassel, Germany), Josef Boercsoek (University of Kassel, Germany) 92

<i>A Videoconferencing Platform for eHealth Services in Jordan</i>	
Ala Khalifeh (German University of Jordan, Jordan), Majid A. Al Taee (University of Liverpool, Jordan), Firas Alabsi (German Jordanian University, Jordan), Saifaldeen Al-Rawi (German Jordanian University, Jordan), Ayman Murshed, A (University of Jordan, Jordan)	98
<i>Multi-variant Bioreactor for Cartilage Tissue Engineering</i>	
Waddah Malaeb (AUB, Lebanon), Rami Mhanna (AUB, Lebanon), Ramsey Hamade (American University of Beirut, Lebanon)	102

Biomedical Education; Biomedical Imaging and Image Processing; Biomedical Signal Processing (II); Bioinformatics and Systems Biology; Biomedical Systems Modeling

<i>Lower Back MRI Region-Based Segmentation for Computer-Aided Systems</i>	
Rasha S. Aboul-Yazeed (Cairo University, Egypt), Ahmed El-Bialy (Cairo University, Egypt)	106
<i>Automated Localization and Segmentation of Brain Lesions Due to Hemiplegia Using Window-Based Entropy Comparison</i>	
Ali Ali (Lebanese International University, Lebanon), Hassan Ahmad (Lebanese International University, Lebanon), Soha Saleh (Kessler Foundation & Lebanese International University, USA)	110
<i>Face Detection with Expression Recognition using Artificial Neural Networks</i>	
Michel J Owayjan (American University of Science & Technology, Lebanon), Roger Achkar (American University of Science and Technology, Lebanon), Moussa Iskandar (American University of Science & Technology, Lebanon)	115
<i>Differentiation between Cellularized and Decellularized Mouse Kidneys using Mean Scatterer Spacing: A Preliminary Study</i>	
Remie Nasr (Lebanese University, Lebanon), Omar Falou (American University of Culture and Education & Lebanese University, Lebanon), Eno Hysi (Ryerson University, Canada), Lauren Wirtzfeld (Ryerson University, Canada), Elizabeth Berndl (Ryerson University, Canada), Kolios Michael (Ryerson University, Canada)	120
<i>Computer-aided Detection of Melanoma Using Geometric Features</i>	
Rebecca Moussa (Lebanese American University, Lebanon), Firas Gerges (Lebanese American University, Lebanon), Christian Salem (Lebanese American University, Lebanon), Romario Akiki (Lebanese American University, Lebanon), Omar Falou (American University of Culture and Education & Lebanese University, Lebanon), Danielle Azar (Lebanese American University, Lebanon)	125
<i>Electromyographic control of a robotic arm for educational purposes</i>	
Marcos Azulay (Universidad Nacional del Nordeste, Argentina), Maria Pisarello (Universidad Nacional del Nordeste, Argentina), Jorge Monzon (Universidad Nacional del Nordeste, Argentina)	129
<i>Characteristics of the Therapy Spectrum Beams used in the Secondary Standard Dosimetry Laboratory at the Lebanese Atomic Energy Commission</i>	
Nadim Melhem (Lebanese Atomic Energy Commission, Lebanon), Hanna Balaa (LAEC, Lebanon), Al Kattar Zeina (University, Lebanon), Ghassan Younes (Beirut Arab University, Lebanon)	133
<i>Developing a skin conductance device for early Autism Spectrum Disorder diagnosis</i>	
Bechara Nehme (Holy Spirit University of Kaslik (USEK), Lebanon), Rana Youness (Holy Spirit University of Kaslik (USEK), Lebanon), Takla Abi Hanna (Holy Spirit University of Kaslik (USEK), Lebanon), Walid Hleihel (Holy Spirit University, Lebanon), Rami Serhan (Lebanese American University, Lebanon)	139