



**International Conference on Advanced Systems and Electrical  
Technologies  
(IC-ASET'2017)**

***14-17 January 2017, Hammamet, Tunisia***

# Conference program

**Saturday, January 14<sup>th</sup> AM**

<b>08:30 – 10:10</b>	<b>Welcome &amp; Registration</b>
<b>10:10 – 10:30</b>	<b>Opening speech</b>
<b>10:30 – 12:30</b>	<b>Plenary Session I : <i>Advances in Automotive Electrification</i>, Tomy Sebastian, IEEE IAS President, USA</b>
	<b>Plenary Session II : <i>Smart Mobility : State of the Art and Challenges</i>, Fakhreddine Karray, CA</b>
<b>12:30 – 14:00</b>	<b>Lunch</b>

**Saturday, January 14<sup>th</sup>PM**

<b>Parallel Sessions I</b>		
<b>14:00 - 15:40</b>	<p style="text-align: center;"><b>Session 1</b> <b>Automatic Control Systems</b></p> <p style="text-align: center;"><i>Room A</i></p>	<p><b>Chairs : Tomy Sebastian &amp; Naceur Benhadj Braiek</b></p> <p><b><i>Stabilization of constrained uncertain systems by an off-line approach using zonotopes</i></b> <i>Walid Hamdi and Wissal Bey</i></p> <p><b><i>Computing polynomial feedback controller to enlarge the stability domain for nonlinear discrete-time systems</i></b> <i>Sabrina Bedoui and Anis Belhadj Brahim Bacha</i></p> <p><b><i>A numerical tool for stability analysis of linear time-varying systems</i></b> <i>Athar Baccouche and Hajer Sayem</i></p> <p><b><i>Robust Sliding Mode-Hinf Control For A Class Of Unmatched Systems</i></b> <i>Wajdi Saad and Anis Sellami</i></p> <p><b><i>Sliding mode Control for Functional Electrical Stimulation of a musculoskeletal model</i></b> <i>Nahla Khraief</i></p>
	<p style="text-align: center;"><b>Session 2</b> <b>Bio-informatics &amp; Biomedical Engineering</b></p> <p style="text-align: center;"><i>Room B</i></p>	<p><b>Chairs : Sonia Hajri Gabouj &amp; Kais Ouni</b></p> <p><b><i>A model to simulate SEMG signals of different muscles</i></b> <i>Amira Dridi, Jassem Mtimat and Slim Yacoub</i></p> <p><b><i>Preoperative Planning Tools for Mandibular Reconstruction</i></b> <i>Ben Ismail Dalel, Aloui Kamel and Bouguila Jed</i></p> <p><b><i>Artificial Neural Network for Blood Glucose Level Prediction</i></b> <i>Takoua Hamdi, Jaouher Ben Ali and Farhat Fnaiech</i></p> <p><b><i>Selection of Hyperspectral Bands by adopting a Dimension Reduction</i></b> <i>Essia Thamri, Kamel Aloui and Mohamed Saber Naceur</i></p> <p><b><i>Estimation of Blood Glucose Levels Techniques</i></b> <i>Khaoula Assadi, Takoua Hamdi and Farhat Fnaiech</i></p>
<b>15:40 – 16:00</b>	<b>Break</b>	
<b>Parallel Session II</b>		
<b>16:00 – 17:40</b>	<p style="text-align: center;"><b>Session 3</b> <b>Automatic Control Systems</b></p> <p style="text-align: center;"><i>Room A</i></p>	<p><b>Chairs : Samir Nejim &amp; Abdekader Chaari</b></p> <p><b><i>Identification of complex systems using nonlinear discrete polynomial structures</i></b> <i>Sana Rannen and Chekib Ghorbel</i></p> <p><b><i>The Non-fragile Performance for Nonlinear Systems</i></b> <i>Marwa Rezgui, Hela Belkhiria and Naceur Benhadj Braiek</i></p> <p><b><i>Feedforward Time Optimal Control For State Feedback Regulated Linear Systems</i></b> <i>Salim Bichiou and Mohamed Karim Bouafoura</i></p> <p><b><i>Stable walking of humanoid robot based on Liquid Level Model</i></b> <i>Nahla Khraief Haddad</i></p> <p><b><i>Speed Tracking Control Performance with Frequency and Amplitude Dependence</i></b> <i>Sabrina Jebri and Khaled Nouri</i></p>
	<p style="text-align: center;"><b>Session 4</b> <b>Signal &amp; Image processing</b></p> <p style="text-align: center;"><i>Room B</i></p>	<p><b>Chairs : Farhat Fnaiech &amp; Riadh Ferah</b></p> <p><b><i>Peak detection of GPR data with Lifting Wavelet Transform (LWT)</i></b> <i>Rim Ghazzi, Samer Lahouar and Chokri Souani</i></p> <p><b><i>Variation of Voice Disorders among speakers in the database NTIMIT and TIMIT</i></b> <i>Imen Daly, Zied Hajaiej and Ali Gharsallah</i></p> <p><b><i>A comparison of classification methods for analysis of remotely sensed hyperspectral data</i></b> <i>Emna Karray, Mohamed Anis Loghmari and Mohamed Saber Naceur</i></p> <p><b><i>Voice Conversion technique based on a combination between LPC analysis/synthesis framework and LSP features</i></b> <i>Ben Othmane Imen and Ouni Kais</i></p> <p><b><i>Fingerprint Identification by Wave atoms Transform and SVM</i></b> <i>Leila Boutella and Amina Serir</i></p>

**Sunday, January 15<sup>th</sup> AM**

<b>Parallel Sessions III</b>		
08:30 – 09:50	<p align="center"><b>Session 5 Automatic Control Systems</b></p> <p align="center">Room A</p>	<p><b>Chairs : Gasmî Moncef &amp; Ahmed Rubaai</b></p> <p><b>State estimation using a fuzzy adaptive particle filter for nonlinear stochastic systems</b> <i>Takoua Grami and Ali Sghaier Tlili</i></p> <p><b>T-S Fuzzy Nonlinear Discrete-Time Models Stability Conditions Based On Vector Norms</b> <i>Sirine Fekih, Boutheina Sfaihi and Mohamed Benrejeb</i></p> <p><b>Multimodel Approach: Validities' Computation by Local Criterion Optimization</b> <i>Abdennacer Ben Messaoud, Samia Talmoudi Ben Aoun and Moufida Lahmari Ksouri</i></p> <p><b>On the Fuzzy Adaptive Internal Model Control of the Discrete-time Nonlinear Systems</b> <i>Ikbel Ben Cheikh Ahmed, Chakra Othman and Dhaou Soudani</i></p>
	<p align="center"><b>Session 6 Power Systems</b></p> <p align="center">Room B</p>	<p><b>Chairs : Lilia El Amraoui &amp; Zohra Kardous</b></p> <p><b>A Fault Classification Scheme with High Robustness for Transmission Lines using Fuzzy-Logic system</b> <i>Moez Ben Hessine, Sahbi Marrouchi and Souad Chebbi</i></p> <p><b>Modeling and Optimal Control of a three generation system</b> <i>Elhabib Theljaoui, Zohra Kardous and Naceur Benhadj Braiek</i></p> <p><b>Dynamic Stability Assessment of a Medium Size Power System Towards large Disturbances- Case Study of the Blackout of August 2014 of the Tunisian Power System</b> <i>Amal Hasni</i></p> <p><b>New Solutions for Optimization of the Electrical Distribution System Availability in Microgrids: Application to Petroleum Platform in Tunisia</b> <i>Mohamed Ghaieth Abidi and Mohamed Khalgui</i></p>
<b>Parallel Sessions IV</b>		
09:50 – 11:10	<p align="center"><b>Session 7 Microelectronics &amp; Embedded systems</b></p> <p align="center">Room A</p>	<p><b>Chairs : Fakhreddine Karray &amp; Mohamed Khalgui</b></p> <p><b>Toward on hardware firewalling of networks-on-chip based systems</b> <i>Ahmed Ben Achballah, Slim Ben Othman and Slim Ben Saoud</i></p> <p><b>Architecture and Performances comparison of Network on Chip router for Hierarchical Mesh Topology</b> <i>Bouraoui Chemli and Abdelkrim Zitouni</i></p> <p><b>Backoff Hardware Architecture for Inter-FPGA Traffic Management</b> <i>Dorai Atef, Virginie Fresse, El-Bay Bourennane and Abdellatif Mtibaa</i></p> <p><b>The Design of an embedded system (SOPC) For an image processing application</b> <i>Fradi Marwa, El Hadjoussef Wajih and Machout Mohsen</i></p>
	<p align="center"><b>Session 8 Industrial Informatics &amp; Robotics</b></p> <p align="center">Room B</p>	<p><b>Chairs : Ahmed Chemori &amp; Khaled Nouri</b></p> <p><b>On decentralized control techniques of interconnected systems - Application to a Double-parallel inverted pendulum</b> <i>Rabeb Ben Amor and Salwa Elloumi</i></p> <p><b>Comparative Assessment Between PD and Fuzzy Controllers for a Rigid-Flexible Manipulator Robot</b> <i>Salim Hamdi, Rahma Boucetta and Saloua Bel Hadj Ali Naoui</i></p> <p><b>Data Analytics for Predictive Maintenance of Industrial Robots</b> <i>Tawfik Borgi, Adel Hidri, Mohamed Saber Ennaceur and Benjamin Neef</i></p> <p><b>Visio control of Two-Wheeled Mobile Robot Based On Color And Texture Attributes</b> <i>Mohamed Sabri Ben Mansour, Sami Cherif and Mohamed Saber Naceur</i></p>
11:10 – 11:30	<b>Break</b>	
<b>Parallel Sessions V</b>		
11:30 – 12:50	<p align="center"><b>Session 9 Communication Engineering</b></p> <p align="center">Room A</p>	<p><b>Chairs : Ali Gharsallah &amp; Taoufik Aguilî</b></p> <p><b>Application of the Iterative Method to Characterize the Effect of the Aperture in Shield Device on the Path of Induced Current</b> <i>Mejri Rafika and Taoufik Aguilî</i></p> <p><b>MLP and RBF Symbol Tracking with 16 QAM Modulation Over Multipath Distorted Channel</b> <i>Fateh Bouguerra, Imad Benacer and Lamir Saidi</i></p> <p><b>Interval Type-2 Beta Fuzzy Neural Network for Wheeled Mobile Robots Obstacles avoidance</b> <i>Nesrine Baklouti and Adel Alimi</i></p> <p><b>Type-2-Fuzzy Rule Base System Based On ECUs Communication in a Smart City Vehicular Environment</b> <i>Hela Lajmi, Habib M. Kammoun, Adel Alimi and Joseba M. Rodriguez</i></p>
	<p align="center"><b>Session 10 Renewable Energy &amp; Smart Grid</b></p> <p align="center">Room B</p>	<p><b>Chairs : Radhouane DAKHLI &amp; Habib Dallagi</b></p> <p><b>Economic Scheduling Of A Hybrid Microgrid Based On Weather Forecasts</b> <i>Hamadi Bouaicha, Emily Craparo, Habib Dallagi and Samir Nejim</i></p> <p><b>Commitment Scheduling Using Hybrid Metaheuristic and Deterministic methods: Theoretical Investigation and comparative study</b> <i>Sahbi Marrouchi, Moez Ben Hessine and Souad Chebbi</i></p> <p><b>Statistical Characterization of Capacity of Hybrid Energy Storage System (HESS) to Assimilate the Fast PV-Wind Power Generation Fluctuations</b> <i>Abdelkader Abbassi, Mohamed Ali Dami and Mohamed Jemli</i></p> <p><b>Fuzzy Electromagnetic Energy Recovery Control Unit for Small Satellite</b> <i>Chafaa Hamrouni, Abdessalem Bsissa and Adel M. Alimi</i></p>
12:50 – 14:00	<b>Lunch</b>	
<b>Sunday, January 15<sup>th</sup> PM</b>		
<b>Free afternoon</b>		

Monday, January 16<sup>th</sup> AM

08:30 – 09:30	Plenary Session III : <b>Control of Biomimetic Underwater Robots for Inspection Applications</b> , Ahmed Chemori, FR	
09:30 – 10:50	<b>Parallel Sessions VI</b>	
	<p><b>Session 11</b> <b>Industrial Informatics &amp; Robotics</b>  Room A</p>	<p><b>Chairs : Salwa Elloumi &amp; Ahmed Chemori</b> <i>Autonomous Wheelchair Navigation in Indoor Environment Based on Fuzzy Logic Controller and Intermediate Targets</i> Khaoula Maatoug, Malek Njah and Mohamed Jallouli <i>Statistical analysis of parameters impacts on temporal performances for multi-robot coordination based on ACO algorithm</i> Riadh Saaidia and Abdessattar Ben Amor <i>Path planning of two robots in dynamic workspace based on Potential Field</i> Matoui Fethi, Boumedyen Boussaid and Abdelkrim Mohamed Naceur <i>Path planning for autonomous mobile robot using the Potential Field method</i> Ameni Azzabi and Khaled Nouri</p>
10:50 – 11:10	Break	
	<b>Parallel Sessions VII</b>	
11:10 – 12:30	<p><b>Session 13</b> <b>Communication Engineering</b>  Room A</p>	<p><b>Chairs : Ali Gharsallah &amp; Adel Ghezal</b> <i>A Survey on Wireless Sensor Networks Security Issues and Military Specificities</i> Tarek Azzabi, Hassene Farhat and Nabil Sahli <i>Design and Development of Circular Filter using QSIW Resonator</i> Abdelkhalek Nasri, Tahar Ben Chaieb and Hassen Zairi <i>FPGA Implementation of the Predistorter Stage for Memory Polynomial-based DPD for LDMOS Power Amplifier in DVB-T Transmitter</i> Haithem Rezgui, Fatma Rouissi and Adel Ghazel <i>Measure of Reflection Factor 11 S High Frequency</i> Nadia Fezai and Abdessattar Ben Amor</p>
	<p><b>Session 14</b> <b>Microelectronics &amp; Embedded systems</b>  Room B</p>	<p><b>Chairs : Slim Ben Saoud &amp; Mohamed Khalgui</b> <i>Low Loss Substrate Integrated WaveGuide Slot Antenna</i> Tahar Ben Chaieb, Abdelkhalek Nasri and Hassen Zairi <i>A Hardware-Software Co-designed AES-ECC Cryptosystem</i> Amal Hafsa, Nejmeddine Alimi and Anissa Sghaier <i>AFDX simulation Based on TTEthernet Model under OMNeT++</i> Nejla Rejeb, Ahmed Karim Ben Salem and Slim Ben Saoud <i>Formal Methodology for Modeling, Verifying and Optimizing Reconfigurable NoC Modes</i> Héla Ben Salah, Adel Benzina and Mohamed Khalgui</p>
	<p><b>Session 15</b> <b>Manufacturing Engineering</b>  Room C</p>	<p><b>Chairs : Sonia Hajri Gabouj &amp; Nesrine Zoghلامي</b> <i>Towards integrating artificial immunity features in case-based reasoning to address quality issues in manufacturing systems</i> Khaoula Yazidi, Saber Darmoul and Sonia Hajri-Gabouj <i>Engineering optimisation by Heterogeneous Cuckoo Search Algorithm : Application to an Irrigation Station</i> Chrouta Jaouher, Zaafouri Abdelrrahmen and Jemli Mohamed <i>TOPSIS based multi-criteria reconfiguration of manufacturing systems considering operational and ergonomic indicators</i> Amina Bougrine, Saber Darmoul and Sonia Hajri-Gabouj <i>Big Data for Transport and Logistics : State of The Art</i> Tawfik Borgi, Nesrine Zoghلامي and Mourad Abed</p>
12:30 – 14:00	Lunch	

Monday, January 16<sup>th</sup> PM

**Parallel Sessions VIII**

14:00 - 15:40

**Session 16  
Automatic  
Control Systems**

Room A

**Chairs : Moufida Ksouri & Mohamed Benrejeb**

**Internal Model Control: Application to a class of linear underactuated systems with two degrees of underactuation**

*Asma Mezzi and Dhaou Soudani*

**An optimal observer-based control approach for dynamical systems**

*Ridha Aloui and Naceur Benhadj Braiek*

**Decentralized optimal control of interconnected systems using a direct approach**

*Soumaya Ghali, Ines Sansa Aousgi and Salwa Elloumi*

**Design and Optimal Tuning of Fractional Order  $\alpha$ P-PD Controller for Unstable and Integrating Processes**

*Boulbaba Guedri and Abdelkder Chaari*

**IMC Controllers for Uncertain MIMO Over-Actuated Systems**

*Imen Saidi, Ahmed Dhahri and Dhaou Soudani*

**Session 17  
Signal  
&  
Image processing**

Room B

**Chairs : Saber Mohamed Naceur & Hamid Amiri**

**Inverse Tone Mapping High Dynamic Range Images**

*Med Amine Touil and Noureddine Ellouze*

**Interference Analysis: from 2G to 4G**

*Selma Sbit, Mohamed Bechir Dadi and Belgacem Chibani Rhaimi*

**Aerodynamics contribution for monitoring multilayer rough surfaces**

*Ibtissem Hosni, Lilia Bennaceur Farah and Saber Mohamed Naceur*

**Correlation Properties of Sequences Generated by The Ikeda System Using Poincaré Map**

*Olfa Mannai*

**Video Smoke Detection Review: State of the art of smoke detection in visible and IR range**

*Rabeb Kaabi, Sebastien Frizzi, Moez Bouchouicha, Farhat Fnaiech and Eric Moreau*

15:40 – 16:00

Break

**Parallel Sessions IX**

16:00 – 17:20

**Session 18  
Automatic  
Control Systems**

Room A

**Chairs : Anis Sallemi & Salwa Elloumi**

**Tracking Control Synthesis of Nonlinear Polynomial Time Delay Systems**

*Bassem Iben Warrad and Mohamed Karim Bouafoura*

**Discrete-time Adaptive Backstepping Control of irrigation station**

*Chiheb Ben Regaya, Chakchouk Wael, Abderrahmen Zaafouri and Anis Sellami*

**A Sum of Squares approach for the polynomial output feedback control of nonlinear systems**

*Chibani Ali, Mohammed Chadli and Naceur Benhadj Braiek*

**Robust H infinity/D-Stability Control for repetitive processes with disturbances**

*Nizar Toujeni, Chaouki Mnasri and Moncef Gasmî*

**Session 19  
Microelectronics  
&  
Embedded  
systems**

Room B

**Chairs : Adel Alimi & Khaled Nouri**

**Implementation of the PWM Pre-calculated Technique for Elimination Harmonic Using Microcontroller**

*Habib Dallagi and Sami Bouzaiane*

**Implementation of an unknown input observer based on Cellular Neural Network**

*Baya Hajje, Boumedyen Boussaid, Ahmed Zouinkhi and Mohamed Naceur Abdelkrim*

**Hardware/Software Heuristics Partitioning Approaches**

*Imene Mhadhbi, Slim Ben Othman and Slim Ben Saoud*

**Reconfigurable SoC FPGA based : Overview and Trends**

*Hedi Abdelkrim, Slim Ben Othman and Slim Ben Saoud*

**Session 20  
Renewable  
Energy  
&  
Smart Grid**

Room C

**Chairs : Radhouane DAKHLI & Sami Bouzaiane**

**A nonlinear Lyapunov controller for photovoltaic water pumping system**

*Khalil Jouili and Naceur Benhadj Braiek*

**Repowering of the Wind Farm of Sidi-Daoud Tunisia**

*Ridha Karoui, Hamdi Khadhraoui and Faouzi Bacha*

**Optimal band gaps for InGaN single and double junction solar cells**

*Abdelfettah Mesrane, Achour Mahrane, Fayçal Rahmoune and Allaoua Oulebsir*

**Management of a "PV/battery" system in isolated site**

*Imen Dimassi and Abdessattar Ben Amor*

Tuesday, January 17<sup>th</sup> AM

**Parallel Sessions X**

08:30 – 09:50

**Session 21  
Automatic  
Control Systems**

Room A

**Chairs : Souad Chebbi & Dhaou Soudani**

***A Polytopic Proportional Integral Observer Design for Fault Diagnosis***

*Bouali Rabaoui, Habib Hamdi, Mickael Rodrigues and Naceur Benhadj Braiek*

***Discrete-time chaotic multimodels synchronization and application to secure communication***

*Ameni Dridi, Rania Linda Filali and Mohamed Benrejeb*

***Fault Detection Based on Unknown Input Observers for Switched Discrete-Time Systems***

*Wafa Gritli, Hajer Gharsallaoui and Mohamed Benrejeb*

***Actuator Fault Reconstruction for Fault Tolerant Control of a Water Jet Propelled Ship : A Comparative Study***

*Hassene Rebhi and Samir Nejim*

**Session 22  
Signal  
&  
Image processing**

Room B

**Chairs : Saber Mohamed Naceur & Kamel Aloui**

***Comparison of Crisp and Fuzzy kNN in Phoneme Recognition***

*Ines Ben Fredj and Kais Ouni*

***Parametric Versus Discriminative Learning Approach for Multispectral Image Recognition***

*Hela Elmannai, Mohamed Anis Lohmari and Mohamed Saber Naceur*

***Speech Analysis in Search of speakers with MFCC , PLP , jitter and shimmer***

*Imen Daly, Zied Hajaiej and Ali Gharsallah*

***Decomposition of a speech signal wavelet packet using an entropy criterion***

*Sonia Moussa, Zied Hajaiej and Ali Gharsallah*

09:50 – 10:30

Plenary Session : ***Succeeding the Horizon 2020: the challenges for Tunisia***, Kamel BESBES , Sousse Technopark

10:30 – 10:50

Break

10:50– 12:10

Plenary Sessions :

***Protection of inventions in Tunisia***, Nefaa BOUTIT, INNORPI

***Innovation Financing Mechanisms: PMN, ITP, PIRD***, Riadh SOUSSI , Ministry of Industry

12:10 – 13:00

Round Table & Closing