IEEE Lebanon Section

IEEE Engineering in Medicine & Biology Society Lebanon Chapter

ICABME'19

5th International Conference on Advances In Biomedical Engineering

Lebanon, October 17-19, 2019

Conference Program

Order of Engineers
Dam W Farz, Ashir Dayeh Str.
Tripoli-Lebanon

Thursday, October 17		Friday, October 18
8:00 - 8:45	REGISTRATION	Keynote Speaker 3 : Pr. Anwar El Homsi
8:45 - 9:30		Neuroengineering and Signal Processing (Oral Session 3)
9:30 - 10:00		
10:00 - 10:15	Opening Ceremony	Coffee Break 2
10:15 - 10:30		
10:30 - 11:00	Welcome Reception	Imaging and artificial organs (Oral Session 4)
11:00 - 11:45	Keynote Speaker 1 : Pr. Mohamad Sawan	
11:45 - 12:30	Biomedical Image Processing (Oral Session 1)	Keynote Speaker 4 : Abdulmotaleb El Saddik
12:30 - 13:30		
13:30 - 14:00		Lunch
14:00 - 14:30	Lunch	
14:30 - 15:15	Keynote Speaker 2 : Moncef Gabbouj	Biomedical & Bioinformatic applications (Oral Session 5)
15:15 - 15:45		
15:45 - 16:00	Biomedical Signal Processing (Oral Session 2)	Coffee Break 3
16:00 - 17:00		Neuroengineering and biomedical applications(Flash Oral Presentation) Biomedical Education, Telemedicine, m-Health and Therapeutical Devices (Flash Oral Presentation)
17:00 - 17:15	Biomechanics, Bioinformatics, Biometrics, Imaging (Flash Oral Presentation)	
17:15 - 18:00	Signal and Image Processing (Flash Oral Presentation)	Biomedical Engineering - Education and Career Path
18:00 - 18:15		
18:15 - 19:00	Poster Session I: Bioinformatics, Biometrics, Imaging, Signal and Image processing	Poster Session II: Neuro Engineering, Therapeutic devices, Telemedicine
19:00 - 20:30		
20:30 - 23:00		Gala Dinner

Lebanese University
Faculty of Engineering

Lebanese University
Doctoral School
of Sciences & Technology

IEEE
Lebanon Section

EMB

EMB IEEE Engineering in
Medicine & Biology Society
Lebanon Chapter

ABME
2019

5th International Conference on Advances in Biomedical Engineering

2019 Fifth International Conference on Advances in Biomedical Engineering (ICABME) takes place 17-19 October 2019 in Tripoli, Lebanon.

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Welcome message from the Conference Chair

On behalf of the ICABME'19 organizing committee, it is a great pleasure and honor for me to welcome you all to the International Conference on Advances in Biomedical Engineering being organized by the Lebanese University, Faculty of Engineering and Doctoral School for Sciences and Technology, Lebanon.

I am very pleased that many researchers and high-level scientists from all around the world are able to be in Tripoli today. I would also like to welcome the distinguished delegates from international institutions, intergovernmental organizations, non-governmental organizations, scientific community and private sector. This conference is jointly organized by the Lebanese University and other private universities. I would like to use this opportunity to warmly welcome our co-organizers and our co-chairs to this event.

Despite the fact that we have biomedical related majors in most of the universities in Lebanon, there is still a lack of biomedical research and application in this country. Currently, the most active research center in the biomedical domain is the AZM Center for Research in Biotechnology and its Applications located in Tripoli, Lebanon.

The AZM Center has great international relations with many European countries, in addition to the United States, the United Kingdom and Canada. In addition, many Master's and PhD students benefit from the exchange programs that exist between the center and its foreign collaborators.

At this conference, there were 105 submitted papers from 26 different countries. Each paper was evaluated by at least two among 60 reviewers.

65 (67%) of these papers were accepted and were included in the final program.

ICABME'2019 is delighted to have four keynote speakers and twenty invited speakers from France, USA, Canada, Finland, China, Turkey and Cairo.

For the success of this conference, there are indeed many people to thank. The scientific committee did an outstanding job in selecting and organizing a very high quality program. The technical committee also did a great job in promptly answering participants. Staff and trainers at the AZM Center and in the administration of the doctoral school played key roles in handling the conference logistics and local arrangements.

We are very grateful to IEEE Lebanon Section and IEEE EMBS Lebanon Chapter for their technical cosponsoring.

The organizing committee is very grateful to our gold sponsor MEDILAB and the other sponsors: AZM and Saade Association, Union of municipality of Dannieh, LASER Association, Order of Physicians, ElMirador, Municipality of Tripoli for their generous sponsoring and support.

We are very grateful to many local partners' universities such as AUST, BAU, BIU, CTU, IUL, LIU, NDU, RHU and UOB for all their supports.

We have relevant ideas to be presented and discussed during these two days. I hope that we together will be able to acquire new knowledge, propose new research ideas and tackle various challenges, which will serve the society and our country in the coming years.

New challenges require new means and new tools. Not least, they require cooperation across borders.

Let us make brave innovations!

Welcome.

Mohamad Khalil
Conference Chair

Message from the Dean Of Doctoral School of sciences and Technology

Distinguished Guests,
It is my great pleasure to welcome you all to Lebanon and to this International Conference on Advances in Biomedical Engineering. We are deeply proud to jointly organize this activity with many other private universities in Lebanon. This cooperation is an achievement of what we strive to carry out at Lebanese university. It is an expression of a dimension of our mission in Lebanon and forward to the globalized world. It is in fact a constituent of our global responsibility.

The doctoral school of sciences and technology (DSST) at the Lebanese university contains hard workers and high quality students from Lebanese university and from private universities as well. The DSST implemented three multidisciplinary platforms in specific research topics that meet the socio-economic needs and the scientific competencies of researchers in the Lebanese University (Health and environment, nanotechnology, biotechnology).
DSST had made a lot of collaborations with international universities to make students exchange program and with many local universities, company, and social associations.

At DSST, we seek academic excellence, and nowadays, international exposure of faculty and students has become an essential component of excelling academically. For that this participation of prominent international speakers in this conference will immensely contribute to our academic atmosphere. Indeed, your experience and knowledge, honorable and distinguished guests, will also enrich our cultural diversity and strengthen it academically. It is in fact a scientific cooperation in a cross-cultural context. Allow me to express my sincere appreciation for your

presence in Lebanon and at Lebanese university in Beirut in spite of the unsettled circumstances in the region. With no doubt, the development of medical science has contributed throughout history to the betterment of different aspects of the daily life. Developments in the field of biomedical Engineering have always continued to take place. Our conference today is a step forward on this long journey.

Honorable Guests, to conclude, I would like to thank all people involved in the preparation and organization of this great event; the Organizing Committee, the Editorial Board, Sponsors, cosponsors and all speakers. We are grateful to all sponsors and friends who support this conference. Finally, I wish you all success in this conference and let it be the beginning of a series of international conferences in cooperation with all our universities.

Enjoy your stay!

Fawaz El Omar
Dean of DSST

Message from the Dean of the Faculty of Engineering

It is with great pleasure that I welcome the participants of the fifth International Conference on Advances in Biomedical Engineering. ICABME 2019 conference will be a platform to gather and disseminate the latest knowledge in biomedical engineering. Academicians, scientist, researchers and practitioners of Biomedical engineering will be able to share and discuss new ideas and applications in this domain including biomechanics, instrumentation, signal and image processing and others.

The faculty of engineering at the Lebanese university established a research center inside the faculty. One of research unit in this research center is the “technology for health”. This center will help our students and faculty members to propose new ideas in biomedical domains and this is the suitable place to put their innovation.

Our faculty of engineering contains many majors such as electrical, electronics, civil and mechanical engineering. Recently the petrochemical major is added to our curricula due to our vision for the future after discovering petrol and gas in Lebanon.

In order to promote good engineers and researchers, the faculty of engineering focuses on the areas of scientific recommendations, transfer of expertise, promotion of young scientists and engineers. In the faculty there are many research masters in Telecommunication, Civil engineering, renewable energy, Petroleum and biomedical.

Our program is one of the top ranked engineering programs in Lebanon thanks to the great efforts of our administration, faculty members and staff. Our graduates are innovators and professionals who serve and fuel

the economic and technological development of Lebanon and regions beyond.
As usual, biomedical engineering is a part of our curriculum. This will be transferred as department in the few coming years. And this is great pleasure for us to be a part of the organizing committee of this conference in collaboration with the Doctoral School of Sciences and Technology.

Finally I would like to congratulate the organizing committee for their tremendous efforts in organizing the conference.

I hope you will have a rewarding experience and an enjoyable time in Lebanon.

Rafic Younes
Dean of the Faculty of Engineering

FIFTH INTERNATIONAL CONFERENCE ON
ADVANCES IN BIOMEDICAL ENGINEERING (ICABME19)

Doctoral School of Sciences and Technology (EDST) and the Faculty of Engineering
Lebanese University (LU), Order of Engineering , Tripoli - Lebanon
October 17-19, 2019

Honorary Chairs:
Fawaz EL OMAR (Dean, EDST, LU)
Rafic YOUNES (Dean Faculty of Engineering, LU)

Conference Chair:
Mohamad KHALIL

Technical Program Chairs:
Ziad ABU-FARAJ (AUST)
Arij DAOU (AUB)
Sandy RIHANA (USEK)
Mohamad AYACHE (IUL)
Mohamad HAJ HASSAN (LIU)
Walid KAMALI (CU)
Racha BERBARI (UOB)

Publication Chairs:
Abdallah KASSEM (NDU)
Hassan AMOUD (LU)

Finance Chairs:
Omar FALOU (AUCE)
May IBRAHIM (LU)

Publicity Chairs:
Mohamad DIAB (RHU)
Ali ZAART (BAU)

Industrial Relation Chairs:
Wassim FALOU (LU)
Ali HAMIE (AUL)

Plenary Session Chairs:
Ahmad DIAB (LU)
Ali HAIDAR (BAU)

Local Arrangements Chairs:
Roy ABI ZEID DAOU (LGU)
Mohamad DAHER (ULF)

Awards Committee Chairs:
Adnan HARB (BIU)
Alaa Daher (LU)
Noujoud NADER (LU)

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Ahmed MORSY (Egypt)
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Awad AL-ZABEN (Jordan)
Catherine MARQUE (UTC, France)
Christine FERNANDEZ (Tours, Fr)
Dawie VAN DEN HEEVER (SUN, SA)
Dorra Sellami MASMOUDI (Sfax, Tunisia)
Fabrice WEIDLING (Rennes, France)
Guy CARRAULT (Rennes, France)
Hassan AL NASHASH (Charjah, UAE)
Hiba ZBIB (LU, Lebanon)
Jamal CHARARA (LU, Lebanon)
Jean-Marc GIRAULT (Tours, France)
Jihad EL JAAM (Qatar, QU)
Jose BERENGUERES (Sharjah, UAE)
Mahmoud HASSAN (Rennes 1, France)
Mohamad NASER EDDINE (LU, Lebanon)
Mohamad SAWAN (Montreal, Canada)
Mohamed ABOUELHODA (Nile, Egypt)
Mounir BEN AYED (Sfax, Tunis)
Olivier DEBEIR (ULB, Belgium)
Peter STADLER (Leipzig, Germany)
Racha BERBERI (Balamand, Lebanon)
Regine Le BOUQUIN JEANNES (Rennes, Fr)
Reza TAFRESHI (Qatar)
Rochdi MERZOUKI (Lille, France)
Sofiane BOUDAOUD (UTC, France)
Veronique MIGNONNEY (Paris 13, Fr)
Walid KAMALI (CU, Lebanon)
Yassine ARIBI (Sfax, Tunisia)
Zaher DAWY (AUB, Lebanon)
Ziad EL BITAR (Strasbourg, France)

Objectives:

The aim of this conference is to present the latest developments in biomedical engineering, medical informatics and related topics. This conference is an excellent opportunity to exchange new ideas and applications in the field at national and international levels. Moreover, this conference provides a venue to promote and support collaborative research projects.

Topics:

Medical Instrumentation and Artificial Organs, Medical Informatics, Medical Signal processing and Artificial Intelligence, Bioinformatics, Medical Imaging and Image Processing, Telemedicine mHealth and eHealth, IOT, Biomechanics, Bio-MEMS, Biomedical Circuits and Systems, Neuroengineering, Therapeutic Devices, Biomedical Engineering Education and Health Care Risk Management.

Important Dates:

Call for papers:	January 18, 2019
Deadline for submission:	May 31, 2019
Notification of acceptance:	Aug 3, 2019
Submission of final version:	September 7, 2019

Paper Presentation and Submission:

The conference will consist of oral and poster presentations with plenary sessions. All submitted papers will be peer-reviewed. Accepted and presented papers will be published as a collective work in an electronic format and will be submitted for inclusion in IEEE Xplore.
Researchers are welcomed to submit their contributions (4 pages, IEEE Format) via the EDAS System: **www.edas.info /N25652**

WebPage: **www.biotech.ul.edu.lb/icabme19**

Contact: **icabme19@ul.edu.lb**

Technical Co-Sponsors:
IEEE Lebanon Section
IEEE Lebanon EMBS Chapter

National Partner Universities:
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Beirut Arab University, BAU
City University of Tripoli, CTU
Holy Spirit University of Kaslik, USEK
Islamic University of Lebanon, IUL
International University of Beirut, BIU
Lebanese International University, LIU
Notre Dame University, NDU
Rafic Hariri University, RHU
University Of Balamand, UOB
Westlake University

EMBS MEA Committee Chairs:
Egypt Section Chapter,EMB18
Lebanon Section Chapter
South Africa Section Chapter
Tunisia Section Chapter
United Arab Emirates Section Chapter

Friends of the Conference:

KEYNOTE SPEAKER 1

Title: « Epileptic Seizures: From Foci Localization to Deep Learning Prediction »

Prof. Mohamad Sawan

(Polytechnic Montreal, Canada)

Prof. Mohamad Sawan received the Ph.D. degree in electrical engineering from Université de Sherbrooke, Sherbrooke, QC, Canada, in 1990. He joined Polytechnique Montréal, Canada, in 1991, where he was a Professor of Microelectronics and Biomedical Engineering. He is Chair Professor in Westlake University, Hangzhou, China, in 2019, where he is founder and director of the Center for Biomedical Research And INnovation (CenBRAIN).

Dr. Sawan was Deputy Editor-in Chief of the IEEE Transactions on Circuits and Systems-II: Express Briefs (2010-2013), Co-Founder, Associate Editor and Editor-in-Chief of the IEEE Transactions on Biomedical Circuits and Systems, Associate Editor of the IEEE Transactions on Biomedical Engineering, and the International Journal of Circuit Theory and Applications. He is founder of the International IEEE-NEWCAS Conference and of the Polystim Neurotech Laboratory, and Co-Founder of the International IEEE-BioCAS Conference, and the International IEEE-ICECS. General Chair

of the 2016 IEEE International Symposium on Circuits and Systems (ISCAS), and General Chair of the 2020 IEEE International Medicine, Biology and Engineering Conference (EMBC).

His scientific interests are the design and testing of analog and mixed-signal circuits and systems, signal processing, modeling, integration, assembly, and bio-validation. He was awarded the Canada Research Chair in Smart Medical Devices (2001-2015), and was leading ReSMiQ, the Microsystems Strategic Alliance of Quebec (1999-2018).

Dr. Sawan published more than 800 peer reviewed papers, two books, 10 book chapters, and 12 patents. He received several awards, among them the Barbara Turnbull 2003 Award for spinal cord research, the Bombardier and Jacques-Rousseau Awards. Dr. Sawan is Fellow of the IEEE, Fellow of the Canadian Academy of Engineering, Fellow of the Engineering Institutes of Canada, and “Officer” of the National Order of Quebec.

KEYNOTE SPEAKER 2

Title: « Advanced machine learning for biomedical signal analytics»

Prof. Moncef Gabbouj

(Tampere University, Finland)

Dr. Moncef Gabbouj received his BS degree in electrical engineering in 1985 from Oklahoma State University, Stillwater, and his MS and PhD degrees in electrical engineering from Purdue University, West Lafayette, Indiana, in 1986 and 1989, respectively.

Dr. Gabbouj is a Professor of Signal Processing at the Department of Computing Sciences, Tampere University, Tampere, Finland. He was Academy of Finland Professor during 2011-2015. He was a visiting professor at the Departments of Electronic and Computer Engineering, Hong Kong University of Science and Technology, Hong Kong. Dr. Gabbouj was on sabbatical at the Viterbi School of Engineering, University of Southern California, Los Angeles, California, during spring 2012, and before that a visiting professor at the School of Electrical and Computer Engineering of Purdue University, West Lafayette, Indiana during fall 2011. He was also a visiting professor at the American University of Sharjah, UAE in 2007-2008. He was Head of the Department during 2002-2007.

Dr. Gabbouj was Senior Research Fellow of the Academy of Finland during 2007-2008 and 1997-1998. He is the co-founder and past CEO of Suvi-Soft Oy Ltd. From 1995 to 1998 he was a Professor with the Department of Information Technology of Pori School of Technology and Economics.

From 1994 to 1995 he was an Associate Professor with the Laboratory of Signal Processing of Tampere University of Technology, Tampere, Finland. From 1990 to 1993 he was a senior research scientist with the Research Institute for Information Technology, Tampere, Finland.

Dr. Gabbouj is currently the TUT-Site Director of the NSF IUCRC funded Center for Visual and Decision Informatics and member of the Science Council of Tampere University of Technology. His research interests include Big Data analytics, multimedia content-based analysis, indexing and retrieval, artificial intelligence, machine learning, pattern recognition, nonlinear signal and image processing and analysis, voice conversion, and video processing and coding.

Dr. Gabbouj is an IEEE Fellow. He is a member of the IEEE Fourier Award Committee. He is member of the Academia Europaea and the Finnish Academy of Science and Letters. He served as Distinguished Lecturer for the IEEE Circuits and Systems Society in 2004-2005, and Past-Chairman of the IEEE-EURASIP NSIP (Nonlinear Signal and Image Processing) Board. He was chairman of the Algorithm Group of the EC COST 211quat. He served as associate editor of the IEEE Transactions on Image Processing, and was guest editor of Multimedia Tools and Applications, the European journal Applied Signal Processing.

He is the past chairman of the IEEE Finland Section, the IEEE Circuits and Systems Society, Technical Committee on Digital Signal Processing, and the IEEE SP/CAS Finland Chapter. Dr. Gabbouj is the General Co-Chair of ICIP 2020. He was also Chairman of EUVIP 2014, CBMI 2005, WIAMIS 2001 and the TPC Chair of ISCCSP 2006 and 2004, CBMI 2003, EUSIPCO 2000, NORSIG 1996 and the DSP track chair of the 1996, 2012, 2013 and 2014 IEEE ISCAS. He is also member of EURASIP Advisory Board and past member of AdCom. He also served as Publication Chair and Publicity Chair of IEEE ICIP 2005 and IEEE ICASSP 2006, respectively. Dr. Gabbouj was Honorary Guest Professor of Jilin University, China (2005-2010).

Dr. Gabbouj was the Director of the International University Programs in Information Technology (1991-2007) and vice member of the Council of the Department of Information Technology at Tampere University of Technology. He was also the Vice-Director of the Academy of Finland Center of Excellence SPAG, Secretary of the International Advisory Board of

Tampere International Center of Signal Processing, TICSP, and member of the Board of the Digital Media Institute. He served as Tutoring Professor for Nokia Mobile Phones Leading Science Program (2005-2007 and 1998-2001). He is a member of IEEE SP and CAS societies.

Dr. Gabbouj was the recipient of the 2017 Finnish Cultural Foundation for Art and Science Award, the 2015 TUT Foundation Grand Award, the 2012 Nokia Foundation Visiting Professor Award, the 2005 Nokia Foundation Recognition Award. He is the co-recipient of the Myril B. Reed Best Paper Award from the 32nd Midwest Symposium on Circuits and Systems and the NORSIG Best Paper Award from the 1994 Nordic Signal Processing Symposium. He was also the supervisor of the main author receiving the Best Student Paper Award from IEEE International Symposium on Multimedia, ISM 2011, the IBM Best Paper Award at ICPR 2014 and IPTA 2016. He published two books and over 700 journal and conference papers and supervised 47 doctoral and 58 Master theses.

Dr. Gabbouj has been involved in several past and current EU Research and education projects and programs, including Horizon, ESPRIT, HCM, IST, COST, Tempus and Erasmus. He also served as Evaluator of IST proposals, and Auditor of a number of ACTS and IST projects on multimedia security, augmented and virtual reality, image and video signal processing.

KEYNOTE SPEAKER 3

Title: «Applying Artificial Intelligence In Healthcare»

Prof. Anwar El Homsi

Dr. El-Homsi has more than 25 years of global leadership of combined experience in Artificial Intelligence, Applied Statistics, Lean Six Sigma, and Design Thinking. He held Management positions at Verizon Communications Inc., Cisco Systems, and Space Systems Loral and was a consultant to Fortune 100, privately held companies, and non-profit organizations, including Bombardier and Bausch & Lomb. Dr. El-Homsi is currently the CEO of Jainus, an Artificial Intelligence Consulting Company, and President of PassCare USA.

Anwar has a PhD in Business Systems, M.S. in Applied Statistics, and B.S. in Engineering. He was a member of the Advisory Council for Rochester Institute of Technology's Center for Quality and Applied Statistics. He is the originator of the CREŌ problem solving model and author of five business books including "Artificial Intelligence, A Leader's Guide to Building the Future".

KEYNOTE SPEAKER 4

Title: « Digital Twin for Wellbeing»

Prof. Abdulmotaleb El Saddik

(University of Ottawa, Canada)

Abdulmotaleb El Saddik is Distinguished University Professor and University Research Chair in the School of Electrical Engineering and Computer Science at the University of Ottawa. He is the director of the Multimedia Communications research Laboratory and the Medical Devices Innovation Institute. His research focus is on the establishment of Digital Twins using AI, AR/VR and Tactile Internet that allow people to interact in real-time with one another as well as with their digital representation.

He has authored and co-authored 10 books and more than 550 publications and chaired more than 50 conferences and workshop. He received 7 Best Paper Awards for peer-reviewed, published articles. He has obtained research grants and contracts totaling more than $18 M.

He has supervised more than 120 researchers and received several international awards, among others, are ACM Distinguished Scientist, Fellow of the Engineering Institute of Canada, Fellow of the Canadian Academy of Engineers and Fellow of IEEE, IEEE I&M Technical Achievement Award, IEEE Canada C.C. Gotlieb (Computer) Medal and A.G.L. McNaughton Gold Medal for important contributions to the field of computer engineering and science.

LIST OF INVITED SPEAKERS – ICABME19

INVITED SPEAKER

Invited Speaker	Title	University
Adrian Basarab	Computational medical imaging: from model-based approaches to machine learning	IRIT, France
Ahmed Morsy	BMI Effect on Accuracy of Monitoring of Ingestive Activities	Alexandria University, Egypt
Ali Saad	Nanoparticles visualization and extraction from 3D MRI for diagnosis and therapy in nanomedicine	King Saud University, Saudi Arabia
Amine Naït-ali	Face analysis in healthcare	Université Paris-Est Créteil, France
Catherine Marque	Towards a multi-scale multi-physic model of uterine contractions	Université de Technologie de Compiegne, France
Christine Fernandez-Maloigne	Artificial Intelligence for women's imaging and health	XLIM, France
Guy Carrault	Sensors for HEalth Recording and Physical Activity Monitoring: The SHERPAM project	Université de Rennes, France
Jean-Baptite Lamy	Hierarchical visual case-based reasoning for supporting breast cancer therapy	University Paris 13, France
Jean-Marc Girault	An overview of nearly a half century of microembolic signal processing techniques	Ecole Supérieure d'Electronique de l'Ouest & UMR CNRS 6613 LAUM, France
Mahmoud Hassan	Electroencephalography signal processing for brain network imaging	University of Rennes1, France
Mohamed Abouelhoda	Management of Big Variant Datasets in Bioinformatics: Comparison of Different Systems	Cairo University and KFSHRC, Saudi Arabia
Mounir Ben Ayed	Online anomaly detection in ECG signal using Hierarchical Temporal Memory	REGIM, Tunisia

Invited Speaker	Title	University
Olivier Debeir	Data augmentation for training deep regression for in vitro cell detection	ULB, Bruxelles, Belgium
Régine Le Bouquin Jeannès	A Hybrid Solution for Human Activity Recognition: Application to Wrist-Worn Accelerometry	Université de Rennes 1, France
Rochdi Merzouki	Cooperative Brachytherapy for Prostate Cancer Under MRI Guidance	Polytech Lille, France
Samer Mohammed	Adaptive Functional Electrical Stimulation for Assisting Walking Activities of Paretic Patients	University Paris 12
Sofiane Boudaoud	Assessment and sensitivity analysis of a motor units recruitment model during isometric contractions of the Biceps Brachii	University of Technology of Compiegne, France
Veronique Migonney	Functionalization of Polymers and Surfaces: a Way to Get Specific and Controlled Host Response towards Implantable Medical Devices	Université Paris 13, France
Yassine Aribi	Effectiveness of dominance for Anxiety Vs Anger detection	Sfax University, Tunisia
Ziad El Bitar	Monolithic active pixel sensor for low energy X-ray applications	Cnrs France, France

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12:30 - 13:30		
13:30 - 14:00		Lunch
14:00 - 14:30	Lunch	
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15:15 - 15:45		
15:45 - 16:00	Biomedical Signal Processing (Oral Session 2)	Coffee Break 3
16:00 - 17:00		Neuroengineering and biomedical applications(Flash Oral Presentation) Biomedical Education, Telemedicine, m-Health and Therapeutical Devices (Flash Oral Presentation)
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17:15 - 18:00	Signal and Image Processing (Flash Oral Presentation)	Biomedical Engineering - Education and Career Path
18:00 - 18:15		
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19:00 - 20:30		
20:30 - 23:00		Gala Dinner

Thursday, October 17

Thursday, October 17 8:00 - 9:30

REGISTRATION

Room: Main Hall- Order of engineering

Thursday, October 17 9:30 - 10:30

Opening Ceremony

Room: Main Hall- Order of engineering

Thursday, October 17 10:30 - 11:00

Welcome Reception

Room: Main Hall- Order of engineering

Thursday, October 17 11:00 - 11:45

Keynote Speaker 1 : Pr. Mohamad Sawan

Room: Main Hall- Order of engineering

Chair: Abdallah Kassem (Notre Dame University, Lebanon)

Epileptic Seizures: From Foci Localization to Deep Learning Prediction

Mohamad Sawan (Polytechnic Montreal, Canada)

Thursday, October 17 11:45 - 13:30

Biomedical Image Processing (Oral Session 1)

Room: Main Hall- Order of engineering

Chairs: Mohammad Ayache (Islamic University of Lebanon (IUL), Lebanon), Catherine Marque (Université de Technologie de Compiegne, France), Mohamad Sawan (Polytechnique Montréal, Canada)

Data augmentation for training deep regression for in vitro cell detection

Olivier Debeir (ULB, Bruxelles, Belgium); Christine Decaestecker (Universite Libre de Bruxelles, Belgium)

Artificial Intelligence for women's imaging and health

Christine Fernandez-Maloigne (XLIM, France)

Face analysis in healthcare

Amine Naït-ali (Université Paris-Est Créteil (UPEC), France)

BMI Effect on Accuracy of Monitoring of Ingestive Activities

Ahmed Morsy (Faculty of Engineering, Alexandria University, Egypt)

Thursday, October 17 13:30 - 14:30

Lunch

Thursday, October 17 14:30 - 15:15

Keynote Speaker 2 : Moncef Gabbouj

Room: Main Hall- Order of engineering

Chair: Mahmoud Hassan (University of Rennes1, France)

Advanced machine learning for biomedical signal analytics
Moncef Gabbouj (Tampere University, Finland)

Thursday, October 17 15:15 - 17:00

Biomedical Signal Processing (Oral Session 2)

Room: Main Hall- Order of engineering

Chairs: Omar Falou (American University of Culture and Education & Lebanese University, Lebanon), Moncef Gabbouj (Tampere University of Technology, Finland), Ahmed Morsy (Faculty of Engineering, Alexandria University, Egypt)

Assessment and sensitivity analysis of a motor units recruitment model during isometric contractions of the Biceps Brachii
Ines Douania (University of Technology de Compiègne, France); Sofiane Boudaoud (UMR University of Technology of Compiegne (UTC), France); Kiyoka Kinugawa Bourron (Sorbonne University and AP-HP Hôpital Charles Foix, France); Jeremy Laforet (University of Technology of Compiegne (UTC), France)

Sensors for HEalth Recording and Physical Activity Monitoring: The SHERPAM project
Guy Carrault (Universite de Rennes, France)

Towards a multi-scale multi-physic model of uterine contractions
Catherine Marque (Université de Technologie de Compiegne, France)

An overview of nearly a half century of microembolic signal processing techniques
Jean-Marc Girault (Ecole Supérieure d'Electronique de l'Ouest & UMR CNRS 6613 LAUM, France); Maroun Geryes (Lebanese University, Lebanon); Jamal Charara (Lebanese University & Faculty of Sciences, Lebanon); Sébastien Ménigot (ESEO Group & LAUM, UMR-CNRS, Université du Maine, Le Mans, France)

Thursday, October 17 17:00 - 18:15

Biomechanics, Bioinformatics, Biometrics, Imaging (Flash Oral Presentation)

Room: Main Hall- Order of engineering

Chairs: Alaa Daher (Laster Research Center, Doctoral School for Sciences and Technology, Lebanese University, Lebanon), Wassim El Falou (Lebanese University, Lebanon), Christine Fernandez-Maloigne (XLIM, France), Rochdi Merzouki (Polytech Lille, France)

Human-Exoskeleton Joint Misalignment: A Systematic Review
Randa Mallat (University of Paris-Est-Créteil, France); Mohamad Khalil (Lebanese University - AZM Center for Biotechnology -DSST & Faculty of Engineering, Lebanon); Gentiane Venture (Tokyo University of Agriculture and Technology, Japan); Vincent Bonnet (University of Paris Est Créteil, France); Samer Mohammed (University Paris 12, France)

A Novel Deep Learning Approach for Left Ventricle Automatic Segmentation in Cardiac Cine MR
Hisham Abdeltawab and Fahmi Khalifa (University of Louisville, USA); Fatma Taher (Dubai, UAE & Zayed University, United Arab Emirates); Garth Beache, Tamer Mohamed and Adel S Elmaghraby (University of Louisville, USA); Mohammed Ghazal (University of Abu Dhabi, United Arab Emirates); Robert Keynton and Ayman Sabry El-Baz (University of Louisville, USA)

Recent advances in Glioma grade classification using machine and deep learning on MR data
Paul Dequidt (University of Poitiers & Siemens Healthcare, France); Pascal Bourdon (Xlim Sic, France); Olfa Ben Ahmed (XLIM, France); Benoit Tremblais (University of Poitiers, France); Carole Guillevin (CHRU Poitiers, France); Mathieu Naudin (University of Poitiers, France); Christine Fernandez-Maloigne (XLIM, France); Rémy Guillevin (CHRU Poitiers, France)

Development of a New Biometric Authentication Approach Based on Electrocardiogram Signals
Nour Ali Deeb (City University of Tripoli in Lebanon, Lebanon); Alaa Daher (Laster Research Center, Doctoral School for Sciences and Technology, Lebanese University, Lebanon); Mashhour Chakouch (City University of Tripoli, Lebanon); Sarah Nachar (Hospital Albert Haykel, Lebanon); Walid Kamali (City University, Lebanon)

In silico and in vitro Blood-Brain Barrier models for early stage drug discovery
Ralph Saber and Sandy Rihana (Holy Spirit University of Kaslik, Lebanon); Rami Mhanna (AUB, Lebanon)

Neuromotor Strategy of Gait Rehabilitation for Lower-Limb Spasticity
Jinan Charafeddine (Paris Saclay, France); Sylvain Chevallier (University of Versailles-Saint Quentin & Laboratoire d'Ingénierie des Systèmes de Versailles (LISV), France); Mohamad Khalil (Lebanese University - AZM Center for Biotechnology -DSST & Faculty of Engineering, Lebanon); Didier Pradon (End:icap, Paris saclay , france); Samer Al Fayad (Paris Saclay)

Comparison between K-Nearest Neighbor and Support Vector Machine Algorithms for PPG Biometric Identification
Mohamad Hajj-Hassan (Lebanese International University, Lebanon); Ali Cherry (LIU, Lebanese International University, Lebanon); Hussein Hajj-Hassan and Aya Al-Sidani (Lebanese International University, Lebanon)

Identification of individuals using palm vein classification
Maha Hallal Abdulsater (IUL, Lebanon); Hussein Kanaan (Islamic University of Lebanon, Lebanon); Mohammad Ayache (Islamic University of Lebanon (IUL), Lebanon)

Robotic Feeder for Disabled People
Gaby H Abou Haidar and Georgio Abou Saad (American University of Science and Technology, Lebanon)

Influence of Head Movement on Human Gait through Biomechanical Kinematic Modelling
Rami Alkhatib (RHU, Lebanon); Mohamad O. Diab (Rafik Hariri University & College of Engineering, Lebanon); Maher Sabbah and Zahraa Bassyouni (Rafik Hariri University, Lebanon)

Functional Magnetic Resonance Imaging Based Framework for Autism Diagnosis
Reem Haweel (Faculty of Computers and Information Sciences, Ain Shams University & University of Louisville, Egypt); Omar Dekhil (CECS, USA); Ahmed Shalaby and Ali Mahmoud (University of Louisville, USA); Mohammed Ghazal and Ashraf Khalil (Abu Dhabi University, United Arab Emirates); Said Ghoniemy (University of Ain Shams, Egypt); Robert Keynton (UofL, USA); Adel S Elmaghraby (University of Louisville, USA); Gregory Barnes (University of Louisville Autism Center, USA); Ayman Sabry El-Baz (University of Louisville, USA)

Affordable Automated Blood Cell Imager
Mohamad Abou Ali (Author, Lebanon); Abdallah Kassem (Notre Dame University, Lebanon); Mohamad Hajj-Hassan (Lebanese International University, Lebanon); Lara Hamawy (LIU, Lebanese International University, Lebanon); George J. El Hajj-Moussa (Lebanese International University, Lebanon); Mohammad Wadaane and Saeed Bamashmos (LIU, Lebanon); Ahmed N. Al-naggar (Lebanese International University, Yemen)

Brain Segmentation from Super-Resolved Magnetic Resonance Images
Farah Bazzi (University Paul Sabatier, France); Juan Dios Rodriguez-Callejas (Center for Research and Advanced Studies of the Ploytechnique Institute, France); Caroline Fonta (Centre de Recherche Cerveau et Cognition, France); Ahmad Diab (Lebanese University, Lebanon); Omar Falou (American University of Culture and Education & Lebanese University, Lebanon); Hassan Amoud (Lebanese University & Faculty of Sciences, Lebanon); Muriel Mescam (Centre de Recherche Cerveau et Cognition, France); Adrian Basarab and Denis Kouamé (University of Toulouse, France)

Breast Cancer Classification in Ultrasound Images using Transfer Learning
Ahmad Mostafa Hijab (Cairo University & Biomedical Engineer, Egypt); Ayman Eldeib (Cairo, Egypt); Muhammad Rushdi (Cairo University, Egypt)

Signal and Image Processing (Flash Oral Presentation)

Room: Conference Room- Order of engineering

Chairs: Mounir Ben Ayed (REGIM, Tunisia), Sofiane Boudaoud (UMR University of Technology of Compiegne (UTC), France), Mohamad Hajj-Hassan (Lebanese International University, Lebanon), Amira J. Zaylaa (Faculty of Medical Sciences, Lebanese University, Lebanon)

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Kamal Hammouda, Fahmi Khalifa and Ahmed Soliman (University of Louisville, USA); Mohammed Ghazal (Abu Dhabi University, United Arab Emirates); Mohamed Abou El-Ghar (Mansoura University, Egypt); Ahmed Haddad (University of Louisville, USA); Mohammed M. Elmogy (Faculty of Computers and Information & Mansoura University, Egypt); Hanan Darwish (Mansoura University, Egypt); Adel S Elmaghraby, Adel Elmaghraby, Robert Keynton and Ayman Sabry El-Baz (University of Louisville, USA); Ashraf Khalil (Abu Dhabi University, United Arab Emirates)

Bidimensional Colored Fuzzy Entropy Measure: a Cutaneous Microcirculation Study
Mirvana Hilal (LARIS - University of Angers, France); Andreia Gaudêncio (LIBPhys, University of Coimbra, Portugal); Clémence Berthin (University of Angers - Angers Hospital, France); Pedro Guilherme Vaz (LIBPhys, University of Coimbra, Portugal); Joao Cardoso (University of Coimbra, Portugal); Ludovic Martin (PXE ref Center MAGEC and Angers University Hospital, France); Anne Humeau-Heurtier (LARIS, Univ Angers, France)

A Signal Processing Method for Artefact Rejection in Transcranial Doppler Signals used for Micro-embolus detection
Maroun Geryes (Lebanese University, Lebanon); Sébastien Ménigot (ESEO Group & LAUM, UMR-CNRS, Université du Maine, Le Mans, France); Jamal Charara (Lebanese University & Faculty of Sciences, Lebanon); Ahmad Skaiky (Aul, Lebanon); Ali Mcheick (Lebanese University, Lebanon); Jean-Marc Girault (Ecole Supérieure d'Electronique de l'Ouest & UMR CNRS 6613 LAUM, France)

Surface EMG Classification Of Basic Hand Movement
Youssef Omama and Christelle Haddad (LIU(Lebanese International University), Lebanon); Maroun Machaalany (Lebanese International University, Lebanon); Ahmad Hammoudi (Medconsul Company, Lebanon); Mohamad Abou Ali (LIU Lebanese International University); Mohamad Hajj-Hassan (Lebanese International University, Lebanon); Lara Hamawy (LIU, Lebanese International University, Lebanon)

Ventilation Estimation from a Chest Strap: A Case Study Limitations
Hala Abdul Rahman (ENS - Rennes, France); Di GE (University of Rennes 1, France); Jacques Prioux and Alexis Le Faucheur (ENS - Rennes, France); Guy Carrault (Universite de Rennes, France)

Automatic segmentation of bipolar EHGs' contractions using wavelet decomposition - Mono & Multi-dimensional Study
Amer Zaylaa (UTC - LU & Koura Hospital, Lebanon); Ahmad Diab and Ziad Fawal (Lebanese University, Lebanon); Mohamad Khalil (Lebanese University - AZM Center for Biotechnology -DSST & Faculty of Engineering, Lebanon); Catherine Marque (Université de Technologie de Compiegne, France)

Pregnancy Labor classification using neural network based analysis
Kamil Badereldine (University of Technology of Compiègne, France); Noujoud Nader (Lebanese University & Azm Center, Lebanon); Wassim El Falou (Lebanese University, Lebanon); Mohamad Khalil (Lebanese University - AZM Center for Biotechnology -DSST & Faculty of Engineering, Lebanon); Catherine Marque (Université de Technologie de Compiegne, France)

Pregnancy Labor Characterization and Classification Using Nonlinear Methods
Mouhamad Yasser Mourad (IUL, Lebanon); Ahmad Diab (Lebanese University, Lebanon); Mohamad Khalil (Lebanese University - AZM Center for Biotechnology -DSST & Faculty of Engineering, Lebanon); Catherine Marque (Université de Technologie de Compiegne, France)

Using Bio-Kinematic signals for Rehabilitation Exoskeleton Control
Nehma Anass Al hajj (Lebanese University Faculty of Engineering, Lebanon); Jinan Charafeddine (Paris Saclay, France); Samer Al Fayad (France, France); Mohamad Khalil (Lebanese University - AZM Center for Biotechnology -DSST & Faculty of Engineering, Lebanon)

ADC Maps Texture Analysis for the Evaluation of Kidney Function: A Preliminary Study
Israa Alnazer (Xlim, Université de Poitiers, France - LIA, Lebanese University, Lebanon); Pascal Bourdon (Xlim Sic, France); Thierry Urruty (Xlim, France); Carole Guillevin (CHRU Poitiers, France); Mathieu Naudin (University of Poitiers, France); Mohamad Khalil (Lebanese University - AZM Center for Biotechnology -DSST & Faculty of Engineering, Lebanon); Ahmad M. Shahin (Lebanese University, Lebanon); Omar Falou (American University of Culture and Education & Lebanese University, Lebanon); Christine Fernandez-Maloigne (XLIM, France)

Novel Approach for Wireless EMG Database Collection: Applied to Muscle Building Workout Routine Optimization
Ramzi Halabi (Rafik Hariri University, Lebanon); Mohamad O. Diab (Rafik Hariri University & College of Engineering, Lebanon); Imad El Banna, Reem Halabi and Reem Malaeb (Rafik Hariri University, Lebanon)

Deep convolutional neural network for face skin diseases identification
Rola Elsaleh (Université Paris-Est Créteil, France); Amine Naït-ali (Université Paris-Est Créteil (UPEC), France); Sambit Bakshi (National Institute of Technology Jamshedpur, India)

Identification of motor unit spatial activation by minimum norm estimation
Soumaya Berro (Lebanese International University, Lebanon & University of Technology of Compiegne, France); Ahmad Diab (Lebanese University, Lebanon); Mohamad Hajj-Hassan (Lebanese International University, Lebanon); Mohamad Khalil (Lebanese University - AZM Center for Biotechnology -DSST & Faculty of Engineering, Lebanon); Hassan Amoud (Lebanese University & Faculty of Sciences, Lebanon); Sofiane Boudaoud (UMR University of Technology of Compiegne (UTC), France)

Inferring effective connectivity using robust low-rank canonical polyadic decomposition: Application to epileptic intracerebral EEG signals
Pierre-antoine Chantal (Univ Rennes Inserm LTSI UMR 1099, France); Ahmad Karfoul (Université de Rennes1 & INSERM U1099, France); Pasnicu Anca (Epilepsy Surgery Pôle Neurosciences Cliniques CHU Pontchaillou F-35000 Rennes, France); Régine Le Bouquin Jeannès (Université de Rennes 1, France)

Thursday, October 17 18:15 - 19:00

Poster Session I: Bioinformatics, Biometrics, Imaging, Signal and Image processing

Papers of sessions FOP11 and FOP12
Room: Hall 2- Order of engineering

Friday, October 18

Friday, October 18 8:00 - 8:45

Keynote Speaker 3 : Pr. Anwar El Homsi

Room: Main Hall- Order of engineering
Chair: Mohamad O. Diab (Rafik Hariri University & College of Engineering, Lebanon)

Applying Artificial Intelligence In Healthcare
Anwar El-Homsi (USA, USA)

Friday, October 18 8:45 - 10:00

Neuroengineering and Signal Processing(Oral Session 3)

Room: Main Hall- Order of engineering

Chairs: Hassan Amoud (Lebanese University & Faculty of Sciences, Lebanon), Jean-Marc Girault (Université François Rabelais - Tours, France), Amine Naït-ali (Université Paris-Est Créteil (UPEC), France)

Electroencephalography signal processing for brain network imaging
Mahmoud Hassan (University of Rennes1, France)

Online anomaly detection in ECG signal using Hierarchical Temporal Memory
Wissal Midani (REGIM-Lab, Tunisia); Zeineb Fki (University of Sfax & ENIS, Tunisia); Mounir Ben Ayed (REGIM, Tunisia)

Adaptive Functional Electrical Stimulation for Assisting Walking Activities of Paretic Patients
Samer Mohammed (University Paris 12, France)

A Hybrid Solution for Human Activity Recognition: Application to Wrist-Worn Accelerometry
Manuel Abbas (Université de Rennes 1 & Laboratoire Traitement du Signal et de l'Image - Inserm U1099, France); Majd Saleh (University of Rennes 1, LTSI and INSERM, France); Régine Le Bouquin Jeannès (Université de Rennes 1, France)

Friday, October 18 10:00 - 10:15

Coffee Break 2

Friday, October 18 10:15 - 11:45

Imaging and artificial organs (Oral Session 4)

Room: Main Hall- Order of engineering

Chairs: Guy Carrault (Universite de Rennes, France), Veronique Migonney (Universite Paris 13, France), Noujoud Nader (Lebanese University & Azm Center, Lebanon)

Monolithic active pixel sensor for low energy X-ray applications
Ziad El Bitar (Cnrs France, France); Julien Heynes and Maciej Kachel (Institut Pluridisciplinaire Hubert Curien, France); Jérôme Baudot (Université de Strasbourg, France); Christine Hu-Guo and Marc Winter (Institut Pluridisciplinaire Hubert Curien, France)

Computational medical imaging: from model-based approaches to machine learning
Adrian Basarab (IRIT, France)

Cooperative Brachytherapy for Prostate Cancer Under MRI Guidance
Sepaldeep Singh Dhaliwal (University of Lille, France); Taha Chettibi, Abdelkader Belarouci, Gerald Dherbomez and Vincent Coelen (University de Lille, France); Rochdi Merzouki (Polytech Lille, France)

Functionalization of Polymers and Surfaces: a Way to Get Specific and Controlled Host Response towards Implantable Medical Devices
Veronique Migonney (Universite Paris 13, France)

Friday, October 18 11:45 - 12:30

Keynote Speaker 4 : Abdulmotaleb El Saddik

Room: Main Hall- Order of engineering

Chair: Ahmad Diab (Lebanese University, Lebanon)

Digital Twin for Wellbeing
Abdulmotaleb El Saddik (University of Ottawa, Canada)

Friday, October 18 12:30 - 14:00

Lunch

Friday, October 18 14:00 - 15:45

Biomedical & Bioinformatic applications (Oral Session 5)

Room: Main Hall- Order of engineering

Chairs: Mohamad AlJaam (Qatar University, Lebanon), Mohamad Daher (ULF and Lille University, Lebanon), Olivier Debeir (ULB, Bruxelles, Belgium)

Hierarchical visual case-based reasoning for supporting breast cancer therapy
Jean-Baptite Lamy (University Paris 13, France); Boomadevi Sekar (Ulster University, United Kingdom (Great Britain)); Gilles Guézennec, Jacques Bouaud and Brigitte Seroussi (LIMICS, France)

Management of Big Variant Datasets in Bioinformatics: Comparison of Different Systems
Mohamed Abouelhoda (Cairo University and KFSHRC, Saudi Arabia)

Nanoparticles visualization and extraction from 3D MRI for diagnosis and therapy in nanomedicine
Ali Saad (King Saud University, Saudi Arabia); Reem Alanazi (King saud University, Saudi Arabia); Khalid Alhussaini (King Saud University, Saudi Arabia)

Effectiveness of dominance for Anxiety Vs Anger detection
Yassine Aribi (Sfax University, Tunisia); Asma Baghdadi (Regim-Lab, Tunisia)

Friday, October 18 15:45 - 16:00

Coffee Break 3

Friday, October 18 16:00 - 17:15

Neuroengineering and biomedical applications(Flash Oral Presentation)

Room: Main Hall- Order of engineering

Chairs: Yassine Aribi (Sfax University, Tunisia), Adrian Basarab (IRIT, France), Jean-Baptite Lamy (University Paris 13, France), Maher Sabbah (Rafik Hariri University, Lebanon)

Hypertensive Disorders of Pregnancy: Kurtosis-Based Classification of Fetal Doppler Ultrasound Signals
Rayan Chaaban and Walaa Issa (Beirut International University, Lebanon); Ayache Bouakaz (UMRS INSERM U930 CNRS ERL3106 Université François Rabelais, France); Amira J. Zaylaa (Faculty of Medical Sciences, Lebanese University, Lebanon)

A Smart Hip Abduction Splint For Developmental Dysplasia
Nada Ayoub, Sarah Sobh and Hussein Slah ElDeen (Lebanese International University, Lebanon); Amira J. Zaylaa (Faculty of Medical Sciences, Lebanese University, Lebanon)

Detecting transient brain states of functional connectivity: A comparative study
Judie Tabbal (Lebanese University & Université de Rennes1, Lebanon); Aya Kabbara (Lebanese University, Lebanon); Mahmoud Hassan (University of Rennes1, France); Mohamad Khalil (Lebanese University - AZM Center for Biotechnology -DSST & Faculty of Engineering, Lebanon); Pascal Benquet (Université de Rennes 1, France)

Segmentation of CT Brain Stroke Image using Marker Controlled Watershed
Mohammed Mohammed Nabil Ajam and Hussein Kanaan (Islamic University of Lebanon, Lebanon); Mohammad Ayache (Islamic University of Lebanon (IUL), Lebanon); Lina ELkhansa (IUL, Lebanon)

Detecting dynamic changes in modular organization of spontaneous brain activity: A preliminary study
Aya Kabbara (Lebanese University, Lebanon); Mahmoud Hassan (Université de Rennes 1, LTSI, France); Veronique Paban (Aix Marseille University, CNRS, LNSC, France)

Development of a New Real Time Epilepsy Prediction Approach Based on Adaptive Neuro Fuzzy Inference System
Nadia Ahmad Abboud (City University, Lebanon); Alaa Daher (Laster Research Center, Doctoral School for Sciences and Technology, Lebanese University, Lebanon); Mouhamad Darwich (Université Libanaise, Lebanon); Sarah Nachar (Hospital Albert Haykel, Lebanon); Walid Kamali (City University, Lebanon)

Studing the Emotional Behaviour Using A Orbitocortical-Amygdalo Computational Model
Sadeem Kbah and Maha Abushaeer (University of Baghdad, Iraq)

Unveiling the HVC Neural Network Through Computational Modeling
Marc Chammas (American University of Beirut, Lebanon); Arij Daou (American University of Beirut, Lebanon & University of Chicago, USA)

Altered motor performance in Alzheimer's disease: a dynamic analysis using EEG
Sahar Allouch (Azm Center for Research in Biotechnology and its Appplication, EDST, Lebanese University Tripoli, Lebanon); Judie Tabbal (Lebanese University & Université de Rennes1, Lebanon); Assef Nasser (Vita Nova Polyckinic, Lebanon); Mahmoud Hassan (University of Rennes1, France); Mohamad Khalil (Lebanese University - AZM Center for Biotechnology -DSST & Faculty of Engineering, Lebanon); Aya Kabbara (Lebanese University, Lebanon)

An efficient graph structure inference strategy based on random walk model on graph: Application to functional brain networks
Salman Al Muhammad Al Ali and Mazen Youssf (Al-Baath University, Syria); Jennifer Rizkallah (Université de Rennes 1 & Lebanese University, France); Mahmoud Hassan (University of Rennes1, France); Ahmad Karfoul (Université de Rennes1 & INSERM U1099, France)

Signal Analysis of Brain Computer Interface (BCI)
Sabine Nassim (City University, Lebanon); Mashhour Chakouch (City University of Tripoli, Lebanon); Walid Kamali (City University, Lebanon); Ahmad Diab (Lebanese University, Lebanon); Alaa Daher (Laster Research Center, Doctoral School for Sciences and Technology, Lebanese University, Lebanon)

3D Navigation Algorithm of a Micro-Robot Swarm in Blood Vessels for Medical Applications
Abdel-Razzak Merheb (International University of Beirut, Lebanon); Rida Mourad (Lebanese International University, Lebanon); Ahmad Diab (Lebanese University, Lebanon); Ahmad Haddad (Lebanese International University, Lebanon)

Ensemble Learning of Blood Metabolic Biomarkers: A Novel CAD System of Heart Failure
Ahmed Naglah, Fahmi Khalifa, Narayana Singam and Bahjat Aladili (University of Louisville, USA); Mohammed Ghazal (Abu Dhabi University, United Arab Emirates); Guruprasad Giridharan (University of Louisville, USA); Ashraf Khalil (Abu Dhabi University, United Arab Emirates); Adel S Elmaghraby, Ayman Sabry El-Baz and Andrew DeFilippis (University of Louisville, USA)

EEG Features Extraction and Classification Methods in Motor Imagery Based Brain Computer Interface
Mahmoud Malass (Lebanese University, Lebanon); Judie Tabbal (Lebanese University & Université de Rennes1, Lebanon); Wassim El Falou (Lebanese University, Lebanon)

Dual Compartment Computational Modeling of Cortical Neurons in the Zebra Finch
Ahmad Sibahi (AUB, Lebanon); Arij Daou (American University of Beirut, Lebanon & University of Chicago, USA)

Biomedical Education, Telemedicine, m-Health and Therapeutical Devices (Flash Oral Presentation)

Room: Conference Room- Order of engineering

Chairs: Roy Abi Zeid Daou (Lebanese German University, Lebanon), Mashhour Chakouch (City University of Tripoli, Lebanon), Régine Le Bouquin Jeannès (Université de Rennes 1, France), Ahmad M. Shahin (Lebanese University, Lebanon)

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Dilber Uzun Ozsahin (Near East University & Research Centre of Experimental HealthSciences, Near East University, Turkey); Günay Kibarer (Near East University, TRNC, Mersin 10 Turkey, Turkey); Sameer Sheshakli (Near East University Nicosia, North-Cyprus, Turkey); Ammar Jalmood (Near East University, TRNC, Mersin 10 Turkey, Turkey)

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Lara Hamawy (LIU, Lebanese International University, Lebanon); Stephanie Bou Zeidan (LIU, Lebaneese International University, Lebanon); Zahraa Hellani (LIU, Lebaneese International University & LIU, Lebanon); Mohamad Hajj-Hassan (Lebanese International University, Lebanon); Mohamad Abou Ali (Author, Lebanon); Abdallah Kassem (Notre Dame University, Lebanon)

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Georges El Hajal (Bordeaux University, France); Roy Abi Zeid Daou (Lebanese German University, Lebanon); Yves Ducq (University of Bordeaux 1 & IMS Laboratory, France); Josef Boercsoek (University of Kassel, Germany)

Evaluation of Stage Four Brain Cancer Treatment Techniques
Dilber Uzun Ozsahin (Near East University & Research Centre of Experimental HealthSciences, Near East University, Turkey); Ali Denker (Near East University, Turkey); Günay Kibarer (Near East University, TRNC, Mersin 10 Turkey, Turkey); Okoli Chika Benedict (Near East University, Turkey)

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Mohamad Hajj-Hassan, Rayan Fayad and Hussein Hajj-Hassan (Lebanese International University, Lebanon)

Proposal of Reference KPIs to Assess Biomedical Engineering Internship Performance
Marianne Haddad-Adaimi and Roy Abi Zeid Daou (Lebanese German University, Lebanon); Yves Ducq (University of Bordeaux 1 & IMS Laboratory, France)

Effectiveness of Motor Imagery combined to Action Observation in controlling Stroke-related Genu Recurvatum: A Randomized Controlled Trial
Ahmad Rifai Sarraj, Nihal Jammoul, Pascale Abou Zeid and Abir Khatib (Lebanese University, Lebanon)

Virtual Reality Movement Therapy for Post-Stroke Upper limb Rehabilitation Trial
Farah Ayoubi (Laboratory of Motor System, Handicap and Rehabilitation (MOHAR), Lebanese University, Beirut-Lebanon); Sara Chamouni, Olfat Zein and Ahmad Rifai Sarraj (Lebanese University, Lebanon)

Surface electromyography activity of trunk muscles during conventional and non-conventional wheelchair propulsion
Hassan Al-Khalil (Lebanese University Hadath Campus, Lebanon); Ahmad Diab, Tarek Atallah, Alaa Daher and Ahmad Rifai Sarraj (Lebanese University, Lebanon)

Demographic Influence on Opioid Misuse
Daniel Sierra-Sosa and Mohsen Asghari (University of Louisville, USA); Jennifer Gordon (Bellarmine University, USA); Adel S Elmaghraby (University of Louisville, USA)

Sustainability of Medical Equipment in the Healthcare Industry: An Overview
Salma Elabed, Aya Ali and Abdulrahim Shamayleh (American University of Sharjah, United Arab Emirates)

Physio-Vibes: A Biomedical Engineering Educational Kit for High School and Sophomore Students
Ramzi Halabi (Rafik Hariri University, Lebanon); Mohamad O. Diab (Rafik Hariri University & College of Engineering, Lebanon); Maher Sabbah, Muhammad Al-Nahhas, Hadyl Yassine, Rayane Hassan and Nada Baassiri (Rafik Hariri University, Lebanon)

A Smart Spinal Orthopedic Bed for General Purpose Rehabilitation
Hanin ElSayed and Nadine Ghannam (Lebanese International University, Lebanon); Amira J. Zaylaa (Faculty of Medical Sciences, Lebanese University, Lebanon)

Friday, October 18 17:15 - 18:00

Biomedical Engineering - Education and Career Path

IEEE-EMBS USEK Student Chapter

Room: Main Hall- Order of engineering
Chair: Sandy Rihana (Holy Spirit University of Kaslik, Lebanon)

Friday, October 18 18:00 - 19:00

Poster Session II: Neuro Engineering, Therapeutic devices, Telemedicine

Papers of sessions FOP21 and FOP22
Room: Hall 2- Order of engineering

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Fifth International Conference on Advances in Biomedical Engineering (ICABME 2019)

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