IT

INFORMATION TECHNOLOGY

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ACIT 2018

Technically Co-Sponsored by IEEE Computer Society

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The 19th International Arab Conference on Information Technology

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Preface

The International Arab Conference on Information Technology (ACIT) is organized every year in a different Arab country. The 19th edition of this conference, ACIT 2018, organized by the Islamic University of Lebanon in its new campus at Rmayleh-Wardaniyeh, Lebanon, is "Technically Co-Sponsored by IEEE Computer Society". These conferences aim at gathering researchers and engineers from academia and industry to discuss their latest research, results, ideas, developments, and applications in all areas of Information Technology (IT). These areas include, but not limited to, Artificial Intelligence, Big Data, Data Mining, Machine Learning, Internet of Things (IoT), Cyber Security, etc. The interest in Information Technology has gained a lot of attention in the past decades. The development of powerful information processing tools is making human beings more and more dependent on IT devices from everyday life needs to more advanced industrial applications. Some of the most important applications are: Science and Engineering, Business and Commerce, Education, Government, Health and Biotechnology, Entertainment, etc.

During ACIT 2018, three outstanding keynote speakers are addressing important topics related to Small Data, Cancer Care Informatics, and applications of Artificial Intelligence. In addition, the conference has attracted a significant number of peer-reviewed scientific papers. Participants are coming from educational and research institutions from 15 different countries. The papers presented during ACIT 2018 will be submitted for publication in IEEE Xplore.

We believe that this conference will continue to grow in importance and size.

General Chair	**General Co – Chair**
Prof. Hassan NOURA	**Dr. Mohammad AYACHE**

Keynote talk 1
Prof. Alexander ASTEROTH

Biography:

since 2016:   Director of TREE
Institute of Technology, Resource and Energy-Efficient
Engineering (TREE)

2010-2015:   Vice Dean (Department of Computer Science)

since 2008:   Bonn Rhein Sieg University of applied sciences
Department of Computer Science
Full professor (since 2010, field of teaching: theoretical CS)

2001-2008:   Different positions in software development and education

1997-1999:   PhD studies, Bonn University
Scholarship (Reinhard Furrer PhD scholarship
Wernher von Braun-Stifung zur Frderung der
Weltraumwissenschaften)
in cooperation with German Aerospace Center (DLR)

1992-1995:   German National Research Center of Computer Science
(GMD)

1988-1995:   Diploma studies of mathematics and computer science,
Bonn University

Title:
Small Data

Abstract:

In recent years Big Data has been focus on research and industry alike thereby referring to the problem of handling vast amounts of data and to extract information often uninformed of what to look for. Considering real world application, it turns out that often too much data is not the problem but lack thereof or at least lack of useful data. Available data is often not sufficient to solve the problem at hand. Be it because of the quality of the data or simply because acquisition of useful data is simply too expensive in terms of time and/or cost.

In our research group we address different kinds of optimization problems all of which involve huge amounts of data. However even though the amount of data usually is vast - e.g. in case of fluid dynamic simulation - inherent information useful for optimization is small and computational costs are tremendous.

Surrogate modelling and in particular usage of Gaussian Process Models can help to solve this issue. In various use cases we were able to speed up the optimization/illumination process by an order of magnitude. In other cases, where available data was too noisy or some needed data was missing, which often is the case if physiological data from real measurements is used, surrogate models can help to fill the gap.

Keynote talk 2
Prof. Mohammed ODEH

Biography:

Mohammed Odeh, PhD: Head of the Software Engineering Research Group in the University of the West of England, and is Professor of Cancer Care Informatics (first professor awarded this title) at King Hussein Cancer Center in Jordan. Mohammed has co-founded Cancer Care Informatics as a dedicated initiative and discipline that includes the 1st International Conference on Cancer Care Informatics, the 1st MSc in Cancer Care Informatics taught and research programme jointly run with King Hussein Cancer Center and the University of Jordan, with input from the University of West of England, Bristol, UK. He is also the co-founder and co-editor in chief of the forthcoming International Journal on Cancer Care Informatics. He has more than 33 years of research and development experience in the engineering of software systems with an in-depth interest in Systems of Systems software engineering, Knowledge-driven Requirements Engineering and Bridging the Gap between Business Processes and Computer-based Systems. He has been supervising 20 PhD students in software engineering and other related disciplines. Mohammed was co-organiser of the 5th IEEE CloudCom Conference in December 2013 and introduced the first Requirements Engineering for Cloud Computing (RECC) in the IEEE CloudCom Conference. Among other research output include 46 refereed journal papers and books (including books and research work to appear) and 50 conference papers. He was an associate editor of the INCOSE/Wiley Systems Engineering and sits on the editorial board of the IAJIT journal. He has been UWE Bristol co-investigator on EU FP5, FP6 and FP7 projects. Mohammed was the programme leader and co-organiser of the 2015 EICM Conference in Bristol, UK.

Title:

Cancer Care as "Systems of Systems". Paving the Way for the Cancer Care Informatics Initiative and Discipline

Abstract:

Systems of Systems (SoS) may be defined as a form of arrangement of autonomous and heterogeneous systems that when integrated together result in a useful system to humanity that delivers unique functional and non-functional capabilities. Cancer Care may be defined as caring for the patient as a whole including his or her needs, not just the medical and physical ones. Such comprehensive cancer care involves the services of many Cancer Care professionals, care centres, research and trial institutions, government agencies, civil society organisations, and many others working together. In this seminar, cancer care will be presented within the notion of systems of systems from number of perspectives such as characterisation, known classifications, capabilities, challenges, etc. Furthermore, the SoS Perspective of Cancer Care and how it forms the foundation for the new discipline of Cancer Care Informatics will be discussed with reference to strategic modelling, governance, change management, derivation of cancer care services from cancer care process models, big data analytics for cancer care, the 1st MSc in Cancer Care Informatics, and the 1st International Conference on Cancer Care Informatics.

Keynote talk 3
Prof. Imad ELHAJJ

Biography:

Imad H. Elhajj received his Bachelor of Engineering in Computer and Communications Engineering, with distinction, from the American University of Beirut in 1997 and the M.S. and Ph.D. degrees in Electrical Engineering from Michigan State University in 1999 and 2002, respectively. He is currently a Professor with the Department of Electrical and Computer Engineering at the American University of Beirut. In 2014, he co-founded, SAUGO 360 the first startup to be incubated at AUB. Dr. Elhajj is the past chair of IEEE Lebanon Section, senior member of IEEE and senior member of ACM. He is an ABET program evaluator. His research interests include instrumentation and robotics, cyber security, sensor and computer networks, and multimedia networking. Imad received the Best Research Paper Award at the Third International Conference on Cognitive and Behavioral Psychology (CBP), the Best Paper award at the IEEE Electro Information Technology Conference in June 2003, and the Best Paper Award at the International Conference on Information Society in the 21st Century in November 2000. Dr. Elhajj is recipient of the Teaching Excellence Award at the American University of Beirut, June 2011, and the Kamal Salibi Academic Freedom Award, 2014.

Title:

AI Serving Robots, Security, and Health

Abstract:

With the rise in popularity of AI, what are the broader areas of application of these techniques? In this presentation we will present our work on the use of AI in the domains of robotics, cyber security and health. In the field of robotics, we will show the benefits of machine learning in building improved personalized human-machine interfaces for teleoperation. In the area of cyber security, we will present our developed methods for real-time traffic classification and anomaly detection. In the health domain, we will highlight several applications of machine learning in the field of vascular medicine. In addition, we will discuss the general potential and limitation of AI.

	Wednesday November 28, 2018
09:30 - 10:00	Registration
10:00 - 11:00	Opening Ceremony
11:00 - 12:00	Cocktail + Networking
12:00 - 13:00	Keynote Talk I: Prof. Alexander Asteroth - Germany Title: Small Data Chair: Prof. Emad Abu Elrub
13:00 - 14:30	Prayer and Lunch Break
14:30 - 17:00	- Parallel Session I: IOT, Big Data and Security - Parallel Session II: Web Application and Software Engineering - CCIS General Committee Meeting - Workshop Quality Standards for IT Programs in Arab Universities: Prof. Emad Abu Elrub
	Thursday November 29, 2018
09:30 - 10:30	Keynote Talk II: Prof. Mohamad ODEH - UK Title: Cancer Care as "Systems of Systems". Paving the Way for the Cancer Care Informatics Initiative and Discipline Chair: Prof. Essam El Dawod
10:30 - 11:00	Coffee Break
11:00 - 13:20	- Parallel Session I: Graph Model, Modeling and Simulation - Parallel Session II: Engineering Systems and Hardware
13:20 - 14:40	Prayer and Lunch Break
14:40 - 17:00	- Parallel Session I: Artificial Intelligence - Parallel Session II: Biomedical Signal and Image Processing Steering Committee Meeting
20:00	Gala Dinner

Friday November 30, 2018	
09:30 - 10:30	Keynote Talk III: Prof. Imad ELHAJJ, Lebanon Title: AI Serving Robots, Security, and Health Chair: Prof. Adnan Shaout
10:30 - 11:00	Coffee Break
11:00 - 13:20	- Parallel Session I: Networking and Communication - Parallel Session II: Cloud Computing, Vehicular Networks and Remote Sensing Executive Committee meeting
13:20 - 15:00	Prayer and Lunch Break
15:00 - 15:30	Closing
Saturday December 1,2018	
9:00	TRIP

Wednesday November 28, 2018: 14:30 - 17:00

Parallel Session I: IOT, Big Data and Security
  Chair: Prof. Jihad Saidi
  Co-Chair: Prof. Ali Kalakech

- A Comparative study between Lebanon and Middle East countries based on data mining techniques, Souha el Katat, Ali Kalakech, Mariam Kalakech and Denis Hamad, Lebanese University, Lebanon.

- Measuring Impact Score on Confidentiality, Integiry, and Availability Using Code Metrics, Anas Al-Far, Abdallah Qusef and Sufyan Almajali, Princess Sumaya University, Jordan.

- Feature Selection for Android Keystroke Dynamics, Dima El Zein and Ali Kalakech, LIU, Lebanon.

- IoT: Architecture, Challenges, and Solutions using Fog Network and Application Classification, Kassem Ahmad, Omar Mohammad, Hussein Ramadan and Mirna Attieh, Lebanese International University, Lebanon.

- A Fast Clustering Algorithm for Analyzing Big Data Generated in Ubiquitous Sensor Networks, Oussama Zahwe, Ola Majed, Hassan Harb, Mohamad Hamze and Abbas Nasser, AUCE, Lebanon.

- Optimizing Database Query Performance Using Table Partitioning, Khaled Maabreh, Zarqa University, Jordan.

- A Proposed Wireless Intrusion Detection Prevention and Attack System: Jafar Abo Nada and Mohammad Rasmi AL-Mousa, Zarqua University, Jordan

- Botnets Detecting attack based on DNS features, Ammar Almomani, Mohammed Anbar, Kamal Alieyan, Firas Albalas and Mohammad Alauthman, UniversitiSains, Malaysia.

Parallel Session II: Web Application and Software Engineering
Chair: Prof. Ibrahim Fadul
Co-Chair: Dr. Ali Raad

- A Survey of the KnapsaK Problem: Maram Assi and Ramzi Haraty, LAU, Lebanon.

- SATP: Scalable Agile Transforming Process to transform Waterfall PMO into Agile PMO: Jordanian Case Study and Best Practices: Ruba Haj Hamad and Mustafa Al Fayoumi, Princess Sumaya University, Jordan.

- Linking Knowledge Management Enablers to Business Process Architecture: A Semantic-driven Approach: Mohammad Sabri, Mohammed Odeh and Mohammed Saad, University of the West of England, United Kingdom.

- Web-based Framework for Assisting Users Using Speech recognition: Hassan Zahr, Hussein Al Haj Hassan and Jamal Haydar, IUL, Lebanon.

- Metrics for Assessing the Basic Alignment between Business Process and Enterprise Architectures with reference to the BPAOntoEIA Framework: Mahmood Ahmad, Mohammed Odeh and Stewart Green, University of the West of England, United Kingdom.

- Power of Using Regular Expression Patterns in Software Coding Standards Quality Control: Abdallah Qusef and Majid Hassan, Princess Sumaya University, Jordan.

- Plant Classification in the wild: A Transfer Learning Approach: Raffi Al-Qurran, Mahmoud Al Ayyoub and Ali Shatnawi, JUST, Jordan

Thursday November 29, 2018: 11:00 – 13:20

Parallel Session I: Graph Model, Modeling and Simulation
Chair: Prof. Gasm Elseed Ibrahim
Co-Chair: Dr. Ahmad Koubeissi

- Evaluating Performance of Graph Coloring Algorithms Using Clique Approach: Mohammad Al-Haj Hassan, Abdulmutaleb Alzubi and Mohammad Malkawi, Jordan.

- A Multi-Level Data-Centric Model of System of Systems Engineering: Ahmad Koubeissi, IUL, Lebanon.

- Learning Graph Representation: A Comparative Study: Wael Al Etaiwi and Arafat Awajan, Princess Sumaya University, Jordan.

- A Semantically Enriched Goal-Oriented Referential Integrity Model in Systems of Systems Context: Suhair AlHajHassan, Mohammed Odeh, Stewart Green and Asem Mansour, University of the West of England, United Kingdom.

- Performance Measurement Systems-related ontologies: Sara Chelbi and Nora Taleb, Badji Mokhtar University, Algeria.

- Real-Time Heterogeneous Volume Modelling and Rendering Environment: Ali Abdallah, IUL, Lebanon.

- OntoSoS.QR: Semantic Representation of Quality Requirements metamodel for Systems of Systems: Eman Qaddoumi, Mohammed Odeh, Zaheer Khan and Mario Kossmann, University of the West of England, United Kingdom.

Parallel Session II: Engineering Systems and Hardware
 Chair: Prof. Thiab Taha
 Co-Chair: Dr. Jamal Haydar

- CAN Sniffing for Vehicle Condition, Driver Behavior Analysis and Data Logging: Adnan Shaout, Dhanush Mysuru and Karthik Raghupathy, University of Michigan, USA.

- Design of an Automated 3D Scanner: Alaa Abd-Raheem, Farah AlDeiri and Musa Alyaman, University of Jordan, Jordan.

- Towards The Optimization of Road Side Unit Placement Using Genetic Algorithm: Mahmoud Alaraji, Ayman Khalil and Walid Fahs, IUL, Lebanon.

- A Low Cost Automated Cleaning System for Photo-voltaic Panels: Jamal Haydar, Ahmad Nour Aldeen, Hadi Fayad, Walid Fahs and Hussein Al Haj Hassan, IUL, Lebanon.

- Sun Stimulator for Daylight System: Alain Aoun, Abdallah Kassem and Chady EL Moucary, NDU, Lebanon.

- A Novel Implementation of Ternary Decoder Using CMOS DPL Binary Gates: Ramzi Jaber, Ahmad ElHajj, Lina Nimri and Ali Haidar, BAU, Lebanon.

- The Impacts of Remote working on Workers Performance: Nour Eldin Mohamed Elshaiekh, Yasir Ali Ahmed Hassan and Amna Abdelrouf Alhassan Abdallah, University of Nizwa, Oman.

Thursday November 29, 2018: 14:40 – 17:00

Parallel Session I: Artificial Intelligence
Chair: Dr. Mirna Attieh
Co-Chair: Dr. Walid Fahs

- A Vector Space Based Approach for Short Answer Grading System: Leila Ouahrani and Djamal Bennouar, Bouira University, Algeria.

- The Effects of Natural Language Processing on Big Data Analysis: Sentiment Analysis Case Study: Mariam Khader, Arafat Awajan and Ghazi Al-Naymat, Princess Sumaya University, Jordan.

- An Improved Arabic On-Line Characters Recognition System, Redouane Tlemsani and Khadidja Belbachir, National Institute of Telecommunication, Algeria.

- Feature-Based Opinion Summarization for Arabic Reviews: Alaa Elhalees and Doaa Saleh, Islamic University of Gaza, Palestine.

- Comparative study of word embedding models and their usage in Arabic language applications: Dima Suleiman and Arafat Awajan, University of Jordan, Jordan.

- Arabic Semantic Similarity Approaches: Marwah ALian, Arafat Awajan, Princess Sumaya University, Jordan.

- Convolutional Neural Network and BLSTM for offline Arabic handwriting recognition, Rania Maalej and Monji kherallah, Sfax University, Tunisia.

Parallel Session II: Biomedical Signal and Image Processing
  Chair: Dr. Abdallah Kassem
  Co-Chair: Dr. Lina El Khansa

- Study of Myocardial Infarction versus ECG ST Segment and Cardiac Marker Enzyme, High Sensitive Troponin Testing: Nadia Minkara, Nafez Haddad and Walid Kamali, City University, Lebanon.

- Pregnancy/Labor Discrimination and Monitoring: An Investigation using nonlinear methods: Mohamad Mourad, Ahmad Diab, Mohamad Khalil and Catherine Marque, IUL, Lebanon.

- Vaginal Power Doppler parameters as new predictors of Intra-Cytoplasmic Sperm Injection outcome: Zeinab Abbas, Chadi Fakih, Ali Saad and Mohammad Ayache, IUL, Lebanon.

- Automatic segmentation of contractions and other events in Monopolar EHGs-Monodimensional Study: Zaylaa Amer, Diab Ahmad, Khalil Mohamad and Marque Catherine, Compiègne University, France.

- Proposed Method for an Automatic Segmentation of Medical Images: Osama Dorgham, Mohammad Abu Nasser, Mohammad Ryalat and Ammar Almomani, Al Balqa Applied University, Jordan

Friday November 30, 2018: 11:00 – 13:20

Parallel Session I: Networking and Communication
Chair: Prof. Khaled Khanfar
Co-Chair: Dr. Samar Sindian

- Improvement of OLSR Protocol by Using Back Up MPR and Routing Table Mechanisms: Fadlallah Chbib, Ayman Khalil, Walid Fahs, Reda Chbib and Ali Raad, IUL, Lebanon.

- An optimization framework for resource allocation in IEEE 802.15.5 hop-1: Samar Sindian, Abed Ellatif Samhat, Matthieu Crussiaire, Jean-Francois Hélard and Ayman Khalil, IUL, Lebanon.

- A Hyperheuristic Approach for Load Balancing Problem with QOS Service: Kassem Danach, IUL, Lebanon.

- Implementation of a Belief Propagation Detector for an Iterative MIMO Receiver: Ali Haroun, Ahmed Rashid and Jamal Haidar, IUL, Lebanon.

- On the Implementation of Vertical Shuffle Scheduling Decoder for Joint MIMO Detection and Channel Decoding System: Ali Haroun, Rawad Nasr, Ali Chamas Al Ghouwayel, BIU, Lebanon.

- Analytical, Numerical and Experimental study of an Original Design for a Coplanar Circulator/Isolator Based on Thick and Thin Ferrite Film: oussama Zahwe, Walaa Nasser and Hassan Harb, IUL, Lebanon.

- An Adaptive Sampling Technique for Massive Data Collection in Distributed Sensor Networks: Abbass Nasser, Ahmad Karaki, Hassan Harb, Oussama Zahwe and Mohammad Abou Taam, AUCE, Lebanon.

Parallel Session II: Cloud Computing, Vehicular Networks and Remote Sensing

Chair: Prof. Osama Badawi
Co-Chair: Prof. Mohammad El Ammari

- Autonomous Vehicle Detection and Classification in High Resolution Satellite Imagery: Ali J. Ghandour, Houssam Krayem, Abedelkarim Jezzini, IUL, Lebanon.

- Cloud Based System for Detecting Children in Automobiles: Adnan Shaout and Brennan Crispin, University of Michigan, USA.

- Bidirectional Search Algorithm for Airport Ground Movement: Yassine Moulay Slimane University, Morocco.

- Towards Finding an Optimal Flight Zone for a Side-By-Side Tracking UAV w.r.t Extraction of Dynamic Vector Fields: Ahmad Drak and Alexander Asteroth, Bonn - Rhein - Sieg University, Germany.

- Geographical Information System-Based Map for Agricultural Management in South-Lebanon: Kamel Allaw and Layla Al-Shami, IUL, Lebanon.

- CCTM - Cloud Computing Trust Model: Nevrus Kaja and Adnan Shaout, University of Michigan, USA.

- Self-Positioning for UAV Indoor Navigation Based on 3D Laser Scanner, UWB: Miriana Itani, Ali Haroun and Walid Fahs, IUL, Lebanon.