AUS | الجــامـعـة الأمـيركـيـة فـي الـشــارقـة
American University of Sharjah

ICMSAO'17

Seventh International Conference on Modeling, Simulation, and Applied Optimization

April 4–6, 2017
Sharjah, United Arab Emirates

General Information

Registration

The registration desk will be open every day of the conference from 8:30 a.m. to 5:00 p.m. Pre-registered attendees may pick up their badges and conference material at any time. For attendees who wish to register onsite, the registration fees may be paid by cash or credit card:

IEEE or SIAM Member	$400
Non-member	$500
Additional Banquet Ticket	$40

Venue for Technical Sessions

All technical sessions will be held at American University of Sharjah.

Opening Ceremony: AUS Main Building - Lecture Hall A
Keynote Lectures: AUS Main Building - Lecture Hall A
Technical Sessions (April 4–5): Engineering Building I

Banquet

The conference banquet will take place on Wednesday, April 5, 2017 (7:30–10:00 p.m.) at the Sharjah Hilton Hotel in downtown Sharjah. The event is included in the conference fees and all participants are invited to attend. Additional tickets are available at the registration desk for $40 per person.

Lunches

Complimentary lunch vouchers will be provided for the first and second days of the conference and can be used at Break Point Restaurant on campus.

Coffee Breaks

Coffee breaks as listed in the program are included in the conference fees.

Transportation

The main means of transportation is by taxi. A taxi charge for a trip from downtown Sharjah to the conference venue at American University of Sharjah (about 20 minutes) is about $15. The cost for the taxi trip from Dubai to the conference venue at American University of Sharjah is about $30.

Dubai City Tour

A complimentary six-hour Dubai city tour will be held on Thursday April 6, 2017 starting at 9:00 am. Seats are limited so please make your reservation at the registration desk.

Program Overview

Time	Day 1: Tuesday, April 4, 2017			
8:30 a.m. onwards	Registration			
10:00–10:15	**Opening Ceremony – Main Building (Lecture Hall A)**			
10:15–11:05	**Keynote 1: Towards Social Computers** Professor Eric Postma Tilburg University, the Netherlands (Hall A – Main Building)			
11:05–11:20	**Coffee Break**			
11:20–12:10	**Keynote 2: A Perspective on Contemporary Composite Materials** Dr. Peter W.R. Beaumont BSc (Hons) B Surrey (Honorary) MA (Cantab) DPhil DSc (Hall A – Main Building)			
12:15–13:30	Lunch Break | Break Point – Student Center			
13:30–14:45	S1 (EB1-112)	S2 (EB1-113)	S3 (EB1-114)	S4 (EB1-115)
14:45–15:00	**Coffee Break**			
15:00–17:00	S5 (EB1-112)	S6 (EB1-113)	S7 (EB1-114)	S8 (EB1-115)

Time	Day 2: Wednesday, April 5, 2017				
8:30 a.m. onwards	Registration				
9:00–9:45	**Keynote 3: Lightweight Composite Structures for Energy-absorbing Applications** Dr. Wesley Cantwell Associate Dean for Research Khalifa University, Abu Dhabi, UAE (Hall A – Main Building)				
9:45–10:00	**Coffee Break**				
10:00–10:45	**Keynote 4:** (Hall A – Main Building)				
10:45–11:00	**Coffee Break**				
11:00–12:30	S9 (EB1-112)	S10 (EB1-113)	S11 (EB1-114)	S12 (EB1-115)	S13 (EB1-107)
12:30–13:30	Lunch Break | Break Point – Student Center				
13:30–14:40	**Industrial Presentations** Rapid Simulation capabilities for Aerospace and Defense Diogo Rodrigues Analytical Graphics Inc. Platform-based Approach to Engineering and Science Applications Leen Adnan National Instruments (Hall B – Main Building)				
14:40–15:00	**Coffee Break**				
15:00–17:00	S14 (EB1-112)	S15 (EB1-113)	S16 (EB1-114)	S17 (EB1-115)	
19:30–22:00	**Conference Banquet** | Hilton Hotel, Sharjah				

Time	Day 3: Thursday, April 06, 2017
9:00–15:00	**Dubai City Tour**

Keynote Speakers

Keynote 1

Tuesday, April 4, 2017   **10:15–11:05**   **Hall A – Main Building**

Towards Social Computers

Professor Eric Postma
Tilburg University, the Netherlands
Jheronimus Academy of Data Science (JADS)
's-Hertogenbosch, the Netherlands

Fuelled by the sheer volumes of data and computing power, the rapidly progressing developments in artificial intelligence and machine learning led to recognition algorithms with unprecedented performances. Current image recognition performances are nearing a level approaching that of human performance. On some specialized domains, computers even outperform humans in image recognition abilities. The impressive developments enable a next step in the integration of computers and computing devices in our everyday world. In order to achieve a seamless integration of computers in our daily life, computers should be able to communicate in a human-like manner. The long-standing challenge to achieve human-level verbal communication, i.e., speech recognition and speech production, obscured the importance of its non-verbal counterpart. Non-verbal communication is crucial to the social interactions between humans. Examples of nonverbal expressions are vocal expression, such as vocal pitch or intensity, and facial expressions such as smiling or frowning. Nonverbal expressions provide indispensable contextual cues to social interactions. Our research focusses on the understanding, modelling and simulation of the interactive nonverbal dynamics of communicating humans, with the aim to develop computers, robots or intelligent agents with social capabilities. We formalize the nonverbal interactions between human-human or human-computer dyads in terms of dynamical systems theory. In this formalization, dyadic nonverbal communication gives rise to an attractor manifold representing the complex expression dynamics of both interlocutors. This allows us to study and simulate the causal interactions between communicating faces and voices by means of the powerful tools offered by dynamical systems theory. The result is a characterization of the dynamical building blocks of nonverbal communication. In the presentation the results obtained will be demonstrated and their contribution to the development of social computers will be explained by means of illustrative examples.

About the Presenter
Eric Postma is a professor in Artificial Intelligence at Tilburg University, The Netherlands and at the Jheronimus Academy of Data Science (JADS) in 's-Hertogenbosch, The Netherlands. His main research interest is in computational models of vision and in the analysis of vocal and facial social signals. In addition, he works on a wide variety of data science problems involving signal and image processing. His seminal work on the

automatic recognition of paintings ("artist attribution") initiated in collaboration with the Van Gogh museum in The Netherlands gave rise to an international joint effort to develop digital methods to the analysis of art works. His work has been often covered in the international media. Professor Postma has published papers in international scientific journals ranging from cognitive science to artificial intelligence. He was Editor-in-Chief of special issues of the journals Pattern Recognition Letters and Signal Processing. In most of his work, the combination of (mainly visual) sensing and machine learning plays an important role. He supervised over 20 PhD students on topics such as intelligent agents, image recognition, painting analysis, social signal processing, manifold learning, and deep learning. Professor Postma is a member of the Royal Holland Society of Sciences and Humanities, leads the Cognitive Science and Artificial Intelligence group at Tilburg University, and is a member of the scientific core group of the Jheronimus Academy of Data Science in 's-Hertogenbosch, the Netherlands.

Keynote 2

Tuesday, April 4, 2017   **11:20–12:10**   **Hall A – Main Building**

A Perspective on Contemporary Composite Materials

Dr. Peter W.R. Beaumont
BSc (Hons) B Surrey (Honorary) MA (Cantab) DPhil DSc

It is fitting on the occasion of half a century of carbon fiber to place on record the development of structural fiber composites from the emergence of the science of composites and the evolution of a number of neighboring disciplines. In the blink of an eye we have in the contemporary composite material discovered a clearly defined and distinct discipline, which in practice doubles up as a multi-discipline with a substantial number of independent branches, each one with its multifarious journals and textbooks.
On 15th June 1960, 5 years before the discovery of the modern carbon fiber, a fashionable professor at Cambridge, Alan Cottrell gave an invited lecture at The Royal Society in London. Professor Cottrell enunciated as follows: "...the practical approach is to admit the existence of cracks and notches and to try to render them innocuous. If there is a transverse notch cutting across a parallel array of fibers in a rod of some material like adhesive, the forces from the cut fibers can be transmitted to the intact fibers close to the notch tip only by passing as shearing forces through layers of the adhesive."
Basically what this means is that we require in the design of a damage-tolerant composite material the presence of a microscopically weak structure built into a macroscopically strong solid that ensures any crack present becomes benign. In essence, Professor Cottrell had proposed a very striking phenomenon, the possibility of ductility in a non-ductile material system in which a crack is unable to extend if faced with an interface which yields easily in shear.
In 50 years writers on the subject have collectively produced an impressionistic map of the science and mechanics of composite materials, seen as a pointillistic portrait of the discipline of composites, to be viewed from a slight distance. Over 5 decades of research we observe the materials scientist and engineer working at several levels of organization,

each of which is underpinned by the next level. What emerges is the evolution of a number of neighboring disciplines; in mechanical design and processing: in experimentation and analysis; in mathematical and continuum modelling; in constitutive and physical modelling (or micro-mechanics or damage mechanics); and in computational mechanics and virtual simulation aided by computer power. Fine-scale phenomena become embedded in calculations representing larger-scale behavior, arriving at intelligent mechanical design based upon the application of the principles of integrated multi-scale mechanics and hierarchical models and analyses. The important consequence is that the design problem has a better definition.

Thus, the composite of low density and near-net-shape fabricability, as well as manufacturing robustness is provided with remarkable damage tolerance. We arrive at the ideal definition of an engineering composite resembling the strong solid as postulated by Cottrell 50 years ago.

About the Presenter

Dr. Peter W.R. Beaumont obtained the DPhil degree and the Doctor of Science degree at the University of Sussex, England. He is Emeritus Reader in the Department of Engineering at the University of Cambridge and Fellow of Wolfson College, Cambridge. Previously, he was assistant professor in the School of Engineering at the University of California at Los Angeles, USA.

His research on the fracture and fatigue of engineering materials including advanced structural composite materials, duplex polymeric systems and engineering ceramics has resulted in 200 scientific publications in scientific journals and international conference proceedings, encyclopedia, research treatise, engineering design books and material design guides. He is the author of the text book Failure Analysis of Composites and co-editor of several books on composite materials. He is Founder and Editor-in-Chief of the international journal Applied Composite Materials and is on editorial boards of journals in the field.

Throughout his research, the objective is to make interdisciplinary links between engineering principles and other applied sciences to material behavior, including materials in the reconstruction of the ailing human frame. Some of this work has led to a new formulation of the principles of damage mechanics of composite materials.

Keynote 3

Wednesday, April 5, 2017   **9:00–9:45**   **Hall A – Main Building**

Lightweight Composite Structures for Energy-Absorbing Applications

Dr. Wesley Cantwell
Associate Dean for Research
Khalifa University, Abu Dhabi, UAE

This talk will discuss the energy-absorbing capability of high-performance composites based on, for example, glass and carbon fiber reinforced epoxy resins. Composites are often considered as offering relatively poor properties under dynamic loading, particularly under localized transverse impact loading. Here, the impact response of composite structures will initially be discussed briefly, where the different failure mechanisms that occur during dynamic loading of fiber-reinforced composite structures will be elucidated. The influence of key materials and test parameters, such as material properties, specimen geometry and strain-rate will be discussed briefly. The possibility of developing impact-resistant sandwich structures based on graded core designs will also be considered.

The talk will then continue with a discussion of how the aforementioned failure mechanisms contribute to the outstanding energy-absorbing characteristics of correctly-designed composite structures. Attention will focus on how correctly-designed composite tubes can be employed to absorb energy under extreme loading conditions, such as that associated with low velocity impact loading. The influence of composite tube geometry, in particular, will be assessed focusing on how the use of very small diameter composite tubes (low diameter to thickness ratio) can be used to develop a new range of energy-absorbing cores with very high values of energy-absorption for use in dynamic loading events. One example of such a structure is a composite tube reinforced foam core material, where specific energy absorption values can be as high as 100 kJ/kg. An examination of the composites after testing indicates that they are reduced to fine powder, indicating that significant energy has been dissipated in the process of failure. The energy-absorbing response of these structures will be compared with previously-published data on core system, such as aluminum honeycombs and plain polymer foams. Finally, the talk will conclude with a discussion regarding how such materials can be used to enhance the blast resistance of lightweight structures. Recent data from blast tests on a range of reinforced designs will be presented and the great potential offered by these new designs will be highlighted.

About the Presenter
Dr. Wesley Cantwell is the Director of the Aerospace Research and Innovation Center (ARIC) and the Associate Dean for Research at Khalifa University in Abu Dhabi. Prior to arriving in the UAE, he worked for 18 years at the University of Liverpool, UK, where he directed a research group on composite materials. Following his academic studies, he spent nine years at the Ecole Polytechnique Federale de Lausanne (EPFL), Switzerland, working on a range of topics including lightweight materials for the power generation industry. He has been a visiting academic at Virginia Tech in the USA and the Academy of Sciences of the Czech Republic.

He obtained his bachelor's degree in aeronautical engineering from the University of Southampton, UK, and his master's and PhD degrees in the same subject from Imperial College, London. His research interests include the impact and blast response of composite materials, lightweight structures for energy absorption, lattice structures, hybrid metal-composite structures, composites manufacturing as well as 3D metal printing.

Keynote 4

Wednesday, April 5, 2017   **10:00–10:45**   **Hall A – Main Building**

To Be Announced.

Industrial Presentation

I.   Rapid Simulation capabilities for Aerospace and Defense

Wednesday, April 5, 2017   **13:30–14:05**   **Hall B – Main Building**

Diogo Rodrigues
Analytical Graphics Inc.

Complex, autonomous and inter-dependent systems have become ubiquitous in our daily lives. As levels of complexity, autonomy and inter-dependency increase so does the need to augment the traditional Research, Design, Testing and Evaluation - RDTE process with state-of-art collaborative engineering processes and technologies. By no means this is a straightforward process, but can done effectively and systematic through the use of rapid simulation tools aimed to validate architectures, subsystems working together and likely operational scenarios. Rapid Simulation will allow for insightful understanding of each potential solution, adequate mapping of the failure modes and potential courses-of-action. These technologies can also help out find optimum solutions in complex trade spaces in short amount of time since they can be put to work uninterruptedly. This presentation aims to cover the benefits such capabilities applied to Aerospace and Defense Systems and highlight how they can be used across the entire program lifecycle.

About the Presenter
Diogo Rodrigues (MSc. Space Studies), General Manager, LASS TECH Consulting: After having worked 8 years for AGI managing the European, South American and Middle Eastern Markets Diogo has founded LASS TECH Consulting which aims to provide technical and commercial consultancy services for innovative companies seeking to establish a solid presence in the Middle East. LASS TECH Consulting is also the Master Representative for AGI in the Middle East. Besides bringing a diverse experience in the Aerospace and Defense

market, Diogo has also introduced COTS technology to several new customers, explored new use cases and helped organizations fully leverage from the benefits of using COTS technology. Prior to AGI, Diogo also conducted Space mission analysis work for the European Space Operations Center (ESOC), NASA's Jet Propulsion Lab (JPL) and Dassault Aviation. Diogo holds a MSc. in Space Studies from the International Space University (ISU) in Strasbourg and an Aerospace Engineering degree from Instituto Superior Tecnico in Lisbon.

II. Platform-based Approach to Engineering and Science Applications

Wednesday, April 5, 2017   **14:05–14:40**   **Hall B – Main Building**

Leen Adnan
National Instruments, UAE

In this presentation, we will introduce a development environment designed specifically to accelerate the productivity of engineers and scientists using LabVIEW. The development environment allows engineers and scientists to provide solutions to the most challenging problems, taking them from simulation to implementation. Applications in various industries will be presented, highlighting some technical case studies in fields such as robotics, power, structural health, oil and gas, etc.

About the Presenter
Leen Adnan graduated from the American University of Beirut with a Bachelor's of Engineering in Mechanical Engineering and a minor in Biomedical Engineering. Leen started with National Instrument (NI) as an Applications Engineer, gained technical experience in NI platforms and various industries, and now she is working as a Field Engineer based in the UAE.

Technical Sessions

Day 1 - Tuesday, April 4, 2017

Session S1: Artificial Intelligence I (EB1-112)

Session Chair:

Time	Paper ID	Title	Authors and Affiliations
13:30-13:45	1570324562	Modeling Received Signal Strength for Indoors Utilizing Hybrid Neuro-Fuzzy Network	Basem Amer (Royal Military College of Canada; University of Azzawia, Libya); Aboelmagd Noureldin (Royal Military College of Canada, Canada)
13:45-14:00	1570325094	A Collaborative Filtering based Model for Recommending Graduate Schools	Madhav Iyengar; Ayanava Sarkar; Shikhar Singh (BITS Pilani, Dubai, United Arab Emirates)
14:00-14:15	1570325149	Energy Management Optimization for an Extended Range Electric Vehicle	Alhamede Abdelgadir and Jamal Y. Alsawalhi (Petroleum Institute, United Arab Emirates)
14:15-14:30	1570326266	Optimizing the Parameters of a Biodynamic Responses to Vibration Model using Particle Swarm and Genetic Algorithms	Naser Nawayseh, Anwar Hasan Jarndal and Sadeque Hamdan (University of Sharjah, United Arab Emirates)
14:30-14:45	1570326859	Artificially-Intelligent Imaging (AI2) Sensors: How Intelligent CMOS Imaging Devices Can Benefit Photovoltaics	Faycal Saffih (UAE University, United Arab Emirates)
14:45-15:00	*Coffee Break*		

Session S2: Biomedical Engineering (EB1-113)

Session Chair:

Time	Paper ID	Title	Authors and Affiliations
13:30-13:45	1570324650	Patient-Specific Seizure Onset Detection based on CSP-Enhanced Energy and Neural Synchronization Decision Fusion	Marwa Qaraqe (Hamad Bin Khalifa University, Qatar)
13:45-14:00	1570325166	Development of an Algorithm for Automating Gaze Data Analysis Gathered while using Upper Limb Prostheses	Ala'a Abu Zaid, Mohammad Sobuh, Musa Al Yaman (University of Jordan, Jordan)
14:00-14:15	1570326988	Visual Human Action Classification for Control of a Passive Walker	Sajjad Taghvaei (Shiraz University, Iran); Yasuhisa Hirata (Tohoku University, Japan); Kazuhiro Kosuge (Graduate School of Engineering, Japan)
14:15-14:30	1570329201	Notched Anti-Podal Vivaldi Antenna for Biomedical Applications	Asim Alkhaibari , Abdel Fattah Sheta and Ibrahim Elshafiey (King Saud University, Saudi Arabia)
14:30-14:45	1570327115	Exponential sliding mode controller for a nonlinear musculoskeletal human arm model	Zahra Jafari Shahbazzadeh, Fatemeh Fotouhi Ardakani and Ramin Vatankhah (Shiraz University, Iran)
14:45-15:00	*Coffee Break*		

Session S3: Electrical Engineering I (EB1-114)

Session Chair:

Time	Paper ID	Title	Authors and Affiliations
13:30-13:45	1570325101	Forecasting of Peak Electricity Demand Using ANN-GA and ANN-PSO Approaches	Anwar Hasan Jarndal and Sadeque Hamdan (University of Sharjah, United Arab Emirates)
13:45-14:00	1570325190	Data Aggregate Point Placement for Smart Grid with Joint Consideration of Communication and Power Networks	Amani Mahdy, Peng-Yong Kong, Bashar Zahawi (Khalifa University, United Arab Emirates); George K. Karagiannidis (Aristotle University of Thessaloniki, Greece)
14:00-14:15	1570326369	A Novel Hybrid Synchronous PWM Inverter Based IFO Drive System	Adil Khurram, Habib-ur Rehman and Shayok Mukhopadhyay (American University of Sharjah, United Arab Emirates)
14:15-14:30	1570326632	Modeling and Analysis of a Regenerative Braking System with a Battery-Supercapacitor Energy Storage	Andrew Adib and Rached Dhaouadi (American University of Sharjah, United Arab Emirates)
14:30-14:45	1570329581	On the Use of Artificial Neural Networks to Detect and Size Cracks in Conductors	Alaa Ali, Mariam Al-Hudaidi, Habiba Tahir, Nasser Qaddoumi and Amer Zakaria (American University of Sharjah, United Arab Emirates)
14:45-15:00	*Coffee Break*		

Session S4: Applied Mathematics (EB1-115)

Session Chair:

Time	Paper ID	Title	Authors and Affiliations
13:30-13:45	1570325018	Hexacopter Maneuverability Capability: An Optimal Control Approach	Camilo Morales (Universidad de los Andes, Colombia); Diana Ovalle (Universidad Distrital Francisco José de Caldas, Colombia); Alain Gauthier (Universidad de los Andes, Colombia)
13:45-14:00	1570325161	An Exact Epsilon-Constraint Method for Solving the Multi-Objective 2-dimensional Vector Packing Problem	Nadia Dahmani (Emirates College of Technology, United Arab Emirates); Saoussen Krichen (ISG, Tunisia); El-Gazali Talbi (Universite de Lille 1, INRIA Lille-Nord Europe, France)
14:00-14:15	1570326867	A General Iterative Method for Solving a Certain Class of Optimization Problems	Armen Bagdasaryan and Seifedine Kadry (American University of the Middle East, Kuwait)
14:15-14:30	1570322455	Generalized Projective and Injective Modules	Inayatur Rehman (Dhofar University, Oman); Asima Razzaque (Education University Lahore, Pakistan)
14:30-14:45	1570348525	A Novel Semi-Analytical Iterative Approach for BVPs	Ali Sayfi and Suheil Khouri, American University of Sharjah
14:45-15:00	*Coffee Break*		

Session S5: Engineering Systems Management I (EB1-112)

Session Chair:

Time	Paper ID	Title	Authors and Affiliations
15:00-15:15	1570329117	A Discrete-Event Simulation Tool for Decision Support in Selection of Project Scheduling Strategies	Thomas Heine Rasmussen, Niels Hansen and Sanja Lazarova-Molnar (University of Southern Denmark, Denmark)
15:15-15:30	1570325130	A Two Stage Green Supplier Selection and Order Allocation Using AHP and Multi-Objective Genetic Algorithm Optimization	Sadeque Hamdan and Anwar Hasan Jarndal (University of Sharjah, United Arab Emirates)
15:30-15:45	1570325157	Green Supplier Selection and Order Allocation with Incremental Quantity Discounts	Sadeque Hamdan and Ali Cheaitou (University of Sharjah, United Arab Emirates)
15:45-16:00	1570326924	An Optimal Mathematical Modeling for Manufacturing/Remanufacturing Problem under Carbon Emission Constraint	Salim Bouslikhane, Hajej Zied and Nidhal Rezg (University of Lorraine, France)
16:00-16:15	1570326955	Improved Maintenance Strategy for a Parallel Leased Machines System	Askri Tarek; Hajej Zied; Nidhal Rezg (University of Lorraine, France)
16:15-16:30	1570329318	Joint Optimization of Procurement, Production and Shipping Quantities Under Consignment Stock Partnership	Rami As'ad, Osama Alkhatib and Moncer Hariga (American University of Sharjah, United Arab Emirates)

Session S6: Computer Engineering (EB1-113)

Session Chair:

Time	Paper ID	Title	Authors and Affiliations
15:00-15:15	1570323725	Security Approach for LSB Steganography Based FPGA Implementation	Abdullah AlWatyan, Wesam Mater, Omar Almutairi, Mohammed Almutairi and Aisha Al-Noori (Kuwait University, Kuwait); Sa'ed Abed (Kuwait University; College of Computing Sciences and Engineering, Kuwait)
15:15-15:30	1570325168	A Framework for Collaborative Cloud-based Fault Detection and Diagnosis in Smart Buildings	Sanja Lazarova-Molnar (University of Southern Denmark, Denmark); Nader Mohamed (Middleware Technologies Lab., Bahrain)
15:30-15:45	1570326721	Performance Evaluation of Datacenter Network Topologies with Link Failures	Heba Helal and Rana Ahmed (American University of Sharjah, United Arab Emirates)
15:45-16:00	1570329205	Cloud of Things: Optimizing Smart City Services	Nader Mohamed (Middleware Technologies Lab., Bahrain); Sanja Lazarova-Molnar (University of Southern Denmark, Denmark); Jameela Al-Jaroodi (Robert Morris University, USA)
16:00-16:15	1570329319	CANTrack: Enhancing Automotive CAN Bus Security Using Intuitive Encryption Algorithms	Wael Farag (American University of the Middle East, Kuwait)
16:15-16:30	1570330338	Parallel Implementation for Deriving Preset Distinguishing Experiments of Nondeterministic Finite State Machines	Abdul Rahim Haddad, Khaled El-Fakih and Barlas Gerassimos (American University of Sharjah, United Arab Emirates)

Session S7: Mechanical Engineering I (EB1-114)

Session Chair:

Time	Paper ID	Title	Authors and Affiliations
15:00-15:15	1570322660	Finite Element Analysis of Clamping Form in Wire and Arc Additive Manufacturing	Xiaolong Wang and Aimin Wang (Beijing Institute of Technology, P.R. China)
15:15-15:30	1570324183	Numerical Analysis of Free Vortex Flow in a Combustor Model	Wahib Salim and Saad Ahmed (American University of Sharjah, United Arab Emirates)
15:30-15:45	1570324738	Nonlinear Estimation for Kinematic Calibration of 3PRR Planar Parallel Kinematics Manipulator	Abdur Rosyid, Bashar El-Khasawneh and Anas Alazzam (Khalifa University, United Arab Emirates)
15:45-16:00	1570324889	Numerical Simulation of Integrating PCM in Multilayer Wall Construction in UAE	Abdallah Ghazal (United Arab Emirates University, United Arab Emirates); Youssef Zurigat (American University of Sharjah, United Arab Emirates)
16:00-16:15	1570325044	Integrated One-Dimensional Modeling of Asphaltene Deposition in Wellbores/Pipelines	Qiangshun Guan, Yit Fatt Yap and Afshin Goharzadeh (Petroleum Institute, United Arab Emirates); John C, Chai (University of Huddersfield, United Arab Emirates); Francisco Vargas and Walter G. Chapman (Rice University, USA); Min Zhang (Nanjing University of Science and Technology, P.R. China)
16:15-16:30	1570325049	Modeling of Two-Phase Flow with Deposition in Vertical Pipes	Xuan Li, Yit Fatt Yap and Afshin Goharzadeh (Petroleum Institute, United Arab Emirates); John C. Chai (University of Huddersfield, United Arab Emirates); Min Zhang (Nanjing University of Science and Technology, P.R. China)
16:30-16:45	1570326983	Proposal of an Alternative Material for the Energy Storage And Return Foot	Mohamed Anass, Vibhor Bhargava and Mohammad Nazzal (American University of Sharjah, United Arab Emirates)

Session S8: Combinatorics and Discrete Mathematics (EB1-115)
Session Chair:

Time	*Paper ID*	*Title*	*Authors and Affiliations*
15:00-15:15	1570290311	A Few Properties of Circulant Graphs: Self-complementary, Isomorphism, Cartesian Product and Factorization	V. Vilfred (Central University of Kerala, India)
15:15-15:30	1570322882	New Results and Conjectures on 2-partitions of Multisets	Ovidiu Bagdasar (University of Derby, United Kingdom); Andrica Dorin (Babes-Bolyai University, Romania)
15:30-15:45	1570325173	Notes On Z2Z2[u]-Cyclic Self-Dual and Quantum Codes	Ismail Aydogdu (Yildiz Technical University, Turkey); Taher Abualrub (American University of Sharjah, United Arab Emirates); Irfan Siap (Turkey)
15:45-16:00	1570326994	Quantum Codes over Eisenstein-Jacobi Integers	Eda Yildiz and Fatih Demirkale (Yildiz Technical University, Turkey)
16:00-16:15	1570325093	3-Zero-Divisor Hypergraph Regarding an Ideal	Aysegul Bayram Elele (University of Testing & Yildiz Technical University, Turkey); Gulsen Ulucak (Gebze Technical University, Turkey)
16:15-16:30	1570329118	Cyclic Codes Over A Non-Commutative Ring	Seda Akbiyik and Bayram Ali Ersoy (Yildiz Technical University, Turkey)
16:30-16:45	1570322166	The Hypergraphs Generated by Catacondensed Hexagonal Systems	Khaled Salem (The British University in Egypt, Egypt)

Technical Sessions

Day 2 - Wednesday, April 5, 2017

Session S9: Engineering Systems Management II (EB1-112)

Session Chair:

Time	Paper ID	Title	Authors and Affiliations
11:00-11:15	1570327145	Simulation and Analysis of Staff Scheduling in Hospitality Management	Seifedine Kadry and Armen Bagdasaryan (American University of the Middle East, Kuwait)
11:15-11:30	1570329337	Structural Damage Fault Detection using Artificial Neural Networks Profile Monitoring	Mahmoud Awad, Mohammad AlHamaydeh and Ahmed Mohamed (American University of Sharjah, United Arab Emirates)
11:30-11:45	1570329351	Solving an Open Path Multiple Depot Multiple Traveling Salesman Problem after transformation	Mustafa Assaf and Malick Ndiaye (American University of Sharjah, United Arab Emirates)
11:45-12:00	1570329622	A Multi-Objective Optimization of Maintenance Policies using Weighted Comprehensive Criterion Method (WCCM)	Imad Alsyouf and Sadeque Hamdan (University of Sharjah, United Arab Emirates)
12:00-12:15	1570341738	Integrated Economic and Environmental Two-stage Supply Chain Model under Vendor Managed Consignment Inventory Partnership	Moncer Hariga, Salbi Babekian and Zied Bahroun (American University of Sharjah, United Arab Emirates)
12:15-12:30	1570325053	Green Traveling Purchaser Problem Model: A Bi-Objective Optimization Approach	Sadeque Hamdan (SEAM, University of Sharjah, Sharjah, UAE); Rim Larbi (Industrial Engineering, United Arab Emirates); Ali Cheaitou and Imad Alsyouf (University of Sharjah, United Arab Emirates)

Session S10: Electrical Engineering II (EB1-113)

Session Chair:

Time	Paper ID	Title	Authors and Affiliations
11:00-11:15	1570326942	Detection and Identification of Ferroresonance	Heba Abu Sharbain, Ahmed Osman and Ayman El-Hag (American University of Sharjah, United Arab Emirates)
11:15-11:30	1570326953	Impact of PV and Wind Penetration into a Distribution Network Using Etap	Rashed Waqfi and Mutasim I. H. Nour (Heriot Watt University, United Arab Emirates)
11:30-11:45	1570326982	Investigation of Voltage and Frequency Variation on Induction Motor Core and Copper Losses	Mutasim I. H. Nour and Prabhu Thirugnanam (Heriot Watt University, United Arab Emirates)
11:45-12:00	1570328317	Optimal Allocation of PV Systems in Distribution Networks Using PSO	Mohammed Albadi and Hisham Soliman (Sultan Qaboos University, Oman); Ehab El-Saadany (Waterloo University, Canada); Mahmood Awlad Thani (RAECO, Oman); Ahmed Al-Alawi, Said Al-Ismaili, Ahmed Al-Nabhani and Haitham Baalawi (Sultan Qaboos University, Oman)
12:00-12:15	1570329023	Fault Diagnosis of a Commercial PEM Fuel Cell System using LMS AMESim	Reem I. Salim, Hassan Noura and Abbas Fardoun (United Arab Emirates University, United Arab Emirates)
12:15-12:30	1570329327	Frequency Synthesizer Architectural Design for Digital Radar Testbed	Hani AlRifai, Sirine Dhaouadi, Yamen Hatahet, Fares Almabrouk, Lutfi Albasha and Hasan Mir (American University of Sharjah, United Arab Emirates)

Session S11: Artificial Intelligence II (EB1-114)

Session Chair:

Time	Paper ID	Title	Authors and Affiliations
11:00-11:15	1570327015	Sensor Fusion for Ecologically Valid Obstacle Identification: Building a Comprehensive Assistive Technology Platform for the Visually Impaired	John-Ross Rizzo (NYU Langone Medical Center, USA); Yubo Pan (NYU, USA); Todd Hudson (NYU Langone Medical Center, USA); Edward K. Wong (NYU, USA); Yi Fang (NYU Abu Dhabi, United Arab Emirates)
11:15-11:30	1570328344	Structural Control of MR-Dampers with Genetic Algorithm-Optimized Quasi-Bang-Bang Controller	Mohammad AlHamaydeh, Mohammad Jaradat, Mohamed Serry (American University of Sharjah, United Arab Emirates); Laith Sawaqed (JUST, Jordan); Khaled Hatamleh (American University of Sharjah, United Arab Emirates)
11:30-11:45	1570329322	Stable Under-Actuated Manipulator's Design For Mobile Manipulating Unmanned Aerial Vehicle (MM-UAV)	Osama Mutie Abdul Hafez and Mohammad Jaradat (Jordan University of Science &; Technology, Jordan); Khaled Hatamleh (American University of Sharjah, United Arab Emirates)
11:45-12:00	1570329326	ROS Validation for Non-holonomic Differential Robot Modeling and Control	Abdulrahman Renawi (American University of Sharjah, United Arab Emirates); Mohammad Jaradat (JUST, Jordan); Mamoun Abdel-Hafez (American University of Sharjah, United Arab Emirates)
12:00-12:15	1570329343	Sigma-Point Smooth Variable Structure Filters Applications into Robotic Arm	Mohammad Al-Shabi (University of Sharjah, United Arab Emirates)

Session S12: Mathematical Modeling & Simulation I (EB1-115)

Session Chair:

Time	Paper ID	Title	Authors and Affiliations
11:00-11:15	1570322320	Semi-analytical Solutions for the Delayed Diffusive Food-Limited Model	Hassan Alfifi (University of Dammam, Saudi Arabia)
11:15-11:30	1570322878	Dynamic Modeling and Simulation for Virtual Evaluation of Inverted Wheeled Robot Controllers	Khalifa Harib, Kamal Moustafa and Shaima Al Hebsi (UAE University, United Arab Emirates)
11:30-11:45	1570324385	Research on the Modeling and Influence of Flexible Sub-frame on Vehicle Performance	Liang Xu, Rui Guo, Haiyan Song, Xin Jia and Guan Xin (Jilin University, P.R. China); Shuai Zhao (China Automotive Technology and Research Center, P.R. China)
11:45-12:00	1570324439	Reliability Modelling and Analysis of a Single Machine Subsystem of a Cable Plant	Syed Zegham Taj and Syed Rizwan (Caledonian College of Engineering, Oman); Babakalli Alkali and David Harrison (Glasgow Caledonian University, United Kingdom); Gulshan Taneja (Maharshi Dayanand University, India)
12:00-12:15	1570326870	Quadrotors Trajectory Tracking using a Differential Flatness-Quaternion based Approach	Kheireddine Choutri and Mohand Lagha (Aeronautical Sciences Laboratory, Aeronautical and Spatial Studies Institute, University Blida1, Algeria); Laurent Dala (Northumbria University Ellison Place Newcastle, United Kingdom); Michael Lipatov (M-Industries Moscow, Russia)
12:15-12:30	1570327833	Modeling and Optimization of Hybrid Solar-Diesel-Battery Power System	Chaouki Ghenai and Tareq Salameh (University of Sharjah, United Arab Emirates); Adel Merabet (Saint Mary's University, Canada); Abdul-Kadir Hamid (University of Sharjah, United Arab Emirates)

Session S13: Statistics and Probability (EB1-107)
Session Chair:

Time	Paper ID	Title	Authors and Affiliations
11:00-11:15	1570325072	Comparison of Xpert MTB/RIF and GenoType MTBDRplus for Rapid Diagnosis of Tuberculosis	Urvah Shabbir, Bilal Wajid and Sana Akhtar (University of Engineering and Technology, Lahore, Pakistan)
11:15-11:30	1570329268	Real Zeros and Critical Points of Random Polynomials	Tulasi Ram Reddy Annapareddy (New York University, Abu Dhabi, India)
11:30-11:45	1570330687	Sobol Sensitivity for Machine Learning	Dmitry Efimov, Hana Sulieman (American University of Sharjah, United Arab Emirates)
11:45-12:00	1570329328	Consistency in Probabilistic Modeling	Alberto Gandolfi (New York University Abu Dhabi, United Arab Emirates & Università di Firenze, Italy)

Session S14: Electrical Engineering III (EB1-112)

Session Chair:

Time	Paper ID	Title	Authors and Affiliations
15:00-15:15	1570326202	Penta-Frequency CPW Bow-Tie Aperture Antenna For Mobile Communications	Abdul-Kadir Hamid (University of Sharjah, United Arab Emirates)
15:15-15:30	1570329352	Enhancement of Cross-Entropy Based Stopping Criteria via Turning Point Indicator	Roslina Mohamad (Universiti Teknologi Mara, Malaysia); Harlisya Harun (UniKL MIAT, Malaysia); Murizah Kassim (Universiti Teknologi Mara, Malaysia)

Time	Paper ID	Title	Authors and Affiliations
15:30-15:45	1570329359	Modeling and Simulation of Static Power Dissipation in CMOS with SELBOX Structure	Dana Younis, Narayanan Raghavan Madathumpadical and Hasan Al-Nashash (American University of Sharjah, United Arab Emirates)
15:45-16:00	1570338777	A DST Precoding Based Uplink NOMA Scheme for PAPR Reduction in 5G Wireless Network	Imran Baig, CEng (Dhofar University Salalah, Oman)
16:00-16:15	1570322191	Signal Detection in SAR Against the Clutter Reflections Background	Leonid Dorosinskiy and Andrew Kurganski (Ural Federal University, Russia)
16:15-16:30	1570322261	Radar Signal Classification Algorithms Synthesis and Analysis	Leonid Dorosinskiy and Filipp Myasnikov (Ural Federal University, Russia)

Session S15: Chemical & Civil Engineering (EB1-113)

Session Chair:

Time	Paper ID	Title	Authors and Affiliations
15:00-15:15	1570326901	Simulation for the Production of Synthetic Natural Gas for Vehicles (SNGV) from Palm Waste via Gasification with In-Situ CO_2 Capture	Abrar Inayat and Chaouki Ghenai (University of Sharjah, United Arab Emirates); Muhammad Ayoub (Universiti Teknologi PETRONAS, Malaysia)
15:15-15:30	1570348472	Modeling and simulation of bond-slip behavior of aluminum alloy plates adhesively bonded to concrete	Ahmed Mirghani, Jamal Abdalla and Rami Hawileh (American University of Sharjah, United Arab Emirates (UAE))
15:30-15:45	1570325150	Finite Element Parametric Study of the Shear Behavior of GFRP-RC Short Beams	Abdulla Sagher and Farid Abed (American University of Sharjah, United Arab Emirates)
15:45-16:00	1570329353	Key Parameters Influencing the Behavior of Steel Plate Shear Walls (SPSW)	Mohammad AlHamaydeh and Abdulla Sagher (American University of Sharjah, United Arab Emirates)
16:00-16:15	1570329354	Impact of Diverse Seismic Hazard Estimates on Design and Performance of	Mohammad AlHamaydeh and Laith Elayyan (American University of Sharjah, United Arab Emirates)

Time	Paper ID	Title	Authors and Affiliations
		Steel Plate Shear Walls Buildings in Dubai, UAE	
16:15-16:30	1570333163	Improvement of the Ignition Quality of the Diesel Fuel through Adsorption Desulfurization Process using Different Commercial Activated Charcoals	Noora Darwish (American University of Sharjah, United Arab Emirates); Isam Al Zubaidy (University of Regina, Canada); Yehya El Sayed, Zarook Shareefdeen and Ziad Sara (American University of Sharjah, United Arab Emirates)

Session S16: Mechanical Engineering II (EB1-114)

Session Chair:

Time	*Paper ID*	*Title*	*Authors and Affiliations*
15:00-15:15	1570328345	Solar Air-Conditioning: Case Study of Solar Absorption versus Photovoltaic Vapor Compression Systems	Mohammad O. Hamdan and Bassam Abu Nabah (American University of Sharjah, United Arab Emirates)
15:15-15:30	1570328462	Stochastic Processes and Markov Chains in Shape and Material Optimization Problems of Composite Structures	Aleksander Muc and Mateusz Wygoda (Institute of Machine Design, Cracow University of Technology, Kraków, Poland)
15:30-15:45	1570329218	Modeling and Simulation of a Moving Robotic Arm Mounted on Wheelchair	Laith Sawaqed and Ahmad Al-Ali (Jordan University of Science and Technology, Jordan); Khaled Hatamleh (American University of Sharjah, United Arab Emirates); Mohammad Jaradat (JUST, Jordan)
15:45-16:00	1570329338	Optimal Design of Laminated Compressed Structures with Delaminations	Aleksander Muc (Institute of Machine Design, Cracow University of Technology, Kraków, Poland); Katarzyna Składanowska (Cracow University of Technology, Poland)
16:00-16:15	1570329422	The Effectiveness of Optimization Algorithms in Shape and Topology Discrete Optimisation of 2-D Composite Structures	Aleksander Muc (Institute of Machine Design, Cracow University of Technology, Kraków, Poland); Izabela Sanetra (Cracow University of Technology, Poland)

Time	Paper ID	Title	Authors and Affiliations
16:15-16:30	1570327002	Kinematic Synthesis and Optimization of Continuous Passive Motion Mechanisms for Knee	Sajjad Taghvaei, Zahra Rajestari and Navid Feizi (Shiraz University, Iran)
16:30-16:45	1570327117	Natural frequency of size-dependent microplates with piezoelectric layers	Arash Kazemi, Ramin Vatankhah and Mehrdad Farid (Shiraz University, Iran)

Session S17: Mathematical Modeling & Simulation II (EB1-115)

Session Chair:

Time	Paper ID	Title	Authors and Affiliations
15:00-15:15	1570330803	Multiscale simulation of absolute permeability in carbonate samples using 3D X-ray Micro Computed Tomography images	Mohamed Jouini, Ali AlSumaiti, and Moussa Tembely, Khurshed Rahimov (Petroleum Institute, UAE)
15:15-15:30	1570322320	Semi-analytical Solutions for the Delayed Diffusive Food-limited Model	Hassan Alfifi (University of Dammam, Saudi Arabia)
15:30-15:45	1570326984	Optimization of Corona Ring Design for High Voltage Insulators - Simulation by Comsol Multiphysics	Alip Mohammed (Petroleum Institute, United Arab Emirates)
15:45-16:00	1570330847	A Posteriori Error Control & Adaptivity for Evolution Schrodinger Equations	Theodoros Katsaounis (King Abdullah University of Science and Technology, Saudi Arabia); Irene Kyza (University of Dundee, Greece)
16:00-16:15	1570331553	Modeling and Dynamics of Intramammary Infections Caused by Corynebacterium Species	Amira Rachah (Norwegian University of Life Sciences, Norway); Gunnar Dalen, Olav Reksen and Havard Norstebo (Animal and Veterinary Sciences, Norway); John Barlow (Animal and Veterinary Sciences, USA)

16:15-16:30	1570334168	Control Oriented Modeling of Dynamic Torque Converter System	Jin-Hyuk Lee (American University of Sharjah, United Arab Emirates)
16:30-16:45	1570338561	Optimal Control Analysis of the Schistosomiasis Transmission Dynamics in the Human-Snail Hosts	Emmanuel Bakare (Federal University Oye Ekiti, Ekiti State, Nigeria)