

# **2017 10th International Conference on Developments in eSystems Engineering (DeSE 2017)**

**Paris, France  
14 – 16 June 2017**



**IEEE Catalog Number: CFP1756I-POD  
ISBN: 978-1-5386-1722-9**

**Copyright © 2017 by the Institute of Electrical and Electronics Engineers, Inc.  
All Rights Reserved**

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

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

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

IEEE Catalog Number:	CFP1756I-POD
ISBN (Print-On-Demand):	978-1-5386-1722-9
ISBN (Online):	978-1-5386-1721-2

**Additional Copies of This Publication Are Available From:**

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

CURRAN ASSOCIATES INC.  
**proceedings**  
.com

# 2017 10th International Conference on Developments in eSystems Engineering

## DeSE 2017

### Table of Contents

<b>Foreword</b> .....	x
<b>Conference Organization</b> .....	xi
<b>International Program Committee</b> .....	xii
<b>Keynotes</b> .....	xiii

---

#### E-Systems Engineering

Applying System Science and System Thinking Techniques to BIM Management .....	3
<i>Alan Martin Redmond and Mustafa Alshawi</i>	
Detecting the Disc Herniation in Segmented Lumbar Spine MR Image Using Centroid Distance Function .....	9
<i>Ala S. Al Kafri, Sud Sudirman, Abir J. Hussain, Paul Fergus, Dhiya Al-Jumeily, Hiba Al Smadi, Mohammed Khalaf, Mohammed Al-Jumaily, Wasfi Al-Rashdan, and Mohammad Bashtawi</i>	
Wearable Devices and IoT as Enablers of Assistive Technologies .....	14
<i>Davide Mulfari, Antonino Longo Minnolo, and Antonio Puliafito</i>	
Adaptive Clustering Based Inclusion and Computational Intelligence for a Fed-Batch Fermentation Process Control .....	20
<i>Majeed Soufian, Samia Nefti, and Mazaher Molaei</i>	
Recognition of Individual Zebrafish Using Speed-Up Robust Feature Matching .....	26
<i>Qussay Al-Jubouri, Waleed Al-Nuaimy, Majid A. Al-Taei, and Iain Young</i>	
The FL-SMIA Network: A Novel Architecture for Time Series Prediction .....	31
<i>Asmaa Mahdi, Tillman Weyde, and Dhiya Al-Jumeily</i>	
Soft Mathematical System to Solve Black Box Problem through Development the FARB Based on Hyperbolic and Polynomial Functions .....	37
<i>Samaher Al-Janabi and Esraa Alwan</i>	

Impacts and Benefits of Health Informatics in Saudi Arabia: A Weblink Pilot Project .....	43
<i>Jade Hind, Dhiya Al-Jumeily, Abir J. Hussain, Naif Almughamisi, Mark Allen, and Jamila Mustafina</i>	
Dynamic Area of Interest Management for Massively Multiplayer Online Games Using OPNET .....	50
<i>Abdennour El Rhalibi, Abdennour El Rhalibi, and Dhiya Al-Jumeily</i>	
Monitoring the Performance of Solar Street Lights in Sahelian Environment: Case Study of Senegal .....	56
<i>Abdoulaye Kama, Moussa Diallo, Mamadou S. Drame, Mamadou L. Ndiaye, Ababacar Ndiaye, and Pape A. Ndiaye</i>	
Mobile Cloud Computing: Challenges and Future Research Directions .....	62
<i>Samaher Al-Janabi, Ibrahim Al-Shourbaji, Mohammad Shojafar, and Mohammed Abdelhag</i>	

## E-Security and E-Forensics

Towards a Framework for the Extension and Visualisation of Cyber Security Requirements in Modelling Languages .....	71
<i>Curtis L Maines, Bo Zhou, Stephen Tang, and Qi Shi</i>	
A New Approach to Securing Speech Signals .....	77
<i>Ahmida Zahir and Djemili Rafik</i>	
Hybrid Classification Approach Using Self-Organizing Map and Back Propagation Artificial Neural Networks for Intrusion Detection .....	83
<i>Sadeq AlHamouz and Ahmad Abu-Shareha</i>	
Selecting Scalable Network Features for Infiltration Detection .....	88
<i>Phillip Kendrick, Abir Hussain, Natalia Criado, and Martin Randles</i>	
A Robust Spatially Invariant Model for Latent Fingerprint Authentication Approach .....	94
<i>Dhiya Al-Jumeily, Adil Al-Azzawi, Asmaa Mahdi, and Jade Hind</i>	
Enforcing Access Control Models in System Applications by Using Aspect-Oriented Programming: A Literature Review .....	100
<i>Akeel A. Thlunoon and Kashif Kifayat</i>	

## E-Learning (Technology Enhanced Learning)

An Adapted Community of Inquiry (COI) Framework with the Inclusion of Instructor Presence .....	109
<i>Nani Amalina Zulkanain and Elin Eliana Abdul Rahim</i>	

A Guideline for the Development of Blended Learning Platform Based on the Observation of Students' Reaction in a Virtual World .....	115
<i>Nani Amalina Zulkanain and Elin Eliana Abdul Rahim</i>	
Overview on Modern Serious Games for Regional and Minority Languages Promotion .....	120
<i>Egor Petrov, Jamila Mustafina, and Mohamed Alloghani</i>	
Distance Learning of Regional Languages: Comparative Analysis (Case Study: Tatarstan, Bashkortostan, Chuvashia, Udmurtia - Russian National Regions) .....	124
<i>Nailya Nurutdinova, Jamila Mustafina, Liliya Mustafina, and Mohammed Alghamdi</i>	
Towards a Multidimensional Model to Study a Critical Success Factors Affecting Continuity and Success in E-Learning Systems .....	129
<i>Safsouf Yassine, Mansouri Khalifa, and Poirier Franck</i>	
The Attitude towards the Use of Mobile Learning Technology Enhanced Teaching .....	135
<i>Hulya Francis, Mark Taylor, Sud Sudirman, Suparawadee Trongtortam, and Andrew Symons</i>	
Regional Languages in Cyberspace .....	139
<i>Slavina Liliya, Mustafina Jamila, and Mark Alan</i>	
Electronic Educational Resource "Post-Graduate Foreign Language" and the Obtained Learning Curve .....	145
<i>Natalya Chernova and Jamila Mustafina</i>	
 <b>E-Networking and Wireless Environments</b>	
Effect of GSM Frequency Band on Received Signal Strength and Distance Estimation from Cell Tower .....	151
<i>Robson T. Reza and Viranjay M. Srivastava</i>	
Polarization Insensitive 3D Cylindrical Shaped Frequency Selective Surface .....	155
<i>Dhawan Singh and Viranjay M. Srivastava</i>	
In-Body Routing Protocols for Wireless Body Sensor Networks .....	160
<i>Bendjehich Romaisa and Boubiche Djallel Eddine</i>	
 <b>E-Health and E-Medicine</b>	
Privacy Preservation for eSports: A Case Study Towards Augmented Video Golf Coaching System .....	169
<i>Boris Bacic, Qi Meng, and Kam Yuk Chan</i>	
Aggregating Heterogeneous Health Data through an Ontological Common Health Language .....	175
<i>Athanasios Kiourtis, Argyro Mavrogiorgou, and Dimosthenis Kyriazis</i>	

A Novel Choroid Segmentation Method for Retinal Diagnosis Using Deep Learning .....	182
<i>Baidaa Al-Bander, Bryan M. Williams, Majid A. Al-Tae, Waleed Al-Nuaimy, and Yalin Zheng</i>	

Computer Stereovision System for 3D Tracking of Free-Swimming Zebrafish .....	188
<i>Qussay Al-Jubouri, Waleed Al-Nuaimy, Majid A. Al-Tae, and Iain Young</i>	

## E-Government Systems, Autonomic Computing and AI

A Study on Road Accidents in Abu Dhabi Implementing a Vehicle Telematics System to Reduce Cost, Risk and Improve Safety .....	195
<i>Omar Kassem Khalil</i>	

Development of an Interactive System to Enhance Strategic Planning Process and Quality of Aviation Operations Using Balanced Scorecard: A UAE Case study .....	201
<i>Mohamed Alloghani, Abir Hussain, Dhiya Al-Jumeily, Ahmed Aljaaf, and Nasser AlShamsi</i>	

Identifying Actionable Information from Social Media for Better Government-Public Relationship .....	206
<i>Himani Garg, Charu Bansal, Rishabh Kaushal, and Indra Thanaya</i>	

A New Mapping Approach between XML Schemas in a P2P Environment .....	212
<i>El Yahyaoui El Idrissi Selma, Ahmed Zellou, and Ali Idri</i>	

BROGO: A New Low Energy Consumption Algorithm for Leader Election in WSNs .....	218
<i>Ahcène Bounceur, Madani Bezoui, Reinhardt Euler, Nabil Kadjouh, and Farid Lalem</i>	

## Special Session: Machine Learning and Neuroscience Applied to Real World Learning and Self-Development

A Fatigue Prediction Cognitive Model for Naturalistic Typing Environment .....	227
<i>Hilal Al-Libawy, Ali Al-Ataby, Waleed Al-Nuaimy, Majid A. Al-Tae, and Ahmad M. Al-Tae</i>	

Recurrent Neural Network Architectures for Analysing Biomedical Data Sets .....	232
<i>Mohammed Khalaf, Abir Jaafar Hussain, Robert Keight, Dhiya Al-Jumeily, Russell Keenan, Carl Chalmers, Paul Fergus, Wafaa Salih, Dhafar Hamed Abd, and Ibrahim Olatunji Idowu</i>	

Towards a Hybrid Approach of Self-Organizing Map and Density-Based Spatial Clustering of Applications with Noise for Image Segmentation .....	238
<i>Qi Chen, Kevin Kam Fung Yuen, and Chun Guan</i>	

Visual Editor of Scenarios for Virtual Laboratories .....	242
<i>Vlada Kugurakova, Vitaly Abramov, Mikhail Abramskiy, Nadir Manakhov, and Azat Maslaviev</i>	
<b>Special Session: Advanced Robotics</b>	
Spiking Reasoning System .....	251
<i>Alexander Toshev, Max Talanov, and Vitaliy Kurnosov</i>	
Tool for 3D Gazebo Map Construction from Arbitrary Images and Laser Scans .....	256
<i>Roman Lavrenov and Aufar Zakiev</i>	
Towards DJI Phantom 4 Realistic Simulation with Gimbal and RC Controller in ROS/Gazebo Environment .....	262
<i>Artur Sagitov and Yuri Gerasimov</i>	
Towards Effective Interactive Teaching and Learning Strategies in Robotics Education .....	267
<i>Tatyana Tsoy, Leysan Sabirova, and Evgeni Magid</i>	
Comparing Fiducial Marker Systems Occlusion Resilience through a Robot Eye .....	273
<i>Ksenia Shabalina, Artur Sagitov, Hongbing Li, and Evgeni Magid</i>	
Genetic Sensor Placement in Active Control of a Robotic Arm .....	279
<i>Majid Borairi and Majeed Soufian</i>	
<b>Author Index</b> .....	285