2013 10th International Conference on Electrical Engineering, Computing Science and Automatic Control

(CCE 2013)

Mexico City, Mexico
30 September – 4 October 2013
## Program

<table>
<thead>
<tr>
<th>No.</th>
<th>Schedule</th>
<th>Automatic Control (AC)</th>
</tr>
</thead>
</table>
| 1   | 9:00-10:00     | **Session AC1: Robotics**  
Wednesday October 2, 2013  
Session Chair: Dr. Alejandro Malo Tamayo |
| 1.1 | 9:00-9:20      | Lagrangian modelling, simulation and control of a spherical robot  
*Jakob Culebro Reyes, Jorge Luis Aguirre Serralde and Stalin Muñoz Gutiérrez* |
| 1.2 | 9:20-9:40      | Modeling and Robust Attitude Control of a Quadrotor System  
*Angelica Torres Gaitan and Yolanda Bolea Monte* |
| 1.3 | 9:40-10:00     | Electromechanical design: Reactive planning and control with a mobile robot  
*Josue Hernandez Treviño and Jorge Torres Muñoz* |
| 2   | 11:30-12:30    | **Session AC2 : Sliding Modes**  
Wednesday October 2, 2013  
Session Chair: Dr. Wen Yu |
| 2.1 | 11:30-11:50    | Sliding surface design via linear matrix inequalities and Finsler's Lemma  
*Alan Tapia, Miguel Bernal and Adolfo Soto-Cota* |
| 2.2 | 11:50-12:10    | Integral High Order Sliding Mode Control of Single-Phase Induction Motor  
*Guillermo Rubio, Juan Diego Sánchez-Torres, Alexander Loukianov and José Manuel Cañedo* |
| 2.3 | 12:10-12:30    | Backstepping Control with Sliding Mode Estimation for a Hexacopter  
*Carlos A. Arellano-Muro, Luis F. Luque-Vega, Bernardino Castillo-Toledo and Alexander G. Loukianov* |
| 3   | 9:00-10:00     | **Session AC3: Optimal Control and Filtering**  
Thursday October 3, 2013 |
|     |                |                        |
Session Chair: Dr. Fernando Castaños Luna

3.1 9:00-9:20  A posteriori error estimates of variational discretization mixed finite element methods for integro-differential optimal control problem
Zuliang Lu

3.2 9:20-9:40  Optimal Tracking for a Class of Nonlinear Systems based on the State-Dependent Riccati Equation
Fernando Ornelas-Tellez, J Jesus Rico-Melgoza and Edgar N. Sanchez

3.3 9:40-10:00  Iterative Algorithms for Unbiased FIR State Estimation in Discrete Time
Yuriy Shmaliy and Dan Simon

Session AC4: Intelligent Control
Thursday October 3, 2013
11:30-12:30
Session Chair: Dr. Alejandro Malo Tamayo

4.1 11:30-11:50  Takagi-Sugeno Fuzzy Dynamic Regulator for a Pendulum on a Cart System
Wilfredo De La Torre, Francisco Jurado, Miguel Angel Llama and Ramon Garcia Hernandez

4.2 11:50-12:10  Neural Control for NOx Emissions in a Fluidized Bed Sludge Combustor
Rocío Carrasco Navarro, Edgar Nelson Sánchez Camperos, Catherine Cadet and Salvador Carlos Hernández

4.3 12:10-12:30  Sensor selection for event-detectability in Interpreted Petri Nets using an Ant Colony Optimization Algorithm
Luis Aguirre-Salas and Alejandra Santoyo-Sanchez

Session AC5: Estimation and Identification
Thursday October 3, 2013
15:00-16:00
Session Chair: Dr. Ieroham Solomon Barouch

5.1 15:00-15:20  Identification of frequencies of vibration in buildings with wave travel times
Jesús Morales-Valdez and Luis Alvarez-Icaza
Fault Isolation based in Structural Analysis and EWMA of the set DFIG/Back-to-Back Converter of a Wind Energy Conversion System  
Jesús Mina and Román Pérez

Observer Based Controller for Internal Combustion Engine  
Marco Meza, Juan Diego Sanchez, Alexander Loukianov, Antonio Navarrete and Jorge Rivera

Session AC6: Fractional Systems and Nonlinear Oscillations - Passivity-Based Control  
Thursday October 3, 2013  
17:30-18:50  
Session Chair: Dr. Fernando Castaños Luna

Estimate of the region of attraction of a Kapitza pendulum subject to an harmonic excitation and analysis of the pendulum behavior for a non harmonic excitation  
Josue Javier Tellez Luna and Joaquin Collado

Synchronization of Complex Networks of Fractional Order Nonlinear Systems  
Rafael Martinez, Armando Lugo, Jorge A Leon and Guillermo Fernandez

Jorge A Leon, Rafael Martinez and Guillermo Fernandez

Passivity based control of a turbocharger-diesel engine system with exhaust gas recirculation  
José Luis Mendoza-Soto and Luis Alvarez-Icaza

Biomedical engineering (BIO)

Session BIO1: Biomedical Image Processing  
Wednesday October 2, 2013  
9:00-10:00  
Session Chair: Dr. Lorenzo Leija Salas
7.1 9:00-9:20  Quantitative Evaluation Method of Image Segmentation Techniques for Magnetic Resonance guided High Intensity Focused Ultrasound Therapy
Viviana Rincón Montes, Arturo Vargas Olivares, Samuel Pichardo, Laura Curiel and Jesús Enrique Chong Quero

7.2 9:20-9:40  Rethinking MRI Random signals modeling
Jean Marie Vianney Kinani, Alberto Jorge Rosales-Silva, Francisco Javie Gallegos-Funes and Alfonso Arellano

7.3 9:40-10:00  Use of a Variable Thresholding-Based Image Segmentation Technique for Magnetic Resonance guided High Intensity Focused Ultrasound Therapy: an in vivo validation
Arturo Vargas Olivares, Viviana Rincón Montes, Samuel Pichardo, Laura Curiel, Francisco Javier Ortiz Cerecedo and Jesús Enrique Chong Quero

8  Session BIO2: Biomedical Signal Processing
Wednesday October 2, 2013
11:30-12:30
Session Chair: Dr. Roberto Muñoz Guerrero

8.1 11:30-11:50  Approximate Jitter Probability in the Breakpoints of Genome Copy Number Variations
Jorge Muñoz-Minjares and Yuriy Shmaliy

8.2 11:50-12:10  Detection of Absence Epileptic Seizure Using Support Vector Machine
Cesar Fabian Reyes Manzano, Tania Jetzabel Contreras Uribe, Blanca Tovar-Corona, Martin A. Silva and Laura Ivoone Garay Jiménez

8.3 12:10-12:30  Analysis and classification of electroencephalographic signals (EEG) to identify arm movements
Alejandro Pedro Márquez Lázaro and Roberto Muñoz

9  Session BIO3: RF Biomedical Applications
Wednesday October 2, 2013
15:00-16:00
Session Chair: Dr. Juan Manuel Gutiérrez Salgado

9.1 15:00-15:20  3D Model and Simulation of Electroporation Application on Healthy and Tumoral Breast Tissue
Adriana Leticia Vera Tizatl, Laura Ivoone Garay Jiménez, Sergio Rodríguez Cuevas, Arturo Vera Hernández and Pablo Rogelio Hernández Rodriguez
10th International Conference on Electrical Engineering, Computing Science and Automatic Control (CCE 2013)

10 Session BIO4: Biological and Biomedical Instrumentation
Wednesday October 2, 2013
17:30-18:30
Session Chair: Dr. Carlos Alvarado Serrano

10.1 17:30-17:50 First advances on the development of a hydroponic system for cherry tomato culture
Luis Antonio Velázquez Ramírez, Martín Hernández, Moises León Ponce, Rocio Berenice Dominguez and Juan Manuel Gutiérrez Salgado

10.2 17:50-18:10 3D Cartesian System for the Characterization of Electromagnetic and Ultrasonic Applicators: Validation and Performance Testing
Omar Martinez, Lorenzo Leija Salas and Arturo Vera Hernández

10.3 18:10-18:30 A Diagnosis Methodology For Assistive Technology Development
Eduardo Vazquez-Santacruz and Mariano Gamboa-Zúñiga

Communications Systems

11 Session COM1:
Friday October 4, 2013
9:00-10:00
Session Chair: Dr. Hildeberto Jardón Aguilar

11.1 9:00-9:20 Planarized Flag-Type Directive UWB Antenna
Marco A. Peyrot-Solis, J. Alfredo Tirado-Mendez, Ruben Flores-Leal and Hildeberto Jardón-Aguilar

11.2 9:20-9:40 Omnidirectional UWB antenna for monitoring applications at UHF and microwave bands
Marco A. Peyrot-Solis, Ruben Flores-Leal, J. Alfredo Tirado-Mendez and Hildeberto Jardón-Aguilar
11.3 9:40-10:00 Size reduction of volcano monopole antenna for Personal Communication Applications
Berencie Borja-Benitez, Edson Garduño-Nolasco, Jorge Sosa-Pedroza and Luis Mauel Rodriguez-Mendez

12 Session COM2:
Friday October 4, 2013
12:30-13:30
Session Chair: Dr. Mauricio Lara Barrón

12.1 12:30-12:50 A New Class of Discrete Orthogonal Polynomials for Blind Fitting of Finite Data
Hamurabi Gamboa-Rosales, Luis Morales-Mendoza and Yuriy Shmaliy

12.2 12:50-13:10 A forward-backward UFIR algorithm for denoising of piecewise-smooth signals
Roberto Olivera-Reyna, Osbaldo Vite-Chávez, Luis Morales-Mendoza and Yuriy Shmaliy

Computer science and computer engineering (COMP)

13 Session COMP1: Processing and Programming Languages
Wednesday October 2, 2013
9:00-10:00
Session Chair: Dr. Jorge Buenabad Chávez

13.1 9:00-9:20 Greedily Using GPU Capacity for Data List Processing in Multicore-GPU Platforms
Carlos Alberto Martínez-Angeles, Jorge Buenabad-Chavez, Miguel Castro and Jose Luis Quiroz-Fabian

Bo Han, Yinliang Zhao, Changpeng Zhu and Qinghua Zeng

13.3 9:40-10:00 Robustness analysis of a MOEA-based elicitation method for outranking model parameters
Edgar Covantes, Eduardo Fernandez and Jorge Navarro

14 Session COMP2: Numerics and Security
10th International Conference on Electrical Engineering, Computing Science and Automatic Control (CCE 2013)

Wednesday October 2, 2013
11:30-12:30
Session Chair: Dr. Jorge Buenabad Chávez

14.1 11:30-11:50 An Assessment of Ten-Fold and Monte Carlo Cross Validations for Time Series Forecasting
Rigoberto Fonseca Delgado and Pilar Gómez Gil

14.2 11:50-12:10 A Cryptographic Scheme for Secure Cloud Computing
Edgar Alejandro Llamas Mejia and Raúl Ernesto González

14.3 12:10-12:30 Sender verification system for official documents based on watermarking technique
Rodrigo García-Soto, Samuel Hernández-Anaya, Mariko Nakano, Luis Rosales-Roldan and Hector Perez-Meana

15 Session COMP3: Image Processing
Wednesday October 2, 2013
15:00-16:00
Session Chair: Dra. Ofelia Begovich

15.1 15:00-15:20 An Efficient Color Descriptor Based on Global and Local Color Features for Image Retrieval
Atoany Fierro-Radilla, Mariko Nakano-Miyatake, Manuel Cedillo-Hernandez, Francisco Garcia-Ugalde and Hector Perez-Meana

15.2 15:20-15:40 Recognition of Human Walking/Running Actions Based on Neural Network
Eladio Alvarez Valle and Oleg Starostenko

15.3 15:40-16:00 A Feature Selection Methodology for Breast Ultrasound Classification
Cristhian Muñoz-Meza and Wilfrido Gómez Flores

16 Session COMP4: Applications I-ICT1
Wednesday October 2, 2013
17:30-18:50
Session Chair: Dr. Luis Gerardo de la Fraga

16.1 17:30-17:50 Combined Fuzzy-Petri Nets Hybrid Model for Power System Performability Analysis
Mariana Dumitrescu
16.2  17:50-18:10  Numerical Study of Least Mean Square Method for Adjusting Curves  
José-Antonio Medina-Hernández, Felipe Gómez-Castañeda and José-Antonio Moreno-Cadenas

16.3  18:10-18:30  A Hybrid algorithm applied to facility location for forest fire fighting considering budget constraints  
Minerva Aidee Diaz Romero, Juan Antonio Diaz García and Vicente Alarcón Aquino

16.4  18:30-18:50  Modeling of a Greenhouse using Particle Swarm Optimization  
Edgar Cruz, Ofelia Begovich and Jose Javier Ruiz

17  Session COMP5: Applications II  
Thursday October 3, 2013  
9:00-10:00  
Session Chair: Dr. Amilcar Meneses Viveros

17.1  9:00-9:20  Periodic Steady State Determination of Power Systems Using Graphics Processing Units  
Ernesto Magaña-Lemus, Víctor Hugo Montesinos-González, Antonio Ramos-Paz and Aurelio Medina-Rios

17.2  9:20-9:40  Optimal Reconfiguration of Radial Distribution Networks for Reducing Voltage Sags  
Rafael Tapia-Juárez, Elisa Espinosa-Juárez and Mario Graff

17.3  9:40-10:00  Wearable Items Suggestion System using Case Based Reasoning  
Muhammad Aslam, Waqar Mirza Muhammad and Ana Maria Martinez Enriquez

18  Session COMP6: Interaction I  
Thursday October 3, 2013  
11:30-12:30  
Session Chair: Dra. Ana María Martínez

18.1  11:30-11:50  Virtual Prototyping of a Sensor-Driven Plant Using Model-Based Design  
Viridiana Díaz-Castañeda, Rafael Aguilar-Mejía, Raymundo Ramírez-Mata and David Antonio-Torres

18.2  11:50-12:10  User Interface Features For Tiled Display Environments  
Laura Patricia Ramírez Rivera, Amilcar Meneses Viveros and Sergio Chapa Vergara
18.3 12:10-12:30 Voice recognition framework for open rich client mobile applications
Irene Torres, Amilcar Meneses, Erika Hernandez and Blanca Carvajal

19 Session COMP7: Interaction II
Thursday October 3, 2013
15:00-16:00
Session Chair: Dr. Debrup Chakraborty

19.1 15:00-15:20 A Human-Machine interface with Unmanned Aerial Vehicles
Daniel Soto-Guerrero and Gabriel Ramírez-Torres

19.2 15:20-15:40 A Comparative Study of Color Spaces in Skin-Based Face Segmentation
Javier Montenegro, Wilfrido Gómez Flores and P. Sánchez Orellana

19.3 15:40-16:00 Estimation of Human Arm Movement with Inertial Sensors in Smartphone
Carlos Román Parga Villalpando, Xiaou Li Zhang and Wen Yu Liu

20 Session COMP8: Interaction III
Thursday October 3, 2013
17:30-18:50
Session Chair: Dr. Amilcar Meneses Viveros

20.1 17:30-17:50 Recognizing collaborators using a flexible approach based on face and voice biometrics
Jesús Salvador Martínez-Delgado, Sonia Mendoza and Kimberly García

20.2 17:50-18:10 Finding scars in the cerebral cortex through the analysis of intensities in T2/MRI sequences
Ivonne M. Avila-Mora, Sonia Mendoza, Kimberly García, Rosa Delia Delgado-Hernández, Oscar René Marrufo-Meléndez and Daniel San Juan-Orta

20.3 18:10-18:30 XARE: A Framework for Developing Context-Aware Applications for Co-located Collaborative Work
Michael Romero, Sonia Mendoza and Gabriela Sánchez

Mechatronics (MEC)

21 Session MEC1: Robotics
Thursday October 3, 2013
9:00-10:00
Session Chairs: Dr. Eduardo Aranda Bricaire, M. Sc. Jaime González Sierra

21.1 9:00-9:20 Data Fusion of an Attitude Estimator for Global Localization of a Robot
Bernardino Benito Salmeron Quiroz, Gerardo Villegas-Medina, Fermi Guerrero Castellanos, Rodolfo Villalobos Martinez and Maribel Angelica Mendoza Nuñez

21.2 9:20-9:40 Control of a Hip Rehabilitation Robot using a Virtual Prototype
Cesar Humberto Guzmán Valdivia, Andrés Blanco Ortega, Marco Antonio Oliver Salazar, José Luis Carrera Escobedo and Manuel Alejandro Lugo Villeda

21.3 9:40-10:00 Mechanical finger based on three coupled four bar mechanism
Alejandro Prudencio Razo and Eduardo Morales Sanchez

22 Session MEC2: Path Planning - Power Electronics
Thursday October 3, 2013
11:30-12:30

22.1 11:30-11:50 Time-varying Containment Problem for Multi-agent Systems
Jesús Santiaguillo-Salinas and Eduardo Aranda-Bricaire

22.2 11:50-12:10 Design of a Virtual Mechanism for Trajectory Tracking of Convoys of Mobile Robots
Jaime González-Sierra and Eduardo Aranda-Bricaire

22.3 12:10-12:30 Speed and Current Control of a Permanent-Magnet DC Servo Motor Using a Real-Time Microcontroller
Julio Noel Hernández-Pérez, Jesús Ebert Giral-Salas, Roberto Morales-Caporal, Rafael Ordoñez-Flores and Miguel Ángel Morales-Flores

Nanotechnology (NANO)

23 Session NANO1: Nanotechnology
Friday October 4, 2013
9:00-10:00
Session Chair: Dr. Ramón Peña Sierra
23.1  9:00-9:20  Methodology for Thermal Diffusivity Determination of Metallic Films at Room Temperature
Jesus Manuel Lugo Quintal, Jose Emilio Corona and Andres Ivan Oliva Arias

23.2  9:20-9:40  Silicon Nitride anti-reflective coating for intermediate band InAs/GaAs PV devices
Edson Garduño-Nolasco and Mohamed Missous

23.3  9:40-10:00  Synthesis and characterization of In$_2$O$_3$ micro and nanostructures at low temperatures by the CSVT technique
Denisse Cortés Salinas, Fernando Chávez Ramírez, Gerardo Francisco Pérez Sánchez, Plácido Zaca Morán, Arturo Morales Acevedo, Ramón Peña Sierra, Oscar Goiz Amaro and Alejandro Tlalpan Huerta

24  
Session NANO2: Nanotechnology
Friday October 4, 2013
12:30-13:30
Session Chair: Dra. Ma. de la Luz Olvera Amador

24.1  12:30-12:50  Synthesis and Characterization of Nanostructured TiO$_2$ Anatase-phase Powders obtained by the Homogeneous Precipitation Method
Jacob Morales Bautista, María De La Luz Olvera Amador and Arturo Maldonado Alvarez

24.2  12:50-13:10  Morphological and Structural properties of ZnO Powders
María Del Rosario Herrera Rivera, Arturo Maldonado Alvarez and María De La Luz Olvera Amador

24.3  13:10-13:30  ZnO nanowires synthesized by CSS and their application as a hydrogen gas sensor
Alejandro Tlalpan Huerta, Gerardo Francisco Pérez Sánchez, Fernando Chávez Ramírez, Plácido Zaca Morán, Arturo Morales Acevedo, Ramón Peña Sierra, Oscar Goiz Amaro and Denisse Cortés Salinas

Solid-state materials, Electron Devices and Integrated Circuits (SSM)

25  
Session SSM1:
Thursday October 3, 2013
9:00-10:00
Session Chair: Dr. Ezequiel Molinar Solís

25.1  9:00-9:20  Manufacturing of Tin Oxide Pellets and their application for CO and C₃H₈ Gas Sensors  
Venkata Krishna Karthik Tangirala, Dra. Maria De La Luz Olvera Amador and Arturo Maldonado Alvarez

25.2  9:20-9:40  Electrical and Optical properties of In-doped ZnO thin films via Ultrasonic Spray Pyrolysis  
Rajesh Roshan Biswal, Arturo Maldonado and Maria De La Luz Olvera

25.3  9:40-10:00  Optical and structural characterization of antimony doped zinc oxide single crystal  
Gabriel Juarez Diaz, Javier Martinez Juarez, Ramón Peña Sierra, Jorge Indalecio Contreras Rascon and Joel Diaz Reyes

26  Session SSM2:  
Thursday October 3, 2013  
11:30-12:30  
Session Chair: Dra. Ma. de la Luz Olvera Amador

26.1  11:30-11:50  Effect of Changing the Material and Device’s Properties on the Performance of Polysilicon-Based Micro-Actuators  
Carlos Ramón Báez Álvarez, Mónico Linares Aranda, Wilfrido Calleja Arriaga and Joel Molina Reyes

26.2  11:50-12:10  MEMS capacitive sensor using FGMOS  
G. Stephany Abarca J., M. Alfredo Reyes B. and Salvador Mendoza A.

26.3  12:10-12:30  Floating Gate MOSFET programming circuit for standard CMOS technology  
Omar Hernández-Garnica, Felipe Gómez-Castañeda, Jose Antonio Moreno-Cadenas and Luis Martin Flores-Nava

27  Session SSM3:  
Thursday October 3, 2013  
15:00-16:00  
Session Chair: Dr. Gabriel Romero Paredes Rubio

27.1  15:00-15:20  Influence of Recombination on an Energy and Heat Balance Equations for a Bipolar Semiconductor  
Igor Lashkevych and Yuri G. Gurevich
27.2 15:20-15:40  Methodology for ternary $\text{Cd}_{x}\text{Zn}_{1-x}\text{S}$ deposition by chemical bath
Joel Alfonso Rojas Huchim and Andres Ivan Oliva Arias

27.3 15:40-16:00  Symbolic Sensitivity Analysis in the Sizing of Analog Integrated Circuits
Adriana Sanabria-Borbon and Esteban Tlelo-Cuautle

28  Session SSM4:
Thursday October 3, 2013
17:30-18:30
Session Chair: Dr. Felipe Gómez Castañeda

28.1 17:30-17:50 A Simple Floating Memristor Emulator Circuit Based on Current Conveyors
Carlos Sánchez-López, Jorge Mendoza-Lopez, Miguel Angel Carrasco-Aguilar and Francisco Epimenio Morales-López

28.2 17:50-18:10 Generalized Admittance Matrix Model of Fully-Differential VCVS
Carlos Sánchez-López

28.3 18:10-18:30 Design of a Highly Linear Fully Integrated Wideband LNA in 0.13μm CMOS Technology
Faiza Zafar

29  Session SSM5:
Friday October 4, 2013
9:00-10:00
Session Chair: Dr. Alejandro Medina

29.1 9:00-9:20 On the Frequency Limitations of FGMOS Transistor-based Integrated Chaotic Oscillators
Rodolfo Trejo-Guerra and Esteban Tlelo-Cuautle

29.2 9:20-9:40 Realization of the Nullor using Two CMOS CCII+s
David Moro-Frias and Esteban Tlelo-Cuautle

29.3 9:40-10:00 FGPA Development and implementation of a solar panel emulator
Gerardo M. Tornez, Felipe Gomez, Jose A. Moreno and Luis M. Flores

30  Session SSM6:
Friday October 4, 2013
12:30-13:30
Session Chair: Dr. Felipe Gómez Castañeda

30.1 12:30-12:50  Follower Voltage Flipped with FGMOS Transistors for Low-Voltage and Low-Power Applications
Jesús de La Cruz-Alejo

30.2 12:50-13:10  Floating-Gate MOSFET Charge Programming Using Pulsed Hot-Electron Injection
José Luis Ochoa-Padilla, Felipe Gómez-Castañeda and José Antonio Moreno-Cadenas

30.3 13:10-13:30  Injection Current model fit in p-channel Floating Gate MOS transistors using the Levenberg Marquardt method
Omar Hernández-Garnica, Felipe Gómez-Castañeda, José Antonio Moreno-Cadenas and Luis Martin Flores-Nava