CONTENT

Welcome to Dubai Conferences

Dear Professors and distinguished delegates,

Welcome to 2014 IACSIT Dubai Conferences. On behalf of IACSIT organization, I would like to thank all the Conference Chairs, Program Chairs and the technical Committees. Their high competence and professional advice enable us to prepare the high-quality program. We hope all of you have a wonderful time at the conference and also in Dubai.

We believe that by this excellent conference, you can get more opportunity for further communication with researchers and practitioners with the common interest in Signal Processing Systems, Control, Mechatronics and Automation, Information and Multimedia Technology.

In order to hold more professional and significant international conferences, your suggestions are warmly welcomed. And we are look forward to meeting you again next time.

Best Regards!

Yours sincerely,
Teresa Zhang
Director of Conference Department, IACSIT

Announcement

- All accepted papers of **ICISS 2014, ICMIM 2014, ICMENS, 2014 ICCMA 2014**will be published **Applied Mechanics and Materials Journal(ISSN: 1660-9336),** which will be indexed **Ei Compendex** and **ISI proceeding.**

- All accepted papers of **ICSPS 2014, ICIMT 2014** are both invited and contributed, will be reviewed by two or three experts from the TC. After a careful reviewing process, all accepted paper will be published in the following journals：

- **ICSPS 2014: International Journal of Signal Processing Systems(IJSPS)** (IJSPS， **ISSN:2315-4535)**, which will be indexed by Ulrich's Periodicals Directory, Google Scholar, EBSCO, Engineering & Technology Digital Library and Electronic Journals Digital Library.

- **ICIMT 2014: WIT Transactions on Information and Communication Technologies (ISSN: 1743-3517)** Indexed by EI Compendex, Scopus and ISI.

International Journal of Signal Future Computer and Communications (IJFCC, ISSN: 2010-3751)
Abstracting/ Indexing:Google Scholar, Engineering & Technology Digital Library, and Crossref, DOAJ, Electronic Journals Library, EI (INSPEC, IET).

For the journal publication schedule, some authors could not get the journal on conference site. We'll post the journal after publication.

A CD including all registered papers will be handed out to the presenters.

***Attention:**
One excellent presentation will be selected from each session and the author of excellent presentation will be awarded the certificate after the session is over.

IACSIT Committee

Conference Chairs & Keynote Speakers

Jeff Kilby

AUT University, New Zealand

Jeff Kilby, was born Edmonton, Alberta, Canada, has a MEng (Hons) in Signal Processing from the AUT University, Auckland New Zealand. Senior Lecturer in Electronics and Computing in the School of Engineering at AUT University, Main research topic is in the field of Biomedical Signal Processing and Devices with other research interests are LabVIEW Applications Micro-controller Applications and Wireless Sensor Network Applications

Prof. Abel Herrera Camacho

Universidad Nacional Autonoma de Mexico (UNAM), Mexico

Herrera-Camacho Jos é-Abel. He received degrees in Mechanical-Electrical of Engineering, Master on Electronic Engineering, and the Ph.D. Engineering, from Universidad Nacional Aut ónoma de M éxico (UNAM), in 1979, 1985, and 2001, respectively. The Ph. D. was with support of the University of California in Davis, USA. He did a postdoctoral research at Carnegie Mellon University, USA, and a sabbatical research at USC, USA. He is author from more than 50 scientific papers on codification, recognition, and synthesis of speech, and created various laboratory recognition and synthesis systems for Mexican Spanish Language; in particular, an electronic speech commands recognition system for doors, curtains, light bulbs and lamps, a software continuous speech recognition, a software speaker recognition system, and a software natural and emotional speech synthesis system.

He was expert of UNAM for Speaker Identification at a legal trial from 2006 to 2009. He has written two books, the last one is Linear Algebra, Theory and Exercises; was written at 1986, it had 9 printouts until 2010, since 2011 is free at internet for UNAM students. He has been computer engineering department head, signal processing department head, engineering graduate school deputy director, and in charge of the Processing Laboratory at Engineering School of UNAM.

Prof. Sathans Suhag

National Institute of Technology Kurukshetra, India

Sathans received the B. Tech. degree in Electrical Engineering, M. Tech. degree in Electrical Engineering (with Control System specialization) and Ph.D. degree in Electrical Engineering from the National Institute of Technology Kurukshetra (Institution of National Importance), India, where he is currently a Professor in the Department of Electrical Engineering. He carries with him a teaching & research experience of nearly 20 years. He has delivered many invited talks and chaired technical sessions in national/international conferences. He is reviewer of different journals/conferences of repute. He is Member IEEE and ISTE. His areas of research interest include Intelligent Control and Applications, Automatic Generation Control, Advanced Control Applications in Power Systems, Robotics, Smart Grid and Wind Energy Conversion Systems. He has got many publications to his credit in different international/national journals and conferences. He has supervised many students at PG level and currently guiding many PG students and Ph.D. Research Scholars.

Prof. Mounir Ghogho

University of Leeds, UK

Mounir Ghogho received the PhD degree in 1997 from the National Polytechnic Institute of

Toulouse, France. He was a Research Fellow with the University of Strathclyde, Glasgow, from September 1997 to November 2001. Since December 2001, he has been a faculty member with the School of Electronic and Electrical Engineering at the University of Leeds (UK), where He currently holds a Professor/Chair in Signal Processing and Communications. He is also currently a Professor at the International University of Rabat. His research interests are in signal processing and communication networks, on which he has published over 220 journal and conference papers. He was awarded the five-year UK Royal Academy of Engineering Research Fellowship in September 2000. He is one of the recipients of the 2013 IBM Faculty award. He is currently an Associate Editor of the IEEE Signal Processing Magazine. He served as an Associate Editor of the IEEE Signal Processing Letters from 2001 to 2004, the IEEE Transactions on Signal Processing from 2005 to 2008, and the Elsevier Digital Signal Processing journal from 2011 to 2012. He served as a member of the IEEE SPCOM Technical Committee from 2005 to 2010, a member of IEEE SPTM Technical Committee from 2006 to 2011, and is currently a member of the IEEE SAM Technical Committee. He was the General Chair of the 21st edition of the European Signal Processing Conference (EUSIPCO 2013) and the 11th IEEE workshop on Signal Processing for Advanced Wireless Communications (SPAWC 2010), the Technical co-Chair of the MIMO symposium of IWCMC 2007 and IWCMC 2008. He held invited scientist/professor positions at many institutions including the US Army Research Lab (USA), Télécom Paris-Tech (France), National Institute of Informatics (Japan), the University Carlos Third of Madrid (Spain), Technical University of Darmstadt (Germany), the University of Minnesota (USA) and Beijing University of Posts and Telecommunication (China).

Prof. Adrian OLARU

University Politehnica of Bucharest, Romania

Prof. Adrian Olaru finished the University Politehnica of Bucharest, Faculty of Machines and Manufacturing Systems, Romania, in 1974, head of promotion. From 1974 until 1990 he worked as a designing engineer at the "Optica Romana" Enterprise, also being an associate assistant at the Faculty of Machine-Building Technology of the Polytechnic Institute of Bucharest. In 1990 Prof. Adrian became an appointed lecturer at the Faculty of Technological Systems Engineering and Management, the Machine-Tools Department. Now, he is university full professor, and teaches the following courses: Industrial Robots Dynamics, LabVIEW application in modeling and simulation of the dynamic behavior of

robots, Technological Transport Systems, Electrohydraulic Servosystems, Analyze and Syntese of Electrohydraulic Servosistems for Industrial Robots, Personal and social robots and Vibration of the virtual prototypes of industrial robots.

Prof. Adrian Olaru has published over 160 national and international papers concerning modeling and simulation of hydraulic power system, technological transport systems, electrical and hydraulic servo systems and dynamic behavior of industrial robots. For recent relevant details, see the publication list and the web page. He also has substantial contribution for over than ten technical books. Prof. Adrian Olaru was invited professor of the prestigious universities arround the world and the invited speacker at the different international conferences from Slovakie, France, Italy, China, India, Iran, Poland, Autrich, Rusian Federation, United Arab Emirates, Turkie, Croatie. He was coopted each year in the more than 20 International Technical Committees and like general co-chair from the different international conferences arroun the world: USA, Australy, India, United Arab Emirates, Porto Rico, China, Singapore, Malayesia, Japan, Tayland, Slovaky, Czech Republic.

Prof. Oualid (Walid) Ali

University of Sharjah, UAE

Oualid (Walid) Ben Ali, PhD obtained a bachelors degree in Management Information Systems (MIS), in 1998, from the "Institut Superieur de Gestion", in Tunis, Tunisia. In 1999, he moved to Canada, Laval University, Quebec, to carry on further studies and obtained a Masters degree in Computer Science in 2001, and PhD in Computer Science in 2006. In 2006, he moved to work at the University of York (UK) for two years as senior research assistant. In 2008, he moved to Sharjah University (UAE) to work in the MIS Department in the College of Business Administration. In 2010, he became the Head of the MIS Department. Dr. Ben Ali is a research leader in the field of Geographic Information Systems (GIS) and Location Intelligence (LI); he has founded the GIS Center of the University of Sharjah (http://www.walidali.net/giscenter/index.html). He is an active researcher and has published several papers in renowned journals. He has participated in many international and national conferences. He has participated in numerous projects and has done several consultancies around the world. For more information about Dr. Oualid, please visit his website (www.walidali.net).

Prof. Nabil EL KADHI

AMA International university Bahrain

Professor Nabil EL KADHI, has 13 years of experience in management-high education and research units. He assumed various positions starting from project manager and department head to lab director, Dean and recently Provost at AMA International University Bahrain. Professor EL KADHI has more than 20 years of teaching experience in higher education institutions. He has a PhD in Computer Sciences "formal verification of cryptographic protocols (INRIA Rocquencourt France (1998-2000) with the initiative Verified Internet Protocols and the European project TASK)". He started his professional activities early 90th as a lecturer, programmer and IT manager in public/private institutions. He worked at EPITCH-Paris (2000-2008); he was major stone in developing EPITECH Curricula and research activities. Professor EL KADHI contributed to several industrial projects: Artificial intelligence, automatic translation, secure payment, smart card use, Automation, Mechatronics and Robotics As vice-president of KnK Partner, a think tank to bridge the gap between universities and corporate, I developed, managed 3 specialized Master degrees. As a manager and strategic leader, he successfully conduct various QA and accreditations with various scopes: institutional, programme review and international accreditations Professor EL KADHI has more than 50 International publications indexed by ACM, IEEE, DBLP and others, he is reviewers in various engineering and computer sciences international scientific journals. He is considered today as one among the international specialist in cyber security.

Conference Program Chair

Professor Rajender Singh Chhillar

M.D.University, Rohtak, Haryana, India

Professor Rajender Singh Chhillar is a Professor and Head of Department of Computer

Science at Maharshi Dayanand University, Rohtak, Haryana, India. He has been teaching in the fields of Computer Science and Engineering since 1987. He obtained his Master's degree from Kurukshetra University, Kurukshetra, India and Ph.D (Computer Science) from Maharshi Dayanand University, Rohtak, Haryana, India. He received his Master of Business Administration (MBA) degree from Sikkim Manipal University. During his service in Maharshi Dayanand University, Rohtak, Professor Chhillar served as Director, University Institute of Engineering & Technology; Director, Computer Centre; Head, Department of Computer Science, Chairman, Board of Studies, member, Executive and Academic Councils. His research interests include Software Engineering, Software Testing, Software Metrics, Web Metrics, Bio Metrics, Data Warehouse and Data Mining, Computer Networking, and Software Design. He has published more than 81 journal and 55 conference papers over the last several years and has also written two books in the fields of Software Engineering and Information Technology. He has taught a wide variety of Computer courses at University Teaching Departments including Software Engineering, Data Structures, Data Base Management System, Software Testing and Quality Assurance, Software Quality Management, Programming Languages, Software Design. Professor Chhillar is a Director of Board, CMAI Asia Association, New Delhi and Senior Member of IACSIT and a member of IEEE. Professor Chhillar has been serving as Editorial Board Member, Guest Editor and Reviewer of multiple international journals, and serving as Program Committee Chair, Keynote Speaker and Session Chair of multiple international conferences. He also performs advisory work to Government agencies and academic bodies.

Instruction for Oral Presentation

Devices Provided by the Conference Organizer:

- ✧ Laptop (with MS-Office & Adobe Reader)
- ✧ Projector & Screen
- ✧ Laser Sticks

Materials Provided by the Presenters:

- ✧ PowerPoint or PDF files

Duration of each Presentation (Tentatively):

- ✧ Regular oral presentation: about 13-15 minutes (including Q&A)
- ✧ Keynote speech: about 45 minute (including Q&A)

Notice:

Please keep your belongings (laptop and camera etc) with you!

Technical Program at a Glance

Dec. 8	**Venue: In the Al Umara Hall**	**10:00-17:00**	**Registration**	
Dec. 9 8:00-11:50	**Venue: Flora Grand Room**	**8:00-08:10**	**Opening Remarks**	**Prof. Jeff Kilby**
		8:10-8:50	**Plenary Speech I**	**Prof. Mounir Ghogho**
		8:50-9:30	**Plenary Speech II**	**Prof. Jeff Kilby**
		9:30-10:10	**Plenary Speech III**	**Prof. Abel Herrera Camacho**
		10:10-10:30	**Group Photo &Coffee Break**	
		10:30-11:10	**Plenary Speech IV**	**Prof. Adrian OLARU**
		11:10-11:50	**Plenary Speech V**	**Prof. Sathans Suhag**
Dec. 9 12:00-13:30	**Lunch (Floral Grand Restaurant)**			
Dec.9 13:30-16:10	**Venue: Riqqa Boardroom (ICMENS, ICISS,ICMIM)**	**13:30-14:10**	**Plenary Speech VI**	**Prof. Oualid (Walid) Ali**
		14:10-14:50	**Plenary Speech VII**	**Prof. Nabil EL KADHI**
		14:50-16:10	**Session I- ICMENS, ICISS,ICMIM(7 papers)**	
Dec.9 13:30-18:30	**Venue: Flora Grand Room**	**13:30-16:10**	**Session II-11 papers**	
	Venue: Al Umara Hall	**13:30-16:10**	**Session III-12 papers**	
	Breakout area Conference rooms	**16:10-16:30**	**Coffee Break**	
	Venue: Flora Grand Room	**16:30-18:30**	**Session IV-10 papers**	
	Venue: Al Umara Hall	**16:30-18:30**	**Session V-10 papers**	
	Venue: Riqqa Boardroom	**16:30-18:30**	**Session VI-8papers**	
Dec.9 19:00-20:30	**Dinner Banquet (Flora Grand restaurant)**			
Dec. 10 9:30-23:30	**One day tour**			

Detailed Technical Program

Schedule for Dec. 8

Onsite registration: Dec. 8, 2014

Time	10:00am-17:00pm
Event	Arrival, registration and conference materials collection
Location	Venue: In the Al Umara Hall
Address	Near Al Rigga Metro Station, Deira, Dubai, U.A.E.
Telephone	Tel: + 971 4 2943660, Mobile: + 971 50 2562275
Staff	Teresa Zhang /Yoyo Yang

Note:

(1) You can also register at any working time during the conference

(2) Certificate of Participation can be collected at the registration counter.

(3) The organizer won't provide accommodation, and we suggest you make an early reservation.

(4) Please get the notification for your paper printed out and it is required when you register on desk.

Schedule for Dec.9

Morning, Dec.9, 2014

Plenary Speeches

Location: Flora Grand Room

8:00-08:10	**Opening Remarks** ***Prof. Jeff Kilby***
8:10-8:50 ***Plenary Speech I***	**Topic: Signal Processing Techniques for Wireless Physical Layer Security** ***Speaker : Prof. Mounir Ghogho*** ***University of Leeds, UK*** ***Abstract—Due to its broadcast nature, wireless communication is very susceptible to cyber-attacks such as eavesdropping. The conventional approach to achieving secrecy of communication in wireless networks is based on key distribution and complex encryption/decryption algorithms. This high-layer approach to security is being challenged with the emergence of large-scale, dynamic and decentralized wireless networks. The physical layer approach, which exploits the dynamic characteristics of the wireless physical channel to secure communications without the need of secret keys, has witnessed significant interest from both academia and industry over the past few years. Techniques based on this new information-theoretic approach may either be used alongside cryptography to augment security or be used on their own in applications where the computational complexity of cryptography cannot be afforded. This talk will explain the main concepts and ideas underpinning PHY layer security and review some of the promising findings. The focus will be on signal processing techniques, such as MIMO-beamforming, artificial noise-aided transmission and cooperative communication. Open research challenges will also be outlined.***
8:50-9:30 ***Plenary Speech II***	***Topic: Time-Frequency Variant Analysis of Signal Analysis of Surface Electromyography Signals*** ***Speaker : Prof. Jeff Kilby*** ***AUT University, New Zealand*** ***Abstract—A number of signal processing techniques have been adopted and developed as a methodology for extracting features from surface electromyography (sEMG) signals. The main purpose of this research was the investigation of well-known digital signal processing techniques for extracting time-frequency features in sEMG signal with future work to classify normal muscle activity.*** ***The research explored the extraction of recognise time-frequency features from the signals. The processing techniques investigated were (a) Fast Fourier Transform (FFT), (b) Short Time Fourier Transform (STFT), (c) Discrete Wavelet Packet Transform (DWPT), (d) Discrete Wavelet Transform (DWT) and (e) Continuous Wavelet Transform (CWT).*** ***It was found that the traditional analysis methods such as FFT could not be used***

	alone, because muscle diagnosis requires time-based information. CWT, which was selected as the most suitable for this research, includes time-based information as well as scales, and can be converted into frequencies, making muscle diagnosis easier. CWT produces a scalogram plot along with its corresponding frequency-time based spectrum plot. The extracted time-frequency features of the SEMG signals used in this research using CWT were the mean and median frequencies of the average power spectrum and the RMS values at scales 8, 16, 32, 64 and 128. ***sEMG signals were obtained for a 10 second period, sampled at 2048 Hz and digitally filtered using a Butterworth band pass filter (5 to 500 Hz, 4th order). They were collected from normal vastus medialis muscles of both legs from 5 male subjects at 25%, 50%, and 75% of their Maximum Voluntary Isometric Contraction (MVIC) force of the quadriceps.*** ***The next step of the research is to use these extracted time-frequency features at the dominant frequencies and the related scales for as inputs to train and validate a new Artificial Neutral Network for classification of sEMG signals.***
9:30-10:10 ***Plenary Speech III***	**Topic: Advances in Speech Processing** ***Speaker : Prof. Abel Herrera Camacho*** ***Universidad Nacional Autonoma de Mexico (UNAM), Mexico*** ***Abstract—The dream of man-machine communication through speech is now closer than ever. The development of mobile device is pushing the field of speech recognition, text-to-speech synthesis and speech understanding. In this talk, recent advances in these applications will be analyzed. Specially, the topics of robust speech recognition and emotional speech synthesis will be explained.*** ***The topic of speaker identification and speaker verification is a growing application for legal cases and security. Then, recent speaker identification techniques based on gmm's and mutitapers will be described.***
10:10-10:30	***Group Photo &Coffee Break***
10:30-11:10 ***Plenary Speech IV***	**Topic: Assisted New Cycle Coordinate Descent Method with the Proper Neural Network for Optimal Solving of the Inverse Kinematics** ***Speaker : Prof. Adrian OLARU*** ***University Politehnica of Bucharest, Romania*** ***Abstract—Solving of the robots inverse kinematics problem by obtaining the minimum of the space trajectory errors, is very difficult because there are many variable parameters (internal robots coordinates) and many redundant solutions (difference between the number of degree of freedom and number of scalar equations). In the paper are show the state of art of the robots inverse kinematics and the new smart method. The paper proposes one assisted method solving of the inverse kinematics with the goal to minimize the final end-effecter trajectory errors, by optimizing the distance between the final position of the end-effecter and the target. The proper virtual LabVIEW instrumentation used in the assisted research open the***

	way to some other applications like: programming the collaborative robots, exoskeleton robots, multi- robots applications. The proposed method was applied to one arm type robot structure. The method uses the optimal iterative convergence process by applying the obtained results to the forward kinematics by using the proper virtual LabVIEW instrumentation. Was obtained one changed Cycle Coordinate Descent Method [1], [2] coupled to the proper Neural Network Sigmoid Bipolar Hyperbolic Tangent (CCDM-SBHTNN) and one FK with application point to the world coordinates. We were shown one complete study case and the obtained trajectory errors of the one arm type robot fixed on the ceiling. The presented method is general and can be used in all other robots types and in all other conventional and unconventional space curves.
11:10-11:50 ***Plenary Speech V***	**Topic: Intelligent Control: Overview, Issues, and Prospects** ***Speaker : Prof. Sathans Suhag*** ***National Institute of Technology Kurukshetra, India*** ***Abstract—In recent years, intelligent control has emerged as one of the most active and fruitful areas of research and development. The conventional control, as also the modern control theories, have had tremendous success in areas where the system is well defined and a valid and accurate mathematical model of the system is available. However, in many complex dynamical systems which are uncertain, non-linear, and poorly understood, precise models are not possible. In designing controllers for such complex dynamical systems, the control needs cannot be sufficiently addressed by conventional control theory. To address the control demands of such highly complex and uncertain systems, intelligent control techniques are used to design a new family of controllers with learning and adaptation capabilities to ensure that high performance is achieved and maintained under adverse conditions. Systems with such solutions can be referred to as intelligent control systems. Intelligent Control is not a single methodology, but a fusion of several methodologies which are biologically inspired, such as artificial neural networks, fuzzy logic, genetic algorithms and a wide variety of search and optimization techniques.*** ***This talk is intended to provide an overview of Intelligent Control, highlighting various issues involved therein and a discussion on potential areas of applications. I also intend to illustrate the effectiveness of Intelligent Control techniques by discussing some examples from our work in the area of frequency control in AC microgrids and other important control problems.***

12:00-13:30	***Lunch (Flora Grand Restaurant)***

Afternoon, Dec.9, 2014

Venue: Riqqa Boardroom

Time: 13:30-16:10pm

Session I

Session Chair:

Prof. Oualid (Walid) Ali
University of Sharjah, UAE

Keynote Speeches for ICMENS, ICISS, ICMIM2014

Time: 13:30-14:50

13:30-14:10 ***Plenary Speech VI***	**Topic: The age of Big Data: From DB to BD** ***Speaker : Prof. Oualid (Walid) Ali*** ***University of Sharjah, UAE*** ***Abstract—Big Data are structured, semi-structured, unstructured, and raw data that are revolutionizing how we think about and use information in the 21st century. Big Data represents a paradigm shift from our prior use of traditional data assets over the past 30+ years, such as numeric and textual data, to generating and accessing petabytes and beyond of images and social media. Traditional databases stored only structured data consisting of letters and numbers, but in the era of Big Data a need arose to incorporate unstructured data as part of overall information management. The shift to Big Data started with the Internet boom of the mid to late 1990s and the "rich data" that could be collected through semi-structured and unstructured petabytes of behavioral, image, textual, and social media data. Social media, such a Facebook, Twitter, Wikis, Blogs, YouTube, etc., has also changed our view of data. Big Data is a relatively nascent field of study that has spawned the development of new hardware, software, and database architectures to handle the large volume of structured and unstructured data. However, the foundation for the exploration and analysis of Big Data is as old as the Information Age itself and is rooted in the field of communications.***
14:10-14:50 ***Plenary Speech VII***	**Topic: Information and Data Security: A paradigm shift in a dynamic environment.** ***Speaker : Prof. Nabil EL KADHI*** ***AMA International university Bahrain*** ***Abstract—Data and information security is since the 60th a major concern in any information system, embedded application or automated activity. Cryptography and cryptology play a major role in a such. However, and beside the technical advances***

	noted in this area, various paradigm shifts happen and are happening introducing new concepts and challenges such as 'trust' 'virtual and cloud security' and others. Embedded applications, mobile environment and data and recently big data and non-structured information, social applications and use increased the complexity of such services and pushed to an additional paradigm shift in that regard. ***The various shifts and appropriate techniques as well as the actual and expected challenges will be discussed and analyzed with a projection on the security concept in embedded mobile and 'social' environment.***

Oral Presentation

Time: 14:50-16:10 pm

NS0004	**Development of Miniature Electromagnetic Devices Combined with Silicon and Magnetic Ceramic** **Minami Takato**, Hiroaki Endo, Kazuaki Maezumi, Yuji Yokozeki, Ken Saito and Fumio Uchikoba **Nihon University-Japan** **Abstract.** As portable devices become smaller and more convenient, they increasingly require miniaturized batteries that preserve the light weight of the device while delivering sufficient power. However, miniaturization of conventional magnetic devices is precluded by the magnetic material and helical structure of the coil. To solve this problem, we introduce a multilayer ceramic technology that realizes three-dimensional miniature magnetic devices. The miniature components are fabricated by micro-electro-mechanical systems (MEMS) technology. This paper describes an electromagnetic motor and an electromagnetic induction type air turbine generator developed through MEMS and multilayer ceramic technologies. The fabricated motor is 4.2 [mm] in diameter and 6.0 [mm] in height, runs at 1080 rpm, and has a consumption power of 0.11 [W]. The air turbine generator is 10.6 [mm] long, 10.6 [mm] wide, and 3.6 [mm] high. Connected to a 4 [Ω] load resistor, its output power is 195 [μVA] at a rotational speed of 9000 rpm.
NS0006	**Improved Nanoindentation Phase Transformation In Functional Structure Of Niti Sma And Graphene** **Abbas Amini,** Chunhui Yang, and Yang Xiang **University of Western Sydney-Australia** **Abstract.** Graphene layers were deposited on the surface of NiTi shape memory alloy (SMA) to enhance the spherical indentation depth and the phase transformed volume through an extra nanoscale cooling. The graphene-deposited NiTi SMA showed deeper nanoindentation depths during the solid-state phase transition, especially at the rate dependent loading zone. Larger superelastic deformation confirmed that the nano-scale latent heat transfer through the deposited graphene layers allowed larger phase transformed volume in the bulk and, therefore, more stress relaxation and depth can be achieved. During the indentation loading, the temperature of the phase transformed zone in the stressed bulk increased by ~12-43°C as the loading rate increased from 4,500 μN/s to 30,000 μN/s. The layers of graphene enhanced the cooling process at different loading rates by decreasing the temperature up to ~3-10 ℃ depending on the loading rate.
M003	**Adaptive Beaconing Rate Based Stopping Distance**

	Abduladhim Ashtaiwi **College of Information Technology University of Tripoli** **Abstract**—The Intelligent Transportation Systeim (ITS) utilizes Vehicle-to-Vehicle (V2V) and Vehicle-to-Roadside (V2R) communication, enabled by Vehicular Ad Networks (VANETs), to implement many traffic safety application. Vehicles and Road Side Units (RSUs), in VANETs, periodically broadcast messages, known as beacons, contain many vehicle's driving parameters such as current position, direction, speed, road conditions, etc. To receive the broadcasted driving information, vehicles listen to the control channel. The accuracy of the traffic safety application depends on the rate at which the beacons are broadcasted. Higher broadcast rate of beacons, can help obtain close to instantaneous driving information. Increasing the beacon rate for all vehicles on the road can increase the channel congestion which then can lead to higher beacon collision rate. In this work we propose Adaptive Beaconing Rate Protocol (ABRP) which adapts the beaconing rate of vehicles based on their driving parameters change rate. In this paper we set the beaconing rate proportional to the stopping distance. Stopping distance estimation depends on many factors: vehicles speed, weight, size, road fraction coefficient, etc. Hence, setting the beacon rate proportional to stopping distance means that all the aforementioned factors are included in adapting the beaconing rate. To evaluate the proposed scheme, by using OPNET Modeler, we created a detailed highway scenario. The obtained results shows that ABRP scheme outperforms the fixed beaconing rate in terms of medium access delay, delivered ratio, and collision rate**..**
M009	**KSU-IMR Mobile Robot Navigation Maps Building and Learning** **E. Mattar,** K. Al Mutib, M. AlSulaiman, H. Ramdane **College of Engineering, University of Bahrain, P.O. Box 32038, Kingdom of Bahrain** **Abstract—**It is essential to learn environments where a mobile robot navigation to navigate. We describe a research outcomes for KSU-IMR mapping and intelligence. This is for mobile navigation and behavior learning. Mobile robot maps learning was based on hybrid paradigms and AI techniques, this includes ANN-PCA for dimensionality reduction, and for decision based NF.
M007	**Challenges of Data Acquisition and Analysis for Characteristics-Driven and Metrology-Based Optimization of Milling Process Development** **Laura Niendorf**, Dr. Markus Grosse Boeckmann and Prof. Dr. Robert Schmitt **Fraunhofer Institute for Production Technology IPT/Department for Production Quality and Metrology, Steinbachstr. 17, 52074 Aachen, Germany** **Abstract**— The research and practical use of data and data-mining in production environment is still at an early stage. Although almost every manufacturing company collects a lot of process and product related data they often do neither use nor deploy this data in order to optimize or even analyze their production processes. The acquisition of process data brings several advantages. On the one hand the implicit knowledge is permanently stored and on the other hand it is possible to learn from previous process failures. The acquired knowledge could then be applied to all future production tasks. Although many research activities can be observed since the late 90s, none of them managed

	the transfer to practical usage. In order to encourage the practical transfer of data-mining in production environment this paper presents a metrology-based test set-up and therewith arising challenges when consistently acquiring and processing inhomogeneous process, product and machine data. For the experimental set-up, on-machine metrology systems were developed and integrated into a 5-axis milling machine to gain much significant data.
M011	**Neural Net Control of High Nonlinear 2-DOF Nonlinear Robotic Arm** **E. Mattar** **College of Engineering, University of Bahrain, P.O. Box 32038, Kingdom of Bahrain** **Abstract**—A robust ANN system to enhance the control performance and robustness of a Two links robotic system (UoB-Arm) is presented. The UoB-Arm control architecture consists of a classical (PD) controller, independent of the high nonlinear dynamics of the two links robotic model, in parallel with a trainable ANN architecture. ANN architecture is used to identify the whole robotic arm inverse dynamics for arm control compensation. The (PD) controller is used to guarantee the stability and robustness of the whole control system, hence achieve a pr écised tracking accuracy.
M1002	**A Review of Component Based Complexity Metrics** **Pooja Rana and Rajender Singh Chhillar** **M.D University, Rohtak, India** **Abstract.** In Component-Based Software Engineering (CBSE), software systems are mainly constructed with reusable components, such as third-party components and in-house built components. Component Based Software Development (CBSD) is used for making the software applications quickly and rapidly. In Component Based Development (CBD), the software product is built by gathering different components of existing software from different vendors. This process reduces cost and time of the software product. For the purpose of quality software, it is a measure of some property of a piece of software or its specifications. Software metrics are measures of the attributes of the software products and processes. Software metrics are quantifiable measures that could be used to measure different characteristics of a software system or software development process. For component-based systems, complexity metric are based on complexity attributes like interaction, coupling, cohesion, interface etc. In this paper we are trying to explore the different types of component based complexity metrics, attributes and limitations of the traditional complexity metrics.

Session II- Control System and Electronic Communication

Venue: Flora Grand Rooms

Time: 13:30-16:10pm

Session Chair:

Prof. Dr.-Ing. Rolf Roskam
Ostfalia University of Applied Sciences，Germany

MA032	**Frequency Regulation in an AC Microgrid with Diverse Sources of Power Using Intelligent Control Technique** Vishal Saini and **Sathans** **National Institute of Technology, Kurukshetra, India** **Abstract.** In recent years worldwide, there is considerable focus on the growth of renewable energy sources (RESs) and distributed generation system (DGs) leading to the concept of microgrid (MG), which is becoming increasingly very popular. The RESs, constituting a MG, by nature have intermittent power output. Therefore, due to unpredictable uncertainties in power output of these systems it becomes very difficult for the conventional controllers to give satisfactory performance over a wide range and under different operating conditions. This paper addresses the problem of frequency regulation in an AC microgrid under variable wind speed and multiple random load disturbances and proposes a fuzzy gain scheduled proportional-integral-derivative (FGSPID) controller to withstand these uncertainties and disturbances and provide an improved performance. For comparative analysis, the conventional PID controller is also implemented on the same microgrid system. Simulation results clearly indicate significant improvement in the frequency regulation of the microgrid system with FGSPID controller as compared to conventional PID controller.
SP004	**Spread Spectrum Using Chirp Modulated RF Pulses For Incoherent Sampling Compressive Sensing MRI** **Sulaiman Al Hasani,** Gary Egan and Jingxin Zhang **Monash University** **Abstract**—Compressed Sensing Magnetic Resonance Imaging (CS-MRI) has proven to be ne of the most promising techniques to reduce the magnetic resonance (MR) data acquisition time. The performance of compressive sensing is highly depending on the level of incoherence between the sparsity transform matrix and the sensing matrix. In conventional MRI, Fourier matrix as a sensing matrix and Wavelet matrix as a sparsifing transform matrix are not optimally incoherent. Moreover, Fourier encoding weakly spreads out the energy and concentrate energy in the center of the "k-space" in a region known as low frequencies region. This imposes restriction on the under-sampling pattern to fully sample the low spatial frequencies and insufficiently sample the high frequencies at high acceleration factors. Such restriction can cause a huge loss in image resolution. This paper investigates the implementation of spread spectrum RF pulses to increase the incoherence and insure the spread of energy. The spread spectrum compressive sensing is achieved experimentally using tailored spatially selective RF pulses and random under-sampling along the phase encodes. Simulation and experimental results suggest that the proposed technique outperforms the conventional Fourier encoding in the framework of CS-MRI and in preserving the image quality at higher acceleration factors.
SP0013	**Design of Higher Order Digital IIR Low Pass Filter using Hybrid Differential Evolution** **D S Sidhu,** J S Dhillon and Dalveer Kaur **Giani Zail Singh Punjab Technical University**
SP006	**Generalization of some CFAR detectors for MIMO radars.** Mohamed Baadeche, **Faouzi Soltani** and Amar Mezache

	Electronic Engineering Department , Universit é Constantine 1, Constantine 25000, ALGERIA **Abstract**—In this paper we generalize the GOSCA-CFAR, the OSGO-CFAR and the OSSO-CFAR detectors for the MIMO (Multi Input Multi Output) radars. We derive close-form expressions of the probability of false alarm (Pfa) and the probability of detection (Pd) in homogeneous environment. The comparison of these detectors for a non-homogeneous clutter environment showed that the OSSO-CFAR has better performance when the number of interfering is high.
SP0012	**Real-time, Simultaneous Multi-channel Data Acquisition System with no time skews between input channels** **Fatemeh Zahedi,** Zahra Zahedi **Shiraz University** **Abstract**— In this study, a simultaneous multi-channel data acquisition system is designed and implemented. The most significant feature of this system is that it can perform sampling of input channels without any time skews and additionally, it is a real-time system. The general architecture of this system is that the analog signals are received through multi-channel ADCs which are chained together to perform the digitalization of these inputs. Chaining of the ADCs allows the optimization of the number of lines on which the digitalized data is placed. The implemented system uses a Field Programmable Gate Array (Spartan-3, XC3S400 FPGA) and multi-channel ADCs (Texas Instruments ADS8556). This system has a typical SNR of 91.5dB and the calculated gain error for this system which is configured for analog voltage inputs of 0-5v, is equal to 0.0015%.
SP0018	**Source separation for arbitrary array configuration in the presence of spatial aliasing** Masashi Sekikawa, **Nozomu Hamada** **Universiti Teknologi Malaysia (UTM)** **Abstract**—This paper proposes a time-frequency (T-F) source separation method by clustering estimated propagation direction vectors at T-F slots. The method is applicable to arbitrary array configuration in 3-D space and even in the presence of spatial aliasing. To solve spatial aliasing problem which causes ambiguity of phase, unity norm property of propagation direction vector is employed for solving phase difference ambiguity. With combining our previous direction-of-arrival (DOA) estimation algorithm and clustering in terms of spatial information, efficient separation procedure is achieved by a binary masking in T-F domain. Experimental results demonstrate that the proposed procedure effectively separate three or four speech sources with tetrahedron microphone array with wide sensor spacing where spatial aliasing may occur.
MA0020	**On the reducibility of the discrete linear time-varying systems** **Jerzy Klamka**, Elżbieta Ferenstein, Artur Babiarz, Adam Czornik, Michał Niezabitowski **The Silesian University of Technology- Poland** **Abstract.** For the discrete linear time-varying systems we present basic facts and definitions concerning the Lyapunov transformation, kinematic similarity and reducibility in the context of stability and Lyapunov exponents theory. Moreover, the paper contains the original result giving the necessary and sufficient conditions for the reducibility of a system to system with identity matrix.
MA023	**Trajectory controllability of semilinear systems with delay in control and state**

	Jerzy Klamka, Elżbieta Ferenstein, Artur Babiarz, Adam Czornik, Michał Niezabitowski **The Silesian University of Technology- Poland** **Abstract.** In this paper we consider the finite-dimensional dynamical control system described by scalar semilinear ordinary differential state equation with variable delay. The semilinear state equation contains both pure linear part and nonlinear perturbation. We extend the concept of controllability on trajectory controllability for systems with point delay in control and in nonlinear term. Moreover, we present remarks and comments on the relationships between different concepts of controllability. Finally we propose the possible extensions.
MA025	**Intelligent Diagnostic of Induction Machine for Faults Detection & Classification Using Wavelet & Fuzzy inference** **SAMIA BOURDIM,** HEMSAS KAMEL-EDDINE,HARBOUCE YOUCEF **Dept of Electrical Engineering, BATNA University, electrotechnic laboratory of BATNA (LEB) , ALGERIA** **Abstract.** An intelligent diagnostic method based on 3-D plot continuous wavelet transform (3-D plot CWT) and fuzzy inference system is presented to investigate the detectability and classification of rotor broken bars faults in induction machine (IM) and to overcome the limitation of classical Fourier Transform (FT). This approach is successfully used with Motor Current Signature Analysis (MCSA) and suitable developed model of IM in healthy and faulty mode using Matlab environment. As first step we performed new results using 3-D plot CWT to extract the discriminating features. The features extracted from the wavelet transformed signal are the second most predominant frequency, the time range at which it occurs and the corresponding wavelet coefficients .Then as second and last step a fuzzy Inference system is designed and implemented using Matlab software with these three features extracted from the wavelet transformed signal as inputs and generates an output that classifies the fault and no fault conditions. It is observed that the results are satisfactory.
MA0012	**Three-Level PWM Rectifier-Five-Level NPC Voltage Source Inverter Back-to-Back DC bus control for Torque Ripple Reduction in Induction Motor** Thameur Abdelkrim , **Karima Benamrane**, Badreddine Bezza **Unité de Recherche Appliquée en Energies Renouvelables, URAER, Centre de Développement des Energies Renouvelables, CDER- Algeria** **Abstract.** This paper proposes a regulation method of back-to-back connected three-level PWM rectifier-five-level Voltage Source Inverter (VSI) in order to reduce the torque ripple in induction motor. First part is dedicated to the presentation of the feedback control of three-level PWM rectifier. In the second part, five-level Neutral Point Clamped (NPC) voltage source inverter balancing DC bus algorithm is presented. A theoretical analysis with a complete simulation of the system is presented to prove the excellent performance of the proposed technique
MA006	**Properties of the lower Bohl exponents of diagonal discrete linear time-varying Systems** **Michał Niezabitowski** **The Silesian University of Technology-Poland** **Abstract.** The Bohl exponents, similarly as Lyapunov exponents, are one of the most important numerical characteristics of dynamical systems used in control theory. Properties of the Lyapunov characteristics are well described in the literature. Properties of the second

	above-mentioned exponents are much less investigated in the literature. In this paper we show an example of two-dimensional discrete time-varying linear system with bounded coefficients for which the number of lower Bohl exponents of solutions may be greater than dimension of the system.

Session III- Image and Signal Processing

Venue: Al Umara Hall

Time: 13:30-16:10pm

Session Chair:

Abel Herrera-Camacho
Universidad Nacional Autonoma de Mexico (UNAM), Mexico

SP001	**Novel Online Tools for Automatic Generation of Pronouncing Dictionaries in Mexican Spanish for Speech Processing** Carlos D. Hern ández-Mena **Abel Herrera-Camacho** **National Autonomous University of Mexico (UNAM)/Signal Processing Department, Mexico City** **Abstract.** A pronouncing dictionary is a very important tool in a speech processing system. In speech recognition, it helps to the training stage to create the Markov models for every phoneme of every word in the lexicon. In speech synthesis, it helps the system to produce the correct pronunciations of the words introduced by the user despite the orthographic representations of them. All of this implies that creation of pronouncing dictionaries depends on the language one has chosen, because different languages have different sets of phonemes and also different phonetic alphabets to represent them. In this paper we present a methodology of creation of pronouncing dictionaries in Mexican Spanish utilizing a set of novel online tools developed by the CIEMPIESS-UNAM Project. These tools are for free use and they produce pronouncing dictionaries in a particular phonetic alphabet called Mexbet.
SP0030	**A comparison of convergence speed of the Numerical algorithm for solving M-Matrix solution** **Ayesha Sohail,** Khadija Maqbool **International Islamic university Islamabad Pakistan** **Abstract:** The nonlinear matrix equations arise in signal processing and many other engineering problems. In this paper we will adopt two different techniques to solve the nonlinear matrix equation associated with an M-matrix, which are (a) using perturbation

	analysis, where we will study the perturbation bound and residual bound (b) we will also present results based on the implicit iteration method, after specifying certain conditions and transformation. We will show that the iterative method applied to the nonlinear matrix equation can provide a proficient approach to solve the associated nonlinear eigenvalue problem. The accuracy, stabilizing or almost stabilizing solution and the order of convergence of the two techniques will be discussed, based on the results obtained from numerical algorithm. keywords: Perturbation method, Quadratic matrix equation, Alternately linearized iteration, M-matrix solution.
MA204	**Dynamical Pattern Vector in Pattern Recognition with the Use of Thermal Images** **Zygmunt Kuś** **Silesian University of Technology- Poland** **Abstract.** The goal of the following paper was to develop the methodology of object tracking in adverse conditions. Suddenly appearing clouds, fog or smoke could be the examples of atmospheric conditions. We used thermal and visible images in each moment during object tracking. We computed the pattern vectors of the tracked object on the basis of the visual and thermal images separately. The pattern vector and current feature vector for an image of a given type are used to compute the distance between the object pattern vector and feature vector calculated for a given location of the aperture. It is calculated for both: the visual and thermal image. The crux of the proposed method was the algorithm of selection which distance (for visual or thermal image) was used for object tracking. It was obtained by multiplying the values of the distances between a pattern vector and current feature vector by some coefficients (different for thermal and visual images). The values of these coefficients depended on the usefulness of a given type of an image for pattern recognition. This usefulness was defined by the variability of the particular pixels in the image which is represented by calculating gradient in the image. On top of that, this study presented the examples of the object recognition by means of the developed method.
MA205	**The Fusion of the Visual and Thermal Images on the Basis of Determining the Image Fragments which Contain Essential Details** **Zygmunt Kuś** **Silesian University of Technology- Poland** **Abstract.** The aim of the following study was to develop a procedure which guarantees the data fusion of thermal and visual images. The first stage of the proposed algorithm consisted of images acquisition which guaranteed that the same parts of images represented the same parts of the observed terrain. The second stage depended on previous information about the searched object features. Two different situations were considered herein. In the case when we had the searched object's feature vector for both representations of a searched object, we could conduct the pattern recognition for each image. It was conducted separately for visual and thermal images. In this way, we obtained the important parts of the images which should be represented in a fused image. The other case examined in the paper, considered the situation in which we did not have the formalised information about the object. In this case, it was necessary to analyse whole images in order to define the potential parts of the images where the object could be found. This analysis should be helpful for an operator to indicate the parts of the images where there are some artefacts which can be the elements of the searched object. Therefore, in this case, the second stage of the algorithm consisted in calculating the local features of the images. These features constituted grey scale gradient computed for the pixels inside the aperture. This study presented the examples of the fused images obtained by means of the developed method.
SP0015	**Analyzing EEG Signals using Graph Entropy based Principle Component Analysis**

	and J48 Decision Tree Shuaifang Wang ,**Yan Li,** Paul Wen and Guohun Zhu **University of Southern Queensland** **Abstract—**This paper proposed a method using principle component analysis based on graph entropy (PCA-GE) and J48 decision tree on electroencephalogram (EEG) signals to predict whether a person is alcoholic or not. Analysis is performed in two stages: feature extraction and classification. The principle component analysis (PCA) chooses the optimal subset of channels based on graph entropy technique and the selected subset is classified by the J48 decision tree in Weka. K-nearest neighbor (KNN) and support vector machine (SVM) in R package are also used for comparison. Experimental results show that the proposed PCA-GE method is successful in selecting a subset of channels, which contributes to the high accuracy and efficiency in the classification of alcoholics and non-alcoholics
SP0025	**Classification of Respiratory Diseases Using Respiratory Sound Analysis** **Ranjit K. Sawant** and A. A. Ghatol **PG Department of Computer Science, Sant Gadge Baba Amravati University, Amravati.** **Abstract—** Respiratory or lung sounds recorded on the chest can be used to identify different types of diseases. These sounds are attenuated by the thorax and thorax-microphone interface. In order to proper classification of respiratory diseases waveforms similar to the ones generated within the lungs must be recovered from the attenuated sounds. The equalization of crackle sounds recorded on the chest can be done for accurate classification of respiratory sounds. From an experiment an estimation of the channel attenuation was obtained according to which the equalization is applied. For that, multiple tones between 100 and 1200 Hz were applied to each subjects' mouth where they were acquired. These tones were also recorded on the chest. The power ratio between the one measured on the chest and that measured at the mouth is used to calculate the attenuation of each tone. After obtaining the average attenuation curve a discrete-time equalizer was applied to crackles acquired from patients with congestive heart failure, fibrosis, and pneumonia. The equalization is used to modify the maximum frequency and two cycle duration indices measured from these crackles. The equalizer improves the extraction of features from the crackles sounds. Equalization of crackles can be used to better classify the different diseases
SP0026	**Wavelet Decomposition in Laplacian Pyramid for Image Fusion** **Ias Sri Wahyuni** and Rachid Sabre **University of Burgundy** **Abstract**— The aim of image fusion is to combine information from the set of images to get a single image which contains a more accurate description than any individual source image. While the scene contains objects in different focus due to the limited depth-of-focus of optical lenses in camera then by using image fusion technique we can get an image which has better focus across all area. In this paper, a multifocus image fusion method using combination Laplacian pyramid and wavelet decomposition is proposed. The fusion process contains the following steps: first, the multifocus images are decomposed using Laplacian pyramid into several levels of pyramid. Then at each level of pyramid, wavelet decomposition is applied. The images at every level of wavelet are fused using maximum absolute value rule. The inverse wavelet transform is then applied to the combined coefficients to produce the fused image in laplacian pyramid. The final step is to reconstruct the combined image at every level of pyramid to get the fused image which shows an image

	retaining the focus from the several input images.
SP0027	**Analysis of biceps brachii muscles in dynamic contraction using sEMG signals and Multifractal DMA algorithm** **Kiran Marri** and Ramakrishnan Swaminathan **Abstract** — In this work, an attempt has been made to analyze surface electromyography (sEMG) signals in dynamic contraction using multifractal detrending moving average algorithm (MFDMA). The signals are recorded from biceps brachii muscles of twenty two healthy participants using a standard experimental protocol. The recorded sEMG signals are pre-processed and normalized by dividing the time axis into six equal segments. The first segment and sixth segment are considered as nonfatigue and fatigue conditions for analysis. The signals are subjected to MFDMA and verified to test multifractal properties of biceps brachii muscles using scaling exponent, generalized Hurst exponent and multifractal spectrum in both nonfatigue and fatigue conditions. Each multifractal spectrum is characterized by calculating three features namely peak exponent (PEV), degree of multifractality (DOM) and mean multifractal spectral exponent (MSE). The variation of multifractal spectral features in fatigue conditions are analyzed using ANOVA and Tukey test. The results of scaling exponent function and generalized Hurst exponent function indicated multifractal characteristics for sEMG signals in dynamic contractions. DOM increased from 0.56 to 0.96 and MSE increased from 0.54 to 0.75 in nonfatigue and fatigue conditions respectively. It appears that this method is useful in analyzing fatigue and nonfatigue conditions associated with muscle mechanics using non-invasive sEMG recordings. This study can be useful in field of clinical studies, rehabilitation prosthetics control and sports medicine.
SP1007	**Effect of Speech Compression on the Automatic Recognition of Emotions** **Abas Albahri,** Margaret Lech, Eva Cheng **RMIT University** **Abstract**— This paper investigates the effects of standard speech compression techniques on the accuracy of automatic emotion recognition. Effects of Adaptive Multi-Rates (AMR), Adaptive Multi-Rate Wideband (AMR-WB) and Extended Adaptive Multi-Rate Wideband (AMR-WB+) speech codecs were compared against emotion recognition from uncompressed speech. The recognition methods included techniques based on three different types of acoustic speech parameters: Teage Energy Operator features (TEO), Mel Frequency Cepstral Coefficients (MFCCs), and Glottal Time and Frequency domain features (GP-T&GP-F). The results showed that in general, all three speech compression techniques resulted in the reduction of emotion recognition accuracy. However, the amount of degradation varied across compression methods and types of acoustic features. It was observed that the accuracy of emotion recognition using the AMR-WB technique was higher than the accuracy of the AMR-WB+ and the AMR codecs. Further, the TEO-PWP features showed much more robust performance under different compression rates than the MFCC, GP-T and GP-F features.
SP002	**New Iterative Algorithm for Improving Depth Resolution in Ionic Analysis. Effect of Iterations Number** Nadia Dahraoui and **M'hamed Boulakroune** **Electronics and Communication Department, Faculty of New Technologies of Information and Communication, University Kasdi Merbah of Ouargla, Algeria** **Abstract**.In this paper, the improvement by deconvolution of the depth resolution in Secondary Ion Mass Spectrometry (SIMS) analysis is considered. Indeed, we have

	developed a new Tikhonov-Miller deconvolution algorithm where a priori model of the solution is included. This is a denoisy and pre-deconvoluted signal obtained from: firstly, by the application of wavelet shrinkage algorithm, secondly by the introduction of the obtained denoisy signal in an iterative deconvolution algorithm. In particular, we have focused the light on the effect of the iterations number on the evolution of the deconvoluted signals. The SIMS profiles are multilayers of Boron in Silicon matrix.
MA0022	**Applications of hand feature points detection and localization algorithms** **Tomasz Grzejszczak** and Michał Niezabitowski **The Silesian University of Technology- Poland** **Abstract.** Growing interest in hand gesture recognition system, bring new possibilities in developing new ways of intuitive control. Controlling the everyday surrounding can be much easier with use of natural body language. This article presents the review of hand gestures systems basing on color images, focusing on hand feature points detection. Additionally, the ways of hand feature points control possibilities are discussed, along with possible examples of hand gestures control. Hand gestures are introduced with discussion about their usage in everyday equipment control.
CQ4004	An Enhanced Wavelet Neural Network Model with Metaheuristic Harmony Search Algorithm for Epileptic Seizure Prediction Zarita Zainuddin, Kee Huong Lai, and Pauline Ong **Abstract.** The task of epileptic seizure prediction aims at differentiating between two classes of electroencephalography (EEG) signals, namely interictal and pre-ictal signals. The development of an automated classifier that is capable of performing such task with high sensitivity and low false positive rate is of paramount importance, as such classifier will improve the quality of life of patients diagnosed with epilepsy. In this paper, an enhanced wavelet neural network (WNN) model is proposed by incorporating the metaheuristic harmony search (HS) algorithm. The enhancement is accomplished via two modifications to the standard WNN model. First, a binary version of the HS algorithm is employed in the stage of feature selection, which aims at selecting the most optimal subset of input features for the WNN model during the preprocessing stage. Second, the HS algorithm is used to determine the best translation vectors for the hidden nodes of the WNN model. The simulation performed on the benchmark Freiburg dataset reported an average sensitivity of 85.55% and an average false positive rate of 0.22 per hour. It was found that the WNN model that gave the best performance is the one that employs the HS algorithm, in both feature selection and clustering stages. The satisfactory values of sensitivity and false positive rate obtained demonstrate the effectiveness of the proposed model for predicting the occurrence of impending seizures.

16:10-16:30	***Coffee Break***

Session IV-Information Technology and Applications

Venue: Flora Grand Rooms

Time: 16:30-18:30
Session Chair:

Dr. Sheryl Buckley
University of South Africa

MA0016	**Improving Travel Information Systems with the Assistance of GPS** **Udai Hassein**, Kaarman Raahemifar, and Lisa Kadoury **Ryerson University- Canada** **Abstract-** Travel delays and the ever increasing traffic queues negatively affect the everyday lives of commuters. Users of public transit systems, such as the TTC, are left unaware of the length of the delay they might experience on their journey. One of the most important factors in an Intelligent Transportation Systems (ITS) is the ability to predict the bus's arrival time accurately which not only increases the current customers' satisfaction, but also attracts new customers for the system. The objectives of this paper are (1) to predict the bus travel times using GPS data, and (2) to develop a parametric optimization model to improve bus arrival times based on the speed distribution. The bus travel time optimization model proposed in this research explicitly includes arrival time, dwell times, schedule adherence, and traffic congestion, all critical factors for accurate bus arrival times. In this paper, a test bus route was used in downtown Toronto, Canada. The optimization model performed significantly better than the historical data-based models. The proposed model identified the relationship between travel times and the independent variables, leading to superior results.
MT004	**Study on Online Communication Emerged from Centralized Conference** **YOSHIDA Masami** **Chiba University, Japan** **Abstract**. A hashtag of Twitter was announced in a discourse of a centralized conference for in-service educators. Emerged online communication was analyzed by using social graph theory. In addition, online survey of educators who tweeted with a hashtag was executed to identify feasible approach to reach conference effects to local educators. As result, the author identified nine bridge influencers and eight hub influencers.
MT012	**New Media in Consumer Learning: Mapping theoretical and practical approaches on Information Service Design** **Thomas Puchleitner** **University of Graz, Austria** **Abstract**— Consumer electronics is a market segment with constant growth for the last years. Average product lifecycles are dropping and consumers possess a growing amount of technical products for shorter periods of time. Learning how to use a new technical product or how to react in situations when support is required are the two key triggers for technical documentation. At the same time, products resemble each other in terms of technical features. Offering high overall customer experience beyond solely proper product specifications is highly valued by customers and will therefore be a major future

	competitive advantage for businesses. Utilizing information technologies allows the development of customer support environments for high product learnability. In our practical part of research we analyze existing forms of learning aids for customers. Embedding intelligent information systems into products can ensure appropriate support for product learning. Findings are used to identify relevant theoretical research regarding the learning of product usage. Results are structured in a concept map. By considering the practical as well as theoretical aspects, implications for the implementation of customer support environments with focus on product learnability are given.
MT016	**An Approach for Efficiently Creating and Managing Content for Multimedia Environments** **Michael Klenner** **University of Applied Sciences Zwickau, Germany** **Abstract:** In some communication environments, it is advantageous to provide contents for multiple modal channels redundantly and not only in a single media representation. For the case of educational content, this can be for example: visual image-heavy presentation slides for face-to-face teaching, text-based lecture notes with full details for following up at home, and self-study online content for e-learning. There is an overlap in content and structure between all those media files whereas there are differences in style and extent. The requirements for creating and managing content for those multimedia documents are high: On the one hand, the creation process should take care of all media-specific characteristics to obtain the best possible documents, and on the other hand, authors want manage and reuse content in an efficient way. This paper analyzes the lack of current authoring technology, and presents a new approach which suggests a combination of traditional media-specific files and authoring tools with a connected single-source content system.
MT019	**Accessibility Evaluation and Performance Analysis of e-Government Services in Nigeria** **Solomon Adelowo Adepoju**, Ibrahim Shehi Shehu, Peter Bake **Federal University of Technology Minna, Nigeria** **Abstract.** Recent advances in information and Communication Technology has brought about a lot of positive development in Nigeria. Through the deployment of various websites by the state government, e-government services could now be easily accessed. This platform has ensured that government services and programmes are easily available and affordable to the citizens. This is a clear departure from what was obtainable in the past. Hence, this paper evaluates the accessibility and performance analysis of the state government websites in Nigeria by using two online tools; TAW and site analyser. The aim is to test for their conformance with the Web Content Accessibility Guidelines (WCAG). Results from the study show that none of the websites evaluated totally conform to WCAG 2.0 standard. Also, the overall performance obtained shows that most websites tested are above average. The results also show that there is no significant difference in the performance of the websites among different states in the country.
MT107	**Efficient Extraction for Mobile Web Access Log with Caching Strategy** **Lifeng Gao,** Min Zhu, Mengying Li, Yu Cao, Weixue Zhang

	Sichuan University, China **Abstract.** Mobile web access log file plays an important role in the analysis about demand of mobile terminal market or user behaviour. However, the log file data is highly dimensional, disorganized and semi-structured, which heightens the difficulty of data extracting accuracy; while it generates and transmits continuously, which poses an extracting efficiency challenge. It is highly desirable to extract the information embedded in log files as disorder or hidden situation efficiently and accurately. This paper proposes an efficient extracting method for mobile web access log with cache strategy. Firstly of all, data dictionary sets are built for each kind of complex field before extracting. Then, data is extracted based on the dictionaries, and the dictionaries will be completed simultaneously. Furthermore, with the discovery of the distribution of some data in the log generally following Zipf-like distribution, cache strategy is considered to be an auxiliary way to reduce mapping time. In addition, the classical cache strategy LFU is chosen. Ultimately, the experiment shows that the data could be extracted from the log accurately, and the extracting efficiency speeds up remarkably with LFU cache strategy.
MT114	**Risk management strategies of electronic services in the Iran's banking system** **Rosa Khezri** and Ruhollah Tavallaei **Islamic Azad University** **Abstract**— The current study is undertaken with the objective to examine risk and the strategies of its management for electronic banking services in Iran. Continuous innovation in the field of communication and information and also competition between banks has resulted to the fact that banks increasingly provide wider electronic facilities to their macro and micro customers and this vast expansion of capabilities and abilities of electronic banking has various advantages and perils. Hence, it is necessary that these hazards in the banking systems are identified and strategies for management of risk in electronic banking be provided. Therefore, in this study, after examination of theoretical literature review and also examination of documents of the new electronic banking in Iran, the existing risks in the electronic banking are recognized and categorized. Then with the help of the Delphi method and also taking views of 14 experts in the field of information technology in Iran's banking system, 45 strategies of risk management of electronic service are identified in or order to be implemented in the Iranian banking systems and are categorized into two group; short term strategies (28 strategies with first priority) and mid- term strategies (17 strategies with second priority).
MT116	**Exploring Open Source and Onion Model to Support Sustainability Development of Health Information System in Developing Countries** **Noor Mazlina Mahmod,** Abdullah Mohd Zin, and Nurhizam Safie Mohd Satar **Universiti Teknikal Malaysia Melaka (UTeM)** **Abstract.** Sustainability development of health information system (HIS) in developing countries poses tough challenges due to limited resources and settings available. This paper presents a notion that an affordable yet high quality HIS can be developed and sustained through open source software (OSS) and free open health software solution with the right development approach. First, this paper considers the current issues on sustainability development of HIS in low resource settings and then continues with discussion of OSS development and free open health software to provide a robust HIS that can be sustained without monetary cost. Finally, the paper proposes that an appropriate onion-based model of

	open source may be useful to improve the approach for sustainable HIS development in the developing countries.
MA0017	**Estimation of Concern for Others and Consideration of Its Evaluation Focused on Individual Skill** **Naoya Tsujita and Hiroshi Igarashi** **Tokyo Denki University-Japan** **Abstract.** *Concern for others* (CFO) is an important factor in accomplishing efficient work by multiple human beings. Quantified CFO for evaluating CFO, named *Estimation of the CFO* (ECFO), has previously been proposed. In our previous studies, relationships between the cooperative work performance and the ECFO are analyzed using a driving simulation and a visual ping-pong game. In the previous studies, a driving simulation and a visual ping-pong game with two operators were developed and employed to investigate cooperative behavior. Furthermore, the ECFO was defined as the difference of the inputs between individual operation and cooperative operation by two operators. However, these studies did not consider the performance of the individual operation. Therefore, in this study, the ratio of the performances of cooperative operation and individual operation is focused on. Also, relationships between the performance and the ECFO are analyzed by the driving simulation.
CQ4002	The Influence of Salt Solutions and Soil Interspace on the Fungal Counts of Stored Tomatoes in Cooling Structures. **Musliu Olushola Sunmonu** **Abstract.** A study was conducted to study the Influence of salt solution and soil interspace on the total fungal counts of stored tomatoes in Cooling Structures. Three sets of four different types of passive evaporative cooling structures made of two different materials, clay and aluminium were constructed. One set consists of four separate cooling chambers. Two cooling chambers were made with aluminium container (cylindrical and rectangular shapes) and the other two were made of clay container (cylindrical and rectangular). These four containers were separately inserted inside a bigger clays pot and inter- spaced with clay soil of 5 cm (to form tin-in-pot, pot-in-pot, tin-in-wall and wall-in wall) with the outside structure wrapped with jute sack. The other two sets followed the same pattern with interspacing of 7 cm and 10 cm respectively. The set with 7 cm interspace served as the control in which the interspace soil and the jute sack were constantly wetted at intervals of between. 2 to 4 hours depending on the rate of evaporation with water at room temperature. The other two sets (5 cm and 10 cm interspaced soil) were constantly wetted with table salt solution at the same interval to keep the soil in moist condition. Freshly harvested tomatoes were used for the experiment and the fungal counts were determined at interval of three days for a period of sixteen days. The effects of the fungal counts on the weight and nutritional values of the produce were determined using statistical analysis of variance (ANOVA). Further analysis by Duncan's New Multiple Range Test (DNMRT) was carried out to compare the means. The total fungal counts of 13.7ppm, 13.6 ppm, 13.0 ppm, 11.8 ppm and 10.8 ppm were recorded for the tomatoes stored in 5 cm soil inter space while the total fungal counts of 13.7 ppm, 13.8 ppm, 12.7 ppm, 12.5 ppm and 11.5 ppm were recorded for the tomatoes stored in 7 cm soil interspace. However, total fungal count values of 14.3 ppm, 14.4 ppm, 13.4 ppm, 12.9 ppm and 12.1 ppm were recorded for the tomatoes stored in the 10 cm soil interspace.

Session V- Mechanical Design and Applied Mechanics

Venue: Al Umara Hall

Time: 16:30-18:30

Session Chair:

Prof. Sathans Suhag
National Institute of Technology Kurukshetra, India

MA040	**Extended Modeling of Vertical Axis Motion Dynamics of VTOL Vehicle** **Wojciech Janusz** , Roman Czyba, Grzegorz Szafrański, Michał Niezabitowski **The Silesian University of Technology- Poland** **Abstract**. Development of a reliable high-performance multirotor unmanned aerial vehicle (UAV) requires an accurate and practical model of the vehicle dynamics. This paper describes the process and results of the dynamic modeling of an unmanned aerial platform known as quadrotor. To model a vehicle dynamics, elementary physical and aerodynamical principles has been employed. Parameter estimations, from a UAV design have been obtained through direct and indirect measurements. In addition to standard configuration of VTOL (Vertical Take-Off and Landing) platform, the amortized landing gear, modeled as spring-damper system, has been added. The resulting model has been implemented in a simulation environment under MATLABs toolbox, SIMULINK. Some numerical results are presented to illustrate response of the open loop system to specific commands.
MA043	**Dynamic Simulation of a One DOF Radial Active Magnetic Bearing using SIMULINK and AMESim Co-Simulation** **Abdollah Ebadi** and Mahdi Aliyari Sh **K.N. Toosi university of Technology- Iran** **Abstract.** Because of their unique capabilities Magnetic Bearings are increasingly being used in different applications in various industries. MBs are divided in to three main type: (1) Active MB (2) Passive MB (3) Hybrid MB. Due to its adjustability active MBs are becoming common in overcoming classical rotor-bearing problems and help engineers reach new boundaries in system efficiency. The most important issue in designing an active MB is its control system which requires novel techniques to implement. In this paper a One-Axis (One-DOF) magnetic bearing co-simulation model using LMS Imagine AMESim and SIMULINK is proposed to show the capabilities of system modelling an AMB via AMESim software as a mechatronics system design software. The electromagnets of the magnetic bearing system is dealt as a magnetic actuator in AMESim while the rotor is modeled as a simple mass. Linear SISO controllers are designed using SIMULINK and a co-simulation interface is implemented to simulate the overall system
MA0021	**Simulation-based analysis of a linear switched system based on human arm's dynamics**

	Artur Babiarz, Jerzy Klamka, Michał Niezabitowski, Radosław Zawiski **The Silesian University of Technology –Poland** **Abstract.** The article outlines the process of developing a mathematical model of the human arm. The model arm consists of two joints connected by the rotational link. Each of them is represented as a truncated cone prism which changes its shape during motion. The shape change instant depends on the two-state coordinates being the angular displacements q_1 and q_2. Based on the analysis of the arm motion a mathematical model is proposed. The design process is made on the basis of switched systems theory. We present a transition from the general equation of a two-link arm's dynamics to the state equation for stationary linear models. Based on previous step a mathematical model is presented as a switched linear system. The article also shows that the dependency of the switching rule on the two components of the state vector.
MA0013	**Abnormality management for fault prevention in industrial automation systems** **Manuel Bordasch,** Nasser Jazdi and Peter Göhner **University of Stuttgart, Germany** **Abstract.** In this paper, a new concept for fault prevention in present and future industrial automation systems is presented. The aim of fault prevention is the identification of fault development processes while a system is still faultless. These processes can be difficult because they are only based on the past and the current system behaviour and the effects may not be visible yet. In order to countervail these problems, an abnormality management approach was developed to identify abnormalities in fault development processes. By means of this information, the same or systems of the same structure can be checked for these abnormalities in the future. Hence, the occurrence of faults can be prevented, the system availability can be increased and the costs can be reduced. Nowadays, the availability of systems are increasingly essential because a high productivity is needed for companies to remain competitive.
MA028	**Advanced Passive Suspension with Inerter Devices and Optimization Design for Vehicle Oscillation** **Thanh-Tung TRAN,** Hiroshi HASEGAWA **Shibaura Institute of Technology, Japan** **Abstract.** In generally, a suspension system needs to be soft to insulate against road disturbances and hard to insulate against load disturbances. It cannot achieve with a traditional passive suspension that only considered to the stiffness and damper. In this study, the paper clarifies some issues related to suspension system with inerter to reduce sprung mass displacement and tire deflection in quarter-car model. In this paper, we integrate some kinds of suspension system with inerter on quarter-car models. We propose some new designs, which have some advantages for suspension system by improving vehicle oscillation. We optimize design of model based on the minimization of cost functions for displacement, tie deflection with constraint function of suspension deflection limitation and the energy consumed by the inerter. The advantage of research is integration a new mechanism, the inerter; this system can improve the vehicle oscillation on quarter-car model with different parameters. It shows the benefit of the inerter in proposal suspension system.
MA038	**Implementing the eRobotics Approach by Combining Advanced Rendering Techniques and Complex Simulations in a Modern, Multi-Domain VR Simulation System** **Nico Hempe**, Jürgen Roßmann

	RWTH Aachen University- Germany **Abstract.** Multi-domain VR simulation systems provide a framework to bring together various modules in order to fulfill all desired tasks; however, rendering capabilities have mostly been neglected in these systems due to economic aspects or technical limitations. In this contribution, we will present the concepts of eRobotics, which have been motivated by the demand for a holistic and comprehensive multi-purpose tool for the application in a wide range of domains dealing with robotics. We will show how realistic virtual environments as well as the close interplay between rendering and simulation modules can bring simulation results closer to those achieved in real world setups. In particular, the simulation of various optical sensors like digital camera systems, laser range scanners (LiDAR) and time-of-flight (ToF) cameras can benefit from these developments in order to further shift costly and time-consuming physical prototypes to the end of the development process.
MA041	**Prototype Construction Of The Wearable Soft orthotic Exoskeleton For Upper Limb Rehabilitation Of Post-stroke Patients** **Omid Kalantari**, Ali.S.Ghafari **Sharif University of Technology- Iran** **Abstract.** Exoskeleton is a wearable active device used to augment human power in upper or lower extremities. One of the most important application of these devices is to help the disable people to compensate the lack of functionality or rehabilitate. The main scope of this research is to design a prototype of a light, wearable robotic exoskeleton to rehabilitate the upper extremity in stroke patients at home. For this purpose mechanism of a wearable exoskeleton will be proposed compatible with upper extremity DOFs with minimum number of actuators which is constructed inexpensively. This idea proposes to provide an efficient, lightweight, and cost-effective device which was available for the patients at home to eliminate the demand of expensive and professional therapists. The conceptual design of such a system should be offered studying the actuation mechanism and degrees of freedom of the upper extremity for compatibility and safety issues of the proposed system. The novelty of this paper goes to the elbow actuator and minimize the number of actuators.
MA008	**Autonomous Underwater Vehicle Simulator Development** **Boris Gurenko**, Roman Fedorenko, Maksim Beresnev, Roman Saprykin **Southern Federal University- Russia** **Abstract**. Testing and debugging of real equipment is a time consuming task. In particular, in the case of marine robots, it is necessary each time to carry out the transportation and deployment of a robot on the water. Experiments with not yet fully functional prototype of marine robot equipped with expensive hardware is in the meantime very risky. Therefore, the use of simulators is affordable way to accelerate the development of robotic systems from the viewpoint of labor effort and cost of experiments. This paper presents a simulator specifically designed for autonomous unmanned underwater vehicles.
MA0014	**Application of a Compensation Inspection Method in geodynamic Monitoring** **Artem Bykov**, Igor' Kurilov and Oleg Kuzichkin **Murom Institute Vladimir State University- Russian Federation** **Abstract.** The paper proves the application of a compensation testing method for geodynamic monitoring when using multi-pole electrical systems. The transfer functions of a geoelectric section are presented as a system of equations, whose coefficients are determined at the initial setup of the measuring system. The block diagram of the compensation method application for geodynamic monitoring based on a multi-pole electrical system is given. Approximation in

	terms of continuous piecewise-linear functions will be used to distinguish the geodynamic offset vector of the geoelectric section. A system of equations for defining the geodynamic offset vector through the approximation vector by continuous piecewise-linear functions on a recorded geoelectric signal error is considered.
MA039	**Modelling of the human's leg as a switched linear system** **Artur Babiarz**, Adam Czornik, Michał Niezabitowski, Radosław Zawiski **Silesian University of Technology- Poland** **Abstract.** This article describes the alternative mathematical modelling of a human's leg by means of switched system approach. The leg is considered three joints connected by a rotational link. The novelty of each of the links being represented as a rectangular prism changing shape during motion introduces new possibilities of model application. Each of the links is represented as a rectangular prism which's shape depends on the three state coordinates - the angular displacements q_1, q_2 and q_3. A design process is then made on the basis of switched system theory. In several steps we show the transition from the general equation of the three-link leg dynamics to the switched linear system where the switching rule depends on the state vector. A switching method is presented in schematics.

Session VI- Robotics and Automation

Venue: Riqqa Boardroom

Time: 16:30-18:30

Session Chair:

Prof. Olaru Adrian

University Politehnica of Bucharest, Romania

MA007	**Robust Vehicle Suspension System by Converting Active & Passive Control of a Vehicle to Semi-Active Control System Analytically** **Hassan Elahi,** Asif Israr, M. Zubair Khan **Institute of Space Technology- Pakistan** **Abstract.** In this research work a simplified translational model of an automotive suspension system is constructed by only considering the translation motion of one wheel of a car. Passive Vehicle Suspension System is converted into Semi Active Vehicle System. Major advantage achieved by this system is that it adjusts the damping of the suspension system without the application of any actuator by using MATLAB® simulations. The semi-active control is found to control the vibration of suspension system very well.
MA0019	**Application-Independent Localization Based On 3d Simulation Technology**

	Bjoern Sondermann, **Markus Emde** and Juergen Rossmann **RWTH Aachen University - Institute for Man-Machine Interaction- Germany** **Abstract.** Mobile robots are recognized as being essential for the examination of hazardous and dangerous places like disaster areas, underground mining and extraterrestrial environments. In this paper we introduce an application-independent approach for self-localization of mobile robots. The idea was implemented and optimized for forestry environments. A generalization of the concept led to a highly modular framework that is adaptable to a multitude of new domains. The framework is based on 3d-simulation technology and benefits from latest developments in this domain, like hybrid testbeds. This testbed approach allows for the integration of real and simulated sensors in virtual and real testbeds for a smooth transition between simulation and real world tests. Introducing virtual sensors, algorithmic results can be treated as ordinary sensor information and are therefore seamlessly addressed by the sensor framework.
MA030	**Human-Robot Collaboration: Twofold strategy algorithm to avoid collisions using ToF sensor** **Rafiq Ahmad** and Peter Plapper **University of Luxembourg, Luxembourg** Abstract. The importance of Human Robot Interaction to complement human skills in a manufacturing environment with industrial robots increases the concerns over safety of human and the robot. It is necessary to identify collision risks and avoid them otherwise production stops may cost a huge amount to the industry. A robot working at manufacturing facility should be able to predict potential collisions and must be able to prevent i.e. react automatically for safe detour around obstacle/human. Currently, industrial robots are able to detect collisions after a real contact but the existing proposals for avoiding collisions are either computationally expensive or not very well adapted to human safety. The objective of this paper is to provide intelligence to the industrial robot to predict collision risks and react automatically without stopping the production in a static environment. The proposed approach using Time of Flight (TOF) camera, provides decision regarding trajectory correction and improvement by shifting robot to a secure position. The application presented in this paper is for safe KUKA robot trajectory generation in peg-in-hole assembly process in the laboratory context.
MA031	**On the Impact Force Reduction of a VGT-Robot-Structure with a Variable Compliant and Damped Hydropneumatic Actuator** **Sven Rost,** Julian Weber, Frank Schreiber, Walter Schumacher **Technical University Donetsk –Ukraine** **Abstract.** This paper presents a danger analysis for a new octahedron-shaped variable-geometry-truss robot structure under collision with a human head. To lower the danger of collision, design modifications featuring a decoupling of the robot's moved mass with variable passive compliance and damping will be introduced and a possible implementation in the robots drives is shown. The paper closes in presenting the impact force reduction potential of the resulting hydropneumatic actuator.
MA033	**Mode Changes of a Planar 3 DOF Redundantly Actuated Parallel Robot** **Takashi Harada**

	Kinki University- Japan **Abstract.** A novel redundantly actuated planar parallel robot which enlarges the workspace by mode changes is proposed. Redundantly actuation and asymmetric design enables singularity avoided mode changes with loss redundancy but maintain non-singularity. In the assembly mode change, where the parallel robot transfers its configurations between two solutions of the direct kinematics, path planning which avoids singularity is proposed. In the working mode change, where the parallel robot transfers its configurations between two solutions of the inverse kinematics, the asymmetrical design contributes to singularity-free mode change. The singularities avoided mode changes were performed by newly developed prototype.
MA0015	**Evaluation of Online-Guiding Software Platforms for Sensor Integration with Industrial Robot Controller over Ethernet Network** **Mustafa Waad Abdullah,** Hubert Roth, Michael Weyrich, Juergen Wahrburg and Aparna Satheeshkumar Lakshm **University of Siegen, Germany** **Abstract.** Sensors integration with exiting industrial robots control system is a challenge for researchers to develop online guiding algorithms for new applications where intelligent robot control is required. Different software platforms for sensors integration with industrial robot controller over Ethernet network have been created and studied in this research. The aim of this work is to provide alternative solution for sensor integration with the industrial robots controllers that have limited interface options in order to extend their performance and the applications where they can be used. By doing so, online motion control based on external sensors data for collision avoidance or online trajectory generator will be possible even with low cost industrial robots. Several tests were conducted on the communication between the platforms and the controller with the focus on data transmission time over different scenarios.
MA026	**Ant-Air self-learning algorithm for path planning in a cluttered environment** **Rafiq Ahmad** and Peter Plapper **University of Luxembourg- Luxembourg** **Abstract.** Path planning in unstructured area while dealing with narrow spaces is an area of research which is receiving extensive interest. Many existing algorithms are able to produce safe paths but the presented concepts are either not adapted to narrow spaces or they are unable to learn from the past experience to improve repeated movements from the same agent or followed trajectories by other agents. This paper introduces an original concept based on Ant-Air phenomenon for safe path planning in a cluttered environment where narrow passages are treated. The algorithm presented is able to learn from the past experience and hence improve the already generated trajectory further by using some lessons learned from the past experience. The concept is applicable in various domains such as mobile robot path planning, manipulator trajectory generation and part movement in narrow passages in real or virtual assembly/disassembly process.
MA037	**Lyapunov Function Based Neural Networks for Adaptive Tracking of Robotic Arm** Muhammad Saleheen Aftab and **Muhammad Shafiq** **Sultan Qaboos University-Oman** **Abstract.** In this paper, we aim to present an adaptive position controller for multiple degree of freedom robotic manipulators. A decentralized approach is presented that

	utilizes Lyapunov function based artificial neural networks as inverse controllers of the robot's nonlinear coupled dynamics. The proposed scheme is successfully implemented on the real time control of the TQ MA3000 robotic manipulator. Promising experimental results show the effectiveness of the proposed algorithm in the sense of fast convergence of adaptive tracking error and stability of the closed loop.

19:00-20:30	***Dinner Banquet (Flora Grand restaurant)***

Schedule for Dec. 10

One Day Tour Schedule:

9.30 am pick up from the hotel and after the city tour will drop to the hotel back at 1.30 pm again will pick up at 7.30pm for Dhow Cruise Dinner and will drop at 11.30pm

(details will be updated soon..)

Flora Grand Hotel

http://www.florahospitality.com/dubai/deira/dubai-flora-grand-hotel.aspx

P.O. Box: 120328, Near Al Rigga Metro Station, Deira, Dubai, U.A.E.
Tel: + 971 4 2943660, Mobile: + 971 50 2562275
Fax: + 971 4 2943150
("Noushad Abdulrahim" e-mail: noushad.abdulrahim@florahospitality.com)



Flora Grand Hotel Dubai is a four star deluxe hotel conveniently located in the heart of Dubai's thriving commercial and leisure district, just 10 minutes from Dubai International Airport and on the famous Al Rigga Street - the most exciting part of town all year round.
The hotel offers 200 rooms to choose from, including Superior, Executive, Deluxe, Connecting Rooms and Suites for uncompromising indulgence.
Indulge your mind and body at the Health and Leisure facilities at the Flora Grand Hotel Dubai. The facilities includes Gym and Health Club, Serenity Spa, Outdoor Swimming Pool and Gym.
The Monsoon is the hotels all day dining restaurant serving a wide range of international cuisine. You can also enjoy a delightful selection of cookies, fresh pastries, juices and coffee at Al Nakheel coffee shop.
Our privileged location in Deira Dubai combined with the highest levels of hospitality and comfort makes the Flora Grand Hotel your best choice in Dubai.

www.ickem.org

Welcome to ICKEM 2015

Ms. Yoyo Yang
E-mail:ickem@iacsit.org

2015 5th International Conference on Key Engineering Materials (ICKEM 2015) will be held during March 21-23, 2015 in Singapore together as the workshop of ICRMM 2015. The aim of ICKEM 2015 is to provide a platform for researchers, engineers, academicians as well as industrial professionals from all over the world to present their research results and development activities in Key Engineering Materials. This conference provides opportunities for the delegates to exchange new ideas and application experiences face to face, to establish business or research relations and to find global partners for future collaboration.

All accepted papers of ICKEM 2015 will be published by Advanced Materials Research **Journal, which will be indexed by EI Compendex.**

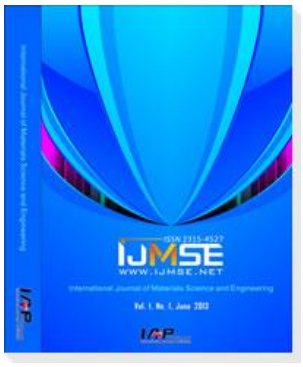
And some excellent papers will be select to be published in International Journal of Materials Science and Engineering （IJMSE） free of charge.

Paper Submission (Full Paper) January 10, 2015

Notification of Acceptance January 30, 2015

Registration Deadline February 15, 2015

Conference Date March 21-23, 2015



Submission Methods

I. Electronic Submission System; (.pdf)

II. ickem@iacsit.org (.doc and .pdf)

www.icdip.org

Welcome to ICDIP 2015

Ms. Yoyo Yang
E-mail: icdip@iacsit.org

ICDIP is the main annual research conference aimed at presenting current research being carried out. The ICDIP 2009-2014 were held in Bangkok, Singapore, Chengdu, Kuala Lumpur, Beijing and Athens, Greece respectively, and the currently ICDIP 2015 will be held in Los Angeles, USA during April 9-10,2015. The idea of the conference is for the scientists, scholars, engineers and students from the Universities all around the world and the industry to present ongoing research activities, and hence to foster research relations between the Universities and the industry.

ICDIP 2015 is sponsored by International Association of Computer Science and Information Technology, and technical assisted by many other universities and institutes.ICDIP 2015 conference papers will be published by SPIE, which will be included in SPIE Digital Library and provided to the Web of Science Conference Proceedings Citation Index-Science, Scopus, Ei Compendex, Inspec, Google Scholar, Microsoft Academic Search, and others, to ensure maximum awareness of the Proceedings.

Submission Deadline-- January 20, 2015

Notification Day—February 10, 2015

Registration Deadline—February 25, 2015

Conference Date-April 9-10, 2015

I. Electronic Submission System; (.pdf)
II.icdip@iacsit.org (.doc and .pdf)

http://www.icvr.org/

Welcome to ICVR 2015

2015 International Conference on Virtual Reality will be held in Los Angeles, USA during April 9-10, 2015. The aim of ICVR 2015 is to provide a platform for researchers, engineers, academics as well as industry professionals from all over the world to present their research results and development activities in the area of Virtual Reality. This conference provides opportunities for delegates to exchange new ideas and research findings in a face to face environment, to establish business or research relationships and to find global partners for future collaboration.
Submitted conference papers will be peer reviewed by the program and technical committees of the Conference.

Accepted papers will be published in **International Journal of Computer Theory and Engineering (IJCTE,ISSN: 1793-8201,DOI: 10.7763/IJCTE)**
Abstracting/Indexing: Electronic Journals Library, EBSCO, Engineering & Technology Digital Library, Google Scholar, INSPEC, Ulrich's Periodicals Directory, Crossref, ProQuest, WorldCat, and EI (INSPEC, IET)

Important Dates

Paper Submission (Full Paper)	January,15, 2015
Notification Day	February,10,2015
Registration Deadline	February,25,2015
Conference Date	April 9-10, 2015

Submission Methods

I. Electronic Submission System; (.pdf)
II. icvr@iacsit.org (.doc and .pdf)

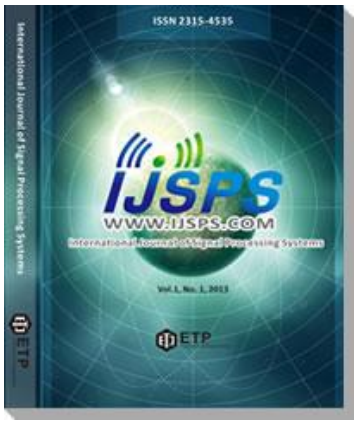
Contact Us

Ms. Yolanda Dong

Email: icvr@iacsit.org

http://www.icrsa.org/

Welcome to ICRSA 2015



2015 International Conference on Remote Sensing and Applications will be held in Los Angeles, USA during April 9-10, 2015. The aim of ICRSA 2015 is to provide a platform for researchers, engineers, academics as well as industry professionals from all over the world to present their research results and development activities in the area of Remote Sensing and Applications. This conference provides opportunities for delegates to exchange new ideas and research findings in a face to face environment, to establish business or research relationships and to find global partners for future collaboration.

Submitted conference papers will be peer reviewed by the program and technical committees of the Conference.

Accepted papers will be published in **International Journal of Signal Processing Systems** (IJSPS, ISSN: 2315-4535, DOI: 10.12720/ijsps)

Abstracting/Indexing: Ulrich's Periodicals Directory, Google Scholar, EBSCO, Engineering & Technology Digital Library, etc.

Important Dates

Paper Submission (Full Paper)	January,25, 2015
Notification Day	February,15,2015
Registration Deadline	March,25,2015
Conference Date	April 9-10, 2015

Submission Methods

I. Electronic Submission System; (.pdf)
II. icrsa@iacsit.org (.doc and ,pdf)

Contact Us

Ms. Yashin Tu

E-mail: icrsa@iacsit.org

www.icccm.org

Welcome to ICCCM 2015

2015 5th International Conference on Computer Communication and Management (ICCCM 2015) will be held during May 18-19, 2015 in Rome, Italy together with the workshops ICSEM 2015 and ICIII 2015. The aim of ICCCM 2015 is to provide a platform for researchers, engineers, academicians as well as industrial professionals from all over the world to present their research results and development activities in Computer Communication and Management. This conference provides opportunities for the delegates to exchange new ideas and application experiences face to face, to establish business or research relations and to find global partners for future collaboration.

Important Dates

Paper Submission (Full Paper)	February, 5, 2015
Notification Day	February,30,2015
Registration Deadline	March,15,2015
Conference Date	May 18-19, 2015

Publication

Conference papers can be selected and published into International Journal of Computer and Communication Engineering (IJCCE) or Journal of Advanced Management Science(JOAMS) excellent papers will be select to be published in International Journal of e-Education, e-Business, e-Management and e-Learning(IJEEEE)

E-mail: icccm@iacsit.or

Note