



Skikda University | ICEE'2014 FACULTY OF TECHNOLOGY



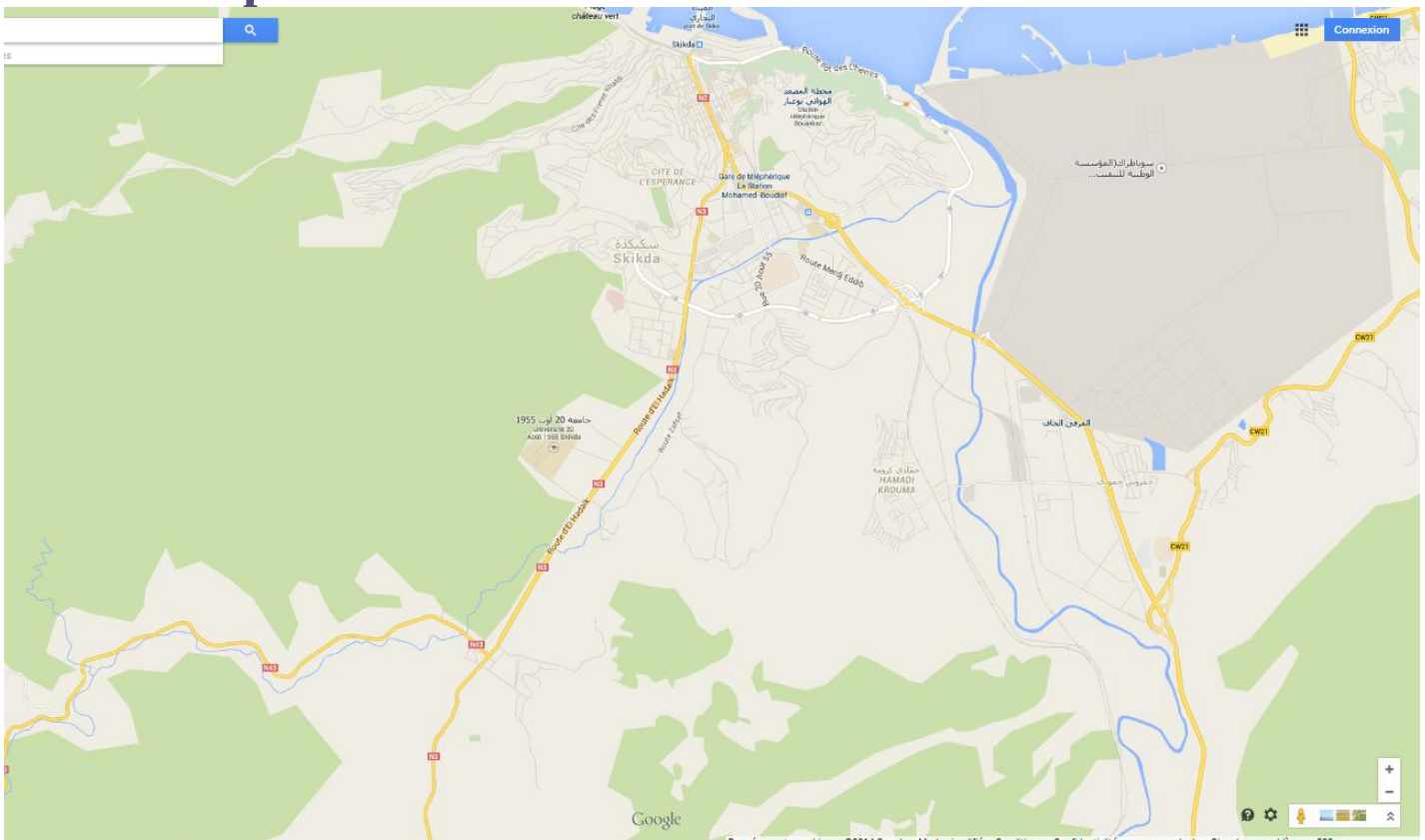
Program

Preliminary

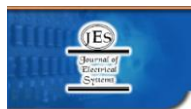
The seven axes ICEE 2014 are planned on two workshops (I and II). Each workshop is practically hosted in a room (Workshop I for room 1 and II for 2).

The official opening session is scheduled to be held in the great amphitheater of the central library at Skikda university.

Usefull Maps.



From Skikda to University.



First day of ICEE 2014

Workshops by Topics

Workshop I : Room 1	Workshop I : Room 1
RES : Renewable Energy Systems	ME: Materials for Energy
PEA: Power Electronics and Application	CSR: Control Systems and Robotics
EMD: Electrical Machines and Drives	EEF: Electric and Electromagnetic Field
MDS: Monitoring and Diagnostic Systems	

First day of ICEE'2014 : November 10th, 2014

Registration day

Registration Open (08h-12h)

The organizing committee receives guests and conducts registration of participants

Opening Session

Reading of Skikda University letter (Pr. A KOUADRIA)

Reading of the ICEE'2014 letter (Dr. Salim HADDAD)

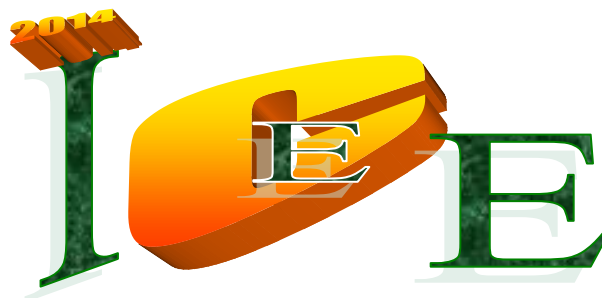
Reception to the honor of our guests

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Recommendations & Requirements

*ICEE'2014 Speakers are requested to provide their Slides to Technical Committee Members (TCM), before a session launch, in PPT or PDF formats so that will be deposited on **Presentation PC**.*

Please, do not hesitate to inform TCM about any other materials needed for presentation.



First day of ICEE2014-November 10, 2014: First Sessions Opening

Morning sessions

A Session	Room I - Chairmen: T. Rekioua, A. Malek	Room II – Atelier A.V. Bossche, M. Legouira
9:30-10:30	Plenary session 1 Multiresolution Analysis : Theory and Applications Prof. Dr. Abdeldjalil OUAHABI Polytech TOURS-France Plenary session 2 Modelling of diverse mechanical and electric losses in vehicles Pr. Alex van den Bossche, eeLAB, Gent University, Belgium	
10:30-11:30	Coffee Break-Poster session 1	
10:50-11:10	Jean Marie Vianney Bikorimana Ghent University Ghent, Belgium Using Numerical Inverse Laplace for Optimizing the Current Control in Grid Coupled Inverters	Hicham ALLAG Jijel University, L2EI Laboratory Jijel Analytical Calculation of the Interactions between two Cylinder-shaped Magnets
11:10-11:30	Salah Tamalouzt Laboratoire LTII Université de Bejaia Novel Direct Torque and Reactive Power Control of Variable Wind Speed Turbine Based on Grid Connected Doubly Fed Induction Generator	B. ALI RACHEDI, LGEG Laboratory, Université 8 Mai 1945 Guelma Measurement and Calculation of Electromagnetic Polution in the Vicinity of the Maximum Sag of Very High Voltage Line
11:30-11:50	F. Khoucha UER, Electrotechnique, EMP, BP17-16111 Bordj El- Bahri, Alger GPV/Battery Microgrid Energy Management	H. Slimani APELEC Laboratory, Djillali Liabes University of Sidi Bel-Abbes, Computation of electromagnetic radiation provoked by HF signals in the vicinity of electric cables
11:50-12:10	R.MATKI Instrumentation Laboratory, Faculty of Electronics and Computer Science, USTHB, Algiers Optimization and Sensitivity of PV Diesel Hybrid System for Industrial Plant	A. Reffas, USTHB University Algiers Influence of Temperature on Naphthenic Transformer Oils Properties
12:10-12:30	F. BRIHMAT Electrical engineering Research Laboratory -ENP, Alger CSC Algiers, Algeria Modeling and Optimal Sizing of a Wind Energy System for the Electrification of an Algerian Territory	Asma AZZOUZ, Jijel University, L2EI Laboratory, Jijel Semi-analytical method for partial self and mutual inductances calculation between conductors of circular cross section for considering proximity and skin effects

12:30-12:50	S. Haddad Electronic Department, University of Jijel Effective techniques for the estimation of the hourly flow rate of a PV water pumping system at Madinah, Saudi-Arabia	Mohamed AISSAOUI Jijel University, L2EI Laboratory, Jijel Analytical Calculation of Permanent Magnet Systems: Internal Energy and Coil Interaction
12:50-13:10	Boutana Nassiha Renewable energy laboratory, Jijel University MATLAB-based simulator for general photovoltaic devices	K. KAMLI Laboratoire des Semi-conducteurs, Université Badji-Mokhtar, Annaba Elaboration of tin disulfide thin films with ultrasonic spray technique for their application in solar cells
13:10-13:30	M.N. Sid Laboratoire Commande des Machines, Ecole Militaire Polytechnique (EMP), Bordj El Bahri, Algiers, MEPT based Energy Management strategy of a Fuel Cell-Supercapacitor for Hybrid Electric Vehicle	H.Moulai FEI, LSEI USTHB, USTHB, Algiers, Discriminant Analysis of Streamers Currents in Dielectrics Liquid under Alternating Voltage
13:30-14:30	Lunch	

First day of ICEE2014-November 10, 2014: First Sessions Opening Afternoon sessions

A Session	Room I - Chairmen: T. Bouktir, Y. Amirat	Room II – Atelier : N. Benslim, A. Otmani&Aida
14:30-15:30	Plenary session 3 Recent Contributions in Polar Axis Solar Tracking Pr. John T. Agee Tshwane University of Technology, Pretoria. South Africa Plenary session 4 Nanotechnology and our Clean Energy Challenge: A New Breakthrough in PV Innovation Dr. Idriss Bedja King Saud University-Saudi Arabia	
15:30-16:30	Coffee Break-Poster session 2	
16:00-16:20	S.Taraft LMER, Faculté de Technologie, Université de Bejaia Power control over a wide range speed of a wind turbine connected to the grid	D. MOHRA USTO-MB University, Oran Modeling and experiments on the I-V characteristic of n-Si/In-SnO₂/Au Schottky Diode
16:20-16:40	Saad saoud M, Laboratory of Automatic and Signals , Annaba Modeling and Search of Global Power Peak Under Partial Shading Conditions on PV Array	A.MEKHANNENE Msila University Effect of enviremental conditions on the substrate Cu(In,Ga)Se₂ solar cell performances
16:40-17:00	Zaghba layachi CDER, Ghardaïa, Algeria Study and simulation the effects of partial shading On Maximum Power Point Tracking and PV array characteristics	HADEF Fatma Laboratoire LRPCSI, Université 20Août 1955- Skikda Nanomaterials for advanced energy applications
17:00-18:00	Coffee Break-Poster session 3	
17:00-17:20	BELKACEM Abdelkader LAAS Laboratory, Oran Advanced Control of a Doubly-Fed Induction Generator (DFIG) fed by an AC-AC converter used in Wind Energy	Nacéra Rouha LGEB, Université Béjaia - Algerie. Characterization of the Electrically Degraded Silicone

17:20-17:40	Farid Hamoudi Laboratoire de maitrise des énergies renouvelables Université de Bejaia Fuzzy Logic Based Solution for DC-Bus Voltage Control of Three-Leg Split-Capacitor Voltage Source Inverter Based Four-Wire Shunt Active Filter	Imane. RADJA Laboratoire de Chimie Organique, Macromoléculaire et des Matériaux Université de Mascara Synthesis and characterization of nanocomposite hybrid obtained by in situ polymerization oxidative of aniline with ZnO nanoparticle
17:40-18:00	Sekhane Hocine LGEC, Université Constantine1 Insertion Study of SSSC Device, to Improve the Powers Transits & Voltage Regulation in a Real Test Network	F. Lekoui Centre de Développement des Technologies Avancées, Alger Microstructure and optical properties of thin films ZnO-Ag obtained by thermal evaporation
18:00-18:20	Chennai Salim Birine Nuclear Research Center - Algeria Performances Evaluation of Shunt Active Power Filter using Fuzzy Controller Operating under Non-ideal Voltage Conditions	H. Rahal Laboratoire d'Analyse Industrielle et Génie des Matériaux, Université 08 Mai 1945, Guelma Realization of n-type semiconductor thin films prepared by electrochemical deposition for photovoltaic energy

Second day of ICEE2014-November 11, 2014: First Sessions Opening Morning session

B Session	Room I - Chairmen : A.Ouahabi, A.Zaatri, S.mekhtoub	Room II - Chairmen : M. Hamouda, H.Allag, M. Mordjaoui
08:30-09:30	Plenary session 5 New Trends in Industrial and Medical Robotics Dr Mohamed BOURI Ecole Polytechnique Fédérale de Lausanne, Laboratoire de Systèmes Robotiques Plenary session 6 Advanced Signal Processing Techniques for Fault Diagnosis of Electromechanical Systems Pr. Mohamed Benbouzid University of Brest, EA 4325 LBMS	
	Coffee Break - Poster session 4	
10:30-10:50	L.Atarsia University of Mohammed Chérif Messaadia Souk Ahras, Applied to Input-Output Feedback Linearization Control an Induction Motor	T. AMIEUR Department of Electrical Engineering, Kasdi Merbah University, Ouargla Adaptive Fuzzy Sliding Mode Control
10:50-11:10	Tarek Boutabba Laboratory LSPIE, Université de Batna A Multi-output Boost Converter (MOB) controlled by Fuzzy Logic Technique supplied by a Photovoltaic System with Grid-Connected and fed by three level inverter	Y.ZENNIR Automatic Laboratory of Skikda Robust Farctional ordre controller : applied to control of on wrist of a robot
11:10-11:30	Mohammed Chebout L2ADI Laboratory, Djelfa University Improvement of Small Crack Detection Performance Using Eddy Current NDT Technique	Ammar Amouri University of Constantine1 Simulation and Kinematic Modeling of Constant Curvature Flexible Continuum Robots
11:30-11:50	Abla bouguerne Université constantine 1 K- Means Clustering Algorithm For Classification of Ball Bearing Faults	M.Rida Mokhtari Automatic Control Laboratory of Tlemcen (LAT) Tlemcen University Robust Trajectory Tracking for a Small Model Autonomous Helicopter

11:50-12:10	Mohamed Yacine Hammoudi University of Biskra, MSE Laboratory New State Observer Based On Takai-Sugeno Fuzzy Controller of Induction Motor	Touati B. A University of Boumerdes Immersion and Invariance Adaptive Backstepping Controller for Rotary Drilling System
12:10-12:30	S. Aliouat, USTHB, Algiers Detection of High Impedance Faults in Electrical Power Network	Mostefa Amara, Mokhtar Amer University of Sidi Bel Abbès Sensorless Field Oriented Control Robust of Doubly Fed Induction Speed Drive
12:30-12:50	Hanane Zermane, Laboratory of Automation and Manufacturing (LAP) University of Hadj Lakhdar, Batna control and supervision of a manufacturing system - Application in a cement factory	Saida Makhoulfi Centre de Développement des Energies Renouvelables BP. 62 Route de l'Observatoire Bouzareah 16340, Algiers, Algeria Hybridization of modified particle swarm optimization with gravitational search algorithm for solving optimal power flow including wind generation in isolated Adrar region
12:50-13:10	Rabah Benabid Nuclear Research Center of Birine, Djelfa, Intelligent Identification of Power Quality Problems using Kohonen Self-Organizing Map An experimental Study	
13:30-14:30	Lunch	

**Second day of ICEE2014-November 11, 2014: First Sessions Opening
Afternoon session**

B Session	Room I - Chairmen : K. Touafek , R. KELAIAIA.	
14:30-14:50	M. Messaadi University of Batna Adaptive Backstepping Control of a Permanent Magnet Synchronous Motor Via RBFNNs Technique	
14:50-15:10	Madjid Sibrahim LATAGE Laboratory, Mouloud MAMMERI University Steady State Behaviour Prediction of a Stand-alone Self-Excited Induction Generator	
15:10-15:30	GHOURAF Djamel Eddine IRECOM Laboratory, University of SBA An Advanced H2-PSS adapted with a Genetic Algorithm to Improve Power System Stability – Implementation under GUI/MATLAB	
15:30-16:00	Questions & Answers	
16:00	Closing	

First day of ICEE2014-November 10, 2014

Morning session/Poster session 1

10:30-11:30

Tab N°	Paper ID	Title of Poster	Author's name
P1	ICEE2014-10	The Intelligent Control of speed wind Based on DFIG Generator for Grid Integration Studies	k. Roummani
P2	ICEE2014-13	Data Acquisition of a Photovoltaic Pumping System	B. Taghezouit
P3	ICEE2014-16	Characterization of charging systems for electrets	M. Kaci
P4	ICEE2014-81	Power control scheme for Solid Oxide Fuel Cell distributed generation system	Chettibi
P5	ICEE2014-86	Development of a Photovoltaic Simulator Based on DSPACE Map	N. Rahmani
P6	ICEE2014-94	Experimental study of a Sheet and tubes hybrids collectors	Khelifa
P7	ICEE2014-100	Innovative Electrical Machine for Wind Turbine	A.LebSir
P8	ICEE2014-107	A Smart Regression Algorithm for the Prognosis of an Impedance Fault in a Photovoltaic Generator	W. Rezgui
P9	ICEE2014-112	Corrosion and its effect on the cycling performance of lead-acid battery in photovoltaic system	M. Hassaine
P10	ICEE2014-118	Study of solar air collector: Effect of temperature variation	H. Tassoult
P11	ICEE2014-119	Photovoltaic Power Conversion System Based on Z-Source Converter and FL-IC MPPT Controller	F. Mecikar

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Morning session /Poster session 2

15:30-16:30

Tab N°	Paper ID	Title of Poster	Author's name
P12	ICEE2014-132	study and simulation pf photovoltaic wind system	Mezzai
P13	ICEE2014-133	Impact of shadow on the performance of a PV pumping system	A.Mohamedi
P14	ICEE2014-144	ANN-Based Monitoring of Partially Shaded Photovoltaic Panel	H.Mekki
P15	ICEE2014-154	Recent Advances in Wind Turbine Generation Systems	A.Dida
P16	ICEE2014-166	Optimal Tracking of Wind turbine Based on a Second-Order Sliding Mode Control	a.Maghni
P17	ICEE2014-177	Optimal of energy flow management in the buildings	A.Rebai
P18	ICEE2014-178	Power Quality in the grid with PV connecting	S.Sebbar
P19	ICEE2014-67	Improved induction motor power by using the PWM inverter	T.Naima
P20	ICEE2014-113	Comparison the Fuzzy System Controller and PQ Method on the Electrical Network Low-Voltage with a shunt Active Power Filter Five Levels	A.Morsli
P21	ICEE2014-131	Applications des différentes techniques MPPT	s.aissaoui
P22	ICEE2014-80	The principle of Optimal Power for improving the performance of photovoltaic inverters	R. Merahi

First day of ICEE2014-November 10, 2014

Afternoon session/Poster Session 3

17:00-18:00

Tab N°	Paper ID	Title of Poster	Author's name
P23	ICEE2014-26	Field-Oriented-Control of a Doubly Fed Induction generator Using the PI and RST Controllers	F.Arama
P24	ICEE2014-44	Design and Comparative Study of Induction Motor Squirrel Cage of Medium Power	Z.Maddi
P25	ICEE2014-55	Optimal design of a single sided linear induction motor (slim) using a user interactive computer program	o.Aimeur
P26	ICEE2014-111	Optical characterization of thin films TiO ₂ /SnO ₂ : F	W.Allag
P27	ICEE2014-139	Modeling of mHEMT InAlN/GaN Double Gate Performance	Z.Kourdi
P28	ICEE2014-12	Accelerating the Frequency-Domain Response Calculation of Horizontal Grounding Electrode Using MBPE Technique	T.Rouibah
P29	ICEE2014-93	Microstrip Micro-Plasma 3D modelling and Numerical Simulations	M.Labiod
P30	ICEE2014-124	Diagnostic laser in measurements of Soot Particle Size in a Laminar Diffusion Flame	D.lalmi
P31	ICEE2014-51	Induction Motor Model Based on the Method of Electric Circuits Coupled Magnetically In Event of Rotor Faul	A.Debdouche
P32	ICEE2014-61	Indirect Adaptive Backstepping Control by Using the Virtual Controls Filtering	Y.Soukkou
P33	ICEE2014-179	fault diagnosis by use of parametric estimation in electric systems	A.Metatla

Second day of ICEE2014-November 11, 2014:

Morning session

Poster session 4:

10:00-11:00

Tab N°	Paper ID	Title of Poster	Author's name
P34	ICEE2014-23	Commande d'une Articulation Robotique par mode glissant du deuxième ordre	A.Mdjebouri
P35	ICEE2014-27	Design of a hand prosthesis based on a force sensor control	I.Deghboudj
P36	ICEE2014-70	The Stability Study of the Hydraulic Servo Valve Using the Back Integration Algorithm	T.Benabdallah
P37	ICEE2014-92	New method dedicated to faults classification of induction machines	A.Lebaroud
P38	ICEE2014-160	Restitution des mouvements de la main sur un prototype d'une prothèse myoélectrique	Ridha KELAIAIA
P39	ICEE2014-180	Modeling and control of coupling for hybrid renewable energy systems	S.Djebbri
P40	ICEE2014-181	diagnosis of defects short circuit turns of induction motor	N.Talbi
P41	ICEE2014-158	FUZZY CONTROL OF A SYSTEM WITH SIGNIFICANT TIME DELAY	A. I. Barnard
P42	ICEE2014-171	Fuzzy-Control of a Polar Axis Solar Tracker with a Linear Solar Position Sensor	R. van Rensburg

Plenary session

Nanotechnology and our Clean Energy Challenge: A New Breakthrough in PV Innovation

Dr. Idriss Bedja

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Abstract— The world is conscious more than ever about the threat coming from global warming that our planet is facing. In order to limit green-house-gas emissions, 10 TW of carbon-emission-free power should be produced by the year 2050. The fossils fuels like oil (responsible of global warning) are coming close to their overall production peak. Adding to this the last nuclear centrals catastrophes in Japan, the world is more convinced that the future fuel will come exclusively from SUN. Therefore, photovoltaic (PV) cells to generate electricity on a large scale has been accepted as a future important part of the planet's energy supply. **With the Rise in Interest in Nanoscience and Nanotechnology** over the past couple of decades, a number of different nanostructured PV cell concepts are being actively researched, all of which are potentially cheap – in money and in energy – to make. One of these PV concepts that have attracted worldwide is dye-sensitized solar cell (DSSCs). Hybrid-(organic-inorganic) solar cells, including DSSCs, are considered the best so far low cost alternative to the conventional silicon photovoltaic cells. Impure starting materials are permitted, yet resulting in promising cell's power-conversion efficiencies of 10–11% (Graetzel, Nature 1991). To compete silicon based solar cells, the production cost should be lower than 50 \$/m² with 15 % module efficiency which gives 0.33 \$/W_{peak}. **A Recent Breakthrough** from the DSSCs community have made 3rd cell generation closer to mass production: **Perovskite solar cells**. The CH₃NH₃PbI₃ perovskite possesses various good intrinsic properties for photovoltaic applications, such as an appropriate band gap (1.55eV), high absorption coefficient, long hole–electron diffusion length (~100nm), and excellent carrier transport. Power efficiency has reached over 17.9% after only few years ago of discovery and expected to improve efficiencies up to 20% With their rapid improvements in a short amount of time, perovskite solar cells have become one of today's most promising up-and-coming photovoltaic technologies.

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SOME RELATED REFERENCES

- [1] Bedja, I. "FeS₂ Q- Dots Sensitized Nanostructured TiO₂ Solar Cell: PEC, PIASudies", Materials Science-Poland, Vol.(29), No (3), pages 171, 2012
- [2] R. K. Gupta and I. Bedja, Phys. Status Solidi A 211, No. 7, 1601–1604 (2014) / DOI 10.1002/pssa.201330666

THE SPEAKER



Idriss Bedja received his BSc degree from University of Science and Technology Houari Boumediene (USTHB), Algiers, Algeria, in 1986; his MSc degree in Physics (Physics of Surfaces) from University Laval, Quebec, Canada in 1991 and his PhD degree in Photo-biophysics (Photophysics and Photoelectrochemistry Studies on Nanocrystalline Semiconductor Systems and solar Cells.) from University of Quebec at Trois-Rivieres, Quebec, Canada in 1996. Postdoc as Alexander Von Humboldt Fellow in Germany, 1996-1998, Postdoct at INRS-Energie, Montreal 1998-1999, Assistant and then Associate Professor at King Saud University till today. His research expertise and interests include fabrication, steady state and real time characterization of nanostructured-based Dye sensitized/and Quantum Dots solar cells and dynamic studies of electron interfacial transfer of nanostructured heterogeneous systems. As a result of local, regional and international collaborations, Dr. Idriss has published more than 50 journal papers and conference proceedings. He is a co-author of 1 book and chapters in English. He is actually supervising and co-supervising 3 graduate students. Dr Idriss is a permanent member of Alexander Von Humboldt Organization, Germany. He received a Laureate price of Edward G. Weston 1994 from Electrochemical Society, USA.

Advanced Signal Processing Techniques for Fault Diagnosis of Electromechanical Systems

Mohamed Benbouzid

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Abstract—Most of the used failure detection and diagnosis techniques perform spectral analysis, such as Fourier or MUSIC techniques. Although these techniques exhibit good results in stationary conditions, they are not well-suited for a majority of electromechanical systems (i.e. electric machines and drives applications). Indeed, these applications environment is predominantly nonstationary due to transients or variable speed operations. In this context, the involved signals are usually nonstationary, embedded in noise, and can contain closely spaced frequencies. It is then obvious that failures detection and diagnosis in such applications are challenging tasks that need using advanced signal processing tools.

This plenary intends therefore to focus on state-of-the-art research and development as well as future trends in electromechanical systems condition monitoring using advanced signal processing techniques. Attempts will also be made to highlight future issues so as to index some emerging techniques.

SOME RELATED REFERENCES

- [1] M.E.H. Benbouzid, C. Delpha, Z. Khatir, S. Lefebvre, D. Diallo, *Faults Detection and Diagnosis in a Static Converter, Electrical Machines Diagnosis*, Wiley, ISTE, Chapter 9, pp. 271-316, 2011, ISBN 978-1-84821-263-3.
- [2] E. Elbouchikhi, V. Choqueuse and M.E.H. Benbouzid, "Induction machine faults detection using stator current parametric spectral estimation" *Mechanical Systems and Signal Processing*, Available online 25 July 2014.
- [3] V. Choqueuse, A. Belouchrani, E. Elbouchikhi and M.E.H. Benbouzid, "Estimation of amplitude, phase and unbalance parameters in three-phase systems: analytical solutions, efficient implementation and performance analysis," *IEEE Transactions on Signal Processing*, vol. 62, n°16, pp. 4064–4076, August 2014.
- [4] Y. Amirat, V. Choqueuse and M.E.H. Benbouzid, "EEMD-based wind turbine bearing failure detection using the generator stator current homopolar component," *Mechanical Systems and Signal Processing*, vol. 41, n°1-2, pp. 667–678, December 2013.
- [5] E. Elbouchikhi, V. Choqueuse and M.E.H. Benbouzid, "Current frequency spectral subtraction and its contribution to induction machines bearings condition monitoring," *IEEE Transactions on Energy Conversion*, vol. 28, n°1, pp. 135-144, March 2013.
- [6] V. Choqueuse, M.E.H. Benbouzid, Y. Amirat and S. Turri, "Diagnosis of three-phase electrical machines using multidimensional demodulation techniques," *IEEE Transactions on Industrial Electronics*, vol. 59, n°4, pp. 2014-2023, April 2012.

THE SPEAKER



Mohamed Benbouzid was born in Batna, Algeria, in 1968. He received the B.Sc. degree in electrical engineering from the University of Batna, Batna, Algeria, in 1990, the M.Sc. and Ph.D. degrees in electrical and computer engineering from the National Polytechnic Institute of Grenoble, Grenoble, France, in 1991 and 1994, respectively, and the Habilitation à Diriger des Recherches degree from the University of Picardie "Jules Verne," Amiens, France, in 2000.

After receiving the Ph.D. degree, he joined the Professional Institute of Amiens, University of Picardie "Jules Verne," where he was an Associate Professor of electrical and computer engineering. Since September 2004, he has been with the Institut Universitaire de Technologie of Brest, University of Brest, Brest, France, where he is a Professor of electrical engineering and Deputy Director of the EA 4325 LBMS Brest Lab. His main research interests and experience include analysis, design, and control of electric machines, variable-speed drives for traction, propulsion, and renewable energy applications, and fault diagnosis of electric machines.

Prof. Benbouzid is an IEEE Senior Member. He is the Editor-in-Chief of the International Journal on Energy Conversion (IRECON). He is also an Associate Editor of the IEEE TRANSACTIONS ON ENERGY CONVERSION, the IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS, the IEEE TRANSACTIONS ON SUSTAINABLE ENERGY, and the IEEE TRANSACTIONS ON VEHICULAR TECHNOLOGY. He was an Associate Editor of the IEEE/ASME TRANSACTIONS ON MECHATRONICS from 2006 to 2009.

Multiresolution Analysis: Theory and Applications

Prof. Dr. Abdeldjalil OUAHABI

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Abstract—Multiresolution analysis using the wavelet transform has received considerable attention in recent years by industrial engineers, medical researchers, university lab attendants, lecturer-researchers and researchers in various fields, particularly in medical imaging, intelligent instrumentation, telecommunications, smart grid systems, fault tolerance control, artificial intelligence, control systems, robotics and vision, etc. It is a powerful tool for efficiently representing signals and images at multiple levels of detail with many inherent advantages, including compression, level-of-detail display, progressive transmission, level-of-detail editing, filtering, modeling...

This plenary talk covers the most commonly used multiresolution algorithms in real world applications. The review ends by highlighting some future possibilities and challenges.

SOME RELATED REFERENCES

- [7] A. Ouahabi, "Wavelet Denoising : Application in Medical Imaging," *ISTE-Wiley*, 2014.
- [8] A. Ouahabi, "Signal & Image Multiresolution Analysis," *ISTE-Wiley*, Oct.2012.
- [9] A. Ouahabi, "Analyse multirésolution pour le signal et l'image," (*IC2*) *Hermès – Lavoisier*, Nov. 2012.
- [10] A. Ouahabi, "Wavelets-based digital filtering. Basic skills. Filtrage numérique à base d'ondelettes. Fondements," in *Techniques de l'Ingénieur*, June 2013.
- [11] A. Ouahabi, "Wavelets-based digital filtering. Application in medical imaging. Filtrage numérique à base d'ondelettes. Application en imagerie médicale," in *Techniques de l'Ingénieur*, June 2013.

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THE SPEAKER

Abdeldjalil Ouahabi is Professor (from 1995) and Project leader of Signal-Image at Polytech Tours, France, where he was also Deputy Directory in charge of international relations.

In 1983, Abdeldjalil OUAHABI received his Ph.D. degree in Automatic-Control and Signal Processing, from INP Grenoble (France) and in 1992, he received the State Doctorat (Doctorat d'état) degree in Electrical and Information Engineering from jointly INP Grenoble (France) and USTHB (Algeria). His research interests include image and signal processing, biomedical engineering and embedded systems. He has a strong interest in developing theories multiresolution algorithms, optimal filtering, spectral analysis, wavelets, and the use of fractals for signal and image processing. Prof. Abdeldjalil Ouahabi is the author of over 150 published papers in these areas and he was the general chairman of several international conferences including ICSS'94, Sidi-Fredj, Algiers, Sept. 1994 and the Club EEA Congress, Tours, May 2009.

He is the Guest Editor of several scientific journals including "Analog Integrated Circuits and Signal Processing" Journal. Springer and books (Iste and Hermes-Lavoisier).

He has a strong reviewing and consulting activities with more than 40 journals (mostly IEEE) and some International Organizations, Companies and Ministries including EU, UNESCO, Alcatel-Lucent, Sagem, GE, the Ministry of Higher Education and Research and the Ministry of Foreign and European Affairs of France, the Ministry of Higher Education and Research of Algeria ...

Prof. Abdeldjalil Ouahabi obtained many awards including the best paper from the IEEE Circuits and Systems Society (1999) and recently (2013), he obtained the title of "Distinguished Visiting Professor" from Bucknell University, Pennsylvania, USA.



Modelling of diverse mechanical and electric losses in vehicles.

Alex Van den Bossche

Electrical Energy Laboratory, Gent University

EELAB, EESA

Gent, Belgium

Alex.VandenBossche@ugent.be

Abstract— Vehicles of today get a better efficiency of their drive-train. This means that the aerodynamic drag, the tire losses and auxiliary equipment have an increasing influence on the resulting consumption of the vehicle. For example, the rolling resistance and the drag force are not constants but temperature dependent. Effects of wind, rain and altitude change are also evaluated. Such factors are not included in typical driving cycle tests, but are important for the real consumption of the vehicles. At the actual slow speeds in and around the cities, one of the main influence factors is the weight of the vehicle and the electricity consumption of auxiliaries. This plenary talk is useful as well for electric, conventional and hybrid vehicles.

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Keywords— rolling resistance; tire; drag; temperature coefficient; fuel consumption, mileage, range

OTHER PUBLICATIONS OF THE SAME AUTHOR

<https://biblio.ugent.be/person/801000552755>

THE SPEAKER



Alex P. M. Van den Bossche received the M.S. and the Ph.D. degrees in electromechanical engineering from Ghent University Belgium, in 1980 and 1990 respectively. He has worked there at the Electrical Energy Laboratory (EELAB). Since 1993, he is professor at the same university in the same field. His research is in the field of electrical drives, power electronics on various converter types and passive components and magnetic materials. He is also interested in renewable energy conversion and drives for electric vehicles. He is an author of the book *Inductors and transformers for power electronics*. He was a starter of the spin-off companies Inverto n.v. (1990) and Alenco n.v. (2009). He is an IEEE member since 2000 and a senior member of IEEE since 2003.

New Trends in Industrial and Medical Robotics

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Abstract—

Robotics, the science of mastering multidegrees of freedom movements, becomes present not only in our manufacturing and production systems but is increasingly taking part of our daily life activities. The “Laboratoire de Systèmes Robotiques” at EPFL works since many years on the development of robots dedicated both to industry and medical applications for walk assistance and rehabilitation. This plenary talk covers various developments and their specific uses. The following topics will be presented and discussed:

- Context of industrial robotics : from developments to motion control strategies and implementation
- Rehabilitation robotics for upper and lower limbs (Devices and control strategies)
- Walk assistive robotics : new needs for exoskeletons

SOME RELATED REFERENCES

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- [16] Trends in Surgical Robotics, H. Bleuler, M. Bouri, L. Santos-Carreras, S. Gallo, A. Sengül, G. Rognini, Reymond Clavel, in Special issue “New Trends In Advanced Robotics”, Romanian Journal Of Technical Sciences Applied Mechanics, Volume 58, N° 1-2, January - August 2013.
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THE SPEAKER



Mohamed Bouri is a group leader of Rehabilitation and Assistive Robotics in the Laboratory of Robotics Systems at EPFL (Ecole Polytechnique Fédérale de Lausanne) and lecturer of Robotics and Industrial Robotics.

In 1997, Mohamed Bouri graduated in Electrical Engineering from Ecole Nationale Polytechnique d'Alger in 1992 and obtained his PhD degree in Industrial Automation from the National Institute of Applied Sciences of Lyon (INSA LYON France). Since 1997, he is at EPFL and is mainly active in the field of robot control, automation and robotics design for medical and industrial applications. He is the head of Rehabilitation and Assistive Robotics group since 2005.

He has a strong references with the development of many industrialized robotic devices (Hita machine (Willemein Macodel), Delta Direct Drive (Bosch Packaging Technology), MotionMaker and WalkTrainer (Swortec), 5 Axis Polishing Delta (Unitechnologies). His ongoing research focuses on walking assistive orthoses and rehabilitation devices for upper and lower limbs. Example of projects in progress concerns;

the development of dedicated haptic interfaces for hemiplegic children (HandReha) in collaboration with the Human Robotics Group at the imperial college (UK) and the Laboratoire LAMII of the University of Valenciennes; the development of lower limb robotized rehabilitation device (LegoPress), the “Autonomyo” a dedicated exoskeleton for subjects suffering from myopathy.

Recent Contributions in Polar Axis Solar Tracking

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ABSTRACT— The ability to harness energy in its various forms could arguably be said to be a major driver of modern human civilisation. The low cost of fossil fuels, their relative ease of storage, transportation and processing located these energy sources as the primary energy sources for several centuries. Concerns over the environmental impact of fossil fuels in recent years have engendered a search for alternative, environmentally-friendly, renewable, energy sources. Amongst the several possible sources of renewable energy systems that have been exploited in recent years, wind and solar energy systems offer the most significant possibility for large-scale integration. However, the high initial cost of acquisition of wind /solar energy systems require further cost-mitigation strategies to support both the affordability, and the economics of exploiting these two renewable energy sources. Few locations on earth are equally endowed with these two renewable energy sources: hence decision to exploit either one of them depends naturally on the incidence of natural occurrence of the source. The atmosphere which gave rise to the research development that resulted in the current work, was born in a geographical environment that has an abundance of solar energy. The research activities themselves were driven both by the need to make solar tracking systems cost-efficient, as a means of reducing the overall cost of acquiring solar energy systems; and by the need to develop systems that would operate robustly and reliably under challenging environmental conditions, over their quoted lifespan. Polar-axis solar tracking was identified for cost reduction: the discourse here shall, therefore, mainly highlight contributions in respect of polar-axis solar tracking, even though, most of the technical issues addressed in polar-axis solar tracking also apply to solar tracking systems in general. Specifically, the discourse begins with a general review and comparison of the relative issues around static and tracking solar systems. A review of the various types of tracking systems and their motive or drive systems, in terms of system modeling, dynamic performance and the economics issues, is presented. Solar tracking systems require information on the moment-by-moment position of the sun relative to a given platform (location), to effect tracking accuracy. Methodologies and the merits and demerits of sensor-based and sensorless identification of the position of the sun shall be discussed. Linear and non-linear model-based polar-axis tracking techniques shall be demonstrated. A discussion of frictional effects, ageing and parameter variation due to the weathering and natural elements shall be drawn-upon, to motivate the need for non-model based control of polar-axis solar tracking systems. Non-model-based control shall then be discussed. Artificial intelligence-based controllers shall then be advanced. Constraint-based polar-axis solar tracking shall be discussed. Limitations of tracker economic as a means of lowering the cost of solar energy hardware shall be elucidated, to motivate the need for the hybrid exploitation of renewable energy systems. Conclusions and further research directions shall be discussed.

SOME RELATED REFERENCES

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ABOUT THE SPEAKER



AGEE, J. T. received a B. Eng. (Hons.) degree in Electrical and Electronics Engineering, from the Abubakar Tafawa Balewa University (ATBU), Bauchi, Nigeria, in 1989. After a year of national service, he was appointed a Graduate Assistant, at his Alma Mata in 1990. Agee also continued with postgraduate studies at the ATBU, and obtained an M. Eng. (Electronics Engineering) in 1992, and subsequently, a PhD in Control Systems Engineering in 2001. He was also promoted to the rank of a Senior Lecturer at the ATBU in 2001, where he continued until December, 2013. Agee was appointed a Postdoctoral Fellow at the Centre for Automation and Control Systems of the Ecoles des Mines de Paris, France, from September 2001-October 2002. A further career path includes six years (2004-2009) at the University of Botswana, and his current position at the Tshwane University of Technology, Pretoria, South Africa, where he was appointed an Associate Professor in December, 2009. His research activities include nonlinear control systems, power generation control, power quality improvement, renewable energy systems, instrumentation and artificial intelligence. Agee has over a hundred journal conference publications. He is has consistently been a reviewer to several international journal in recent years, has served at several international conferences and is actively engaged in the supervision of masters, doctoral and postdoctoral studies.