

2010 IEEE ANDESCON

**Bogota, Columbia
15-17 September 2010**



IEEE Catalog Number: CFP1061J-PRT
ISBN: 978-1-4244-6740-2

TABLE OF CONTENTS

Decentralized Control for FACTS (SVC and TCSC) Using POD in Power Systems.....	1
<i>D. Cerón, M. A. Ríos</i>	
PQ Analysis in Tramway Systems.....	8
<i>J. G. García, M. A. Ríos</i>	
Robust Control of Nonlinear Dynamic Systems.....	13
<i>V. Kh. Pshikhopov, M. Yu Medvedev</i>	
An Intelligent Protection System for a Transmission Network	20
<i>Daniel Muñoz, Alvaro Torres</i>	
Proposal of an Energy Management Architecture Applied into a Regenerative Braking System.....	26
<i>Adriana Cáceres Delgado, L. Solaque, Ricardo Gutiérrez, Auteliano Antunes Dos Santos Jr., Niederauer Mastelari</i>	
Reducing the Polarization Mismatch for Multipath Fading Systems.....	32
<i>Pedro Lepsch Mallet De Lima, Eduardo Rodrigues Vale, Eduardo Esteves Vale</i>	
ECG Monitoring System Based on ARM9 and Mobile Phone Technologies.....	38
<i>Efrain Bernal Alzate, Fabian Mejia Martinez</i>	
SIMTC: Current Transformer Model	44
<i>J. A. Sánchez, J. W. González</i>	
Impact Assessment of Distribution Events on Power Quality in MV Networks.....	50
<i>L. Wchima, A. Bohórquez, A. Díez</i>	
Modeling and Simulation of Ultrasonic Flow Meters: State of Art	54
<i>J. Reyes</i>	
Parameter Estimation of a Predator-Prey Model Using a Genetic Algorithm	60
<i>Jackelyne Gómez Restrepo, Carlos Mario Vélez Sánchez</i>	
Modeling the Mechanics of Ventilation.....	64
<i>Giovanni Sánchez Prieto, Lely A. Luengas Contreras</i>	
Smartphone Recognition of the U.S. Banknotes' Denomination, for Visually Impaired People.....	69
<i>Felipe Grijalva, J. C. Rodríguez, Julio Larco, Luis Orozco</i>	
Spatial and Frequency Selective Electromagnetic Shield Employing Metamaterials	75
<i>José Fabricio Zelada Rivas, Manuel Yarique Medina</i>	
Design of a Control System for the Pitch and Roll Angles of a Quadrotor.....	81
<i>Alejandra Lucía Jáuregui Uribe, Carlos Alberto Vianchada Estévez, A. Acevedo, John Faber Archila</i>	
Linear Multivariable State-Feedback Starting from the MPF Model; As Recurrent Algorithm to the Control for Canonical Forms.....	87
<i>Franklin Pineda, Alonso Chica</i>	
Coordination Mechanisms for Tracking and Surveillance in Multiagent Environments.....	92
<i>Christian G. Quintero, Francisco A. Bertel, Daniel E. Maldonado</i>	
Dead-Reckoning Inverse and Direct Kinematic Solution of a 4W Independent Driven Rover.....	98
<i>Edgar A. Martínez-García, Oscar Mar, Rafael Torres-Cordoba</i>	
Space Allocation Using Intelligent Optimization Techniques	104
<i>Rafael E. García, Christian G. Quintero</i>	
Fuzzy Logic Based Parameter Estimator for Variable Speed Wind Generators PI Pitch Control	110
<i>I. A. Isaac, D. Cabrera, H. Pizarro, D. Giraldo, J. W. González, H. Biechl</i>	
Design and Implementation of a State Observer for a Textile Machine	116
<i>Jorge Eduardo Cardona, Marisol Osorio Cárdenas</i>	
Motion Analysis of a Wheel-like Articulated Closed Chain	122
<i>Kamilo Andrés Melo, Alexandra Velasco</i>	
A Multi-dimensional Residual Functional for Obtaining the Proper Orthogonal Decomposition Coefficients in Model Reduction.....	128
<i>Richard Ríos, Jairo. J. Espinosa, Carlos E. Mejía</i>	
Analog Circuit Design Using Genetic Algorithms with Fuzzy Fitness Function	134
<i>Héctor Hostos, Federico Sanabria, Miguel Melgarejo</i>	
Learning Styles, A Correlational Study in Engineering Students	139
<i>Jose A. Lagos, Pedro N. Zapata</i>	
Model Based Flow Control Using Two Final Control Elements	148
<i>Jorge A. Londoño, Hernán Alvarez</i>	
Intelligent Erratic Driving Diagnosis Based on Artificial Neural Networks.....	154
<i>Christian G. Quintero, José A. Oñate López, Juan M. Pérez Rúa</i>	

PSS Fuzzy Controllers with New Defuzzification Strategies for a Multimachine System	160
<i>H. R. Chamorro, M. A. Ríos</i>	
Fast Estimation of Acoustic Parameters in Presence of Audience.....	166
<i>Ricardo Quintana, Diego Patiño, F. Ruiz</i>	
Electromagnetic Field Environment in a Typical Hospital	171
<i>Adolfo Escobar, Héctor Cadavid</i>	
An Approach to Stability and Controllability Analysis in Batch Processes Using Set Theory Methods.....	175
<i>César A. Gómez, Lina M. Gómez, Hernán Alvarez</i>	
Compression of Biomedical Signals on FPGA by DWT and Run-Length	181
<i>Dora María Ballesteros Larrotta, Diana Marcela Moreno Enciso, Andres Eduardo Guona Barrera</i>	
Modern Trolleybuses on Bus Rapid Transit: Key for Electrification of Public Transportation	186
<i>Andrés Emiro Diez, Armando Bohórquez, Edder Velandia, Luis Fernando Roa, Mauricio Restrepo</i>	
Analysis of the Dynamical Performance of Industrial Facilities with Local Generation.....	193
<i>Jorge Guillermo Calderón-Guizar</i>	
Weighted Controller for an Inverted Pendulum: A Replicator Dynamics Approach	199
<i>Alejandro Betancur, Eduardo Mojica-Nava, Nicanor Quijano</i>	
Computational Evaluation of an Orthogonal Basis Nonlinear System Identification Method	205
<i>J. A. Castaño, F. Ruiz</i>	
Small Scale Prototype of a DC/DC Multilevel Converter for High Voltage Applications	210
<i>J. A. Castaño, Gabriel Perilla, Rafael Diez, Diego Patiño</i>	
Simulation and Experimental Validation of a Transit Time in an Ultrasonic Gas Flow Meter Using Air	216
<i>J. Reyes</i>	
Waveform Segmentation Based on Tensor Analysis.....	222
<i>Jorge Jagua, V. Barrera, Gilberto Carrillo, Joaquim Meléndez</i>	
Curriculum Coherence Model Knowledge-Based for Electronics Engineering	229
<i>Alfonso Pérez-Gama, Guillermo Hoyos, Byron Perez-Gutiérrez</i>	
Clinical Engineering Education in Colombia: 2010 Specific Situation in the Central University and Evolution to Distance Learning in Biomedical Engineering Courses	235
<i>Pierre Samuel Hadjes, Nubia Esperanza Aguilar</i>	
A 2D-Mapping Strategy Based on Line Segment Extraction	238
<i>Claudia Patricia Ochoa Diaz, Alberto José Álvares</i>	
FPGA Implementation of Asynchronous Controllers from Generalized Multi-Burst Graph Specification	244
<i>Duarte L. Oliveira, Luiz S. Ferreira, Leonardo Romano</i>	
Optimal Control Law Design for Cyclic Switching Systems Based on the Minimum Principle and Singular Arcs. Application to a Buck Converter	250
<i>Diego Patiño</i>	
Social Responsibility of Science and Engineering	256
<i>Zósimo Arévalo Velosa, Arcelio Hernández, Carlos Cañedo</i>	
An Academic Platform to Illustrate Game-Theoretical Approaches	262
<i>Mauricio A. Parra, Nicanor Quijano</i>	
Loading Procedure to Transfer an Electrical Network Data Base from DIgSILENT PowerFactory to CAPE	268
<i>N. J. Orrego, V. H. Bedoya</i>	
Monitoring System of a Weather Station Via IP	273
<i>Daniel Gustavo Castellanos Niño, German Alonso Matamoros Vargas, Manuel Felipe Rodríguez Pérez</i>	
Observation of Linear Time-Invariant Systems with Lebesgue Sampling	279
<i>Jaime A. Moreno, Manuel J. Betancur, Martín A. Tamayo</i>	
Design Approach of a Molecular Nanotransmitter Using Quantum Dynamics: A Case Study on Ethane	285
<i>V. A. Rodriguez-Toro, J. Velasco-Medina, A. C. Mora, J. C. Arce</i>	
Hardware Architectures for Inversion in GF(2^m) Using Polynomial and Gaussian Normal Basis.....	291
<i>V. Trujillo-Olaya, J. Velasco-Medina</i>	
A Low-Cost Control System for Hydraulic Applications	296
<i>Gustavo A. Sanchez, Carlos González</i>	
Remote Monitoring System with Wireless Access to Industrial Processes	301
<i>Tatiana Del Pilar Mateus Guerra, Camilo Ernesto Pardo Beainy, Manuel Felipe Rodríguez Pérez</i>	
Contract Price of a Bilateral Contract Using Risk Assessment: With Application to Colombian Wholesale Electricity Market	306
<i>José D. Arias, Diego F. Cardona, Harold Salazar</i>	

Hardware Implementation of Grain-128, Mickey-128, Decim-128 and Trivium	311
<i>J. M. Marmolejo-Tejada, V. Trujillo-Olaya, J. Velasco-Medina</i>	
Analysis of the Voltage Event Segmentation Using Kalman Filter and Wavelet Transform	317
<i>S. Ortiz, H. Torres, V. Barrera, C. Duarte, G. Ordóñez, S. Herraiz</i>	
An Approach to Applying Project-Based Learning in Engineering Courses	323
<i>Liliana Fernandez-Samaca, Jose Miguel Ramirez</i>	
Model Predictive Control of Water Transportation Networks	329
<i>Catherin Zamora, Juan Manuel Giraldo, Sylvain Leirens</i>	
Study of Plantar Pressure Distribution in Shoe with Curved Sole: A Comparative Preliminary Pilot Study	335
<i>A. Villa, S. Quintero, M. Zequera</i>	
Active Power Filters: A Comparative Analysis of Current Control Techniques	339
<i>Guillermo A. Vargas Cáceres, Julio C. Gélvez Lizarazo, María A. Mantilla Villalobos, Johann F. Petit Suárez</i>	
Instrumentation of an Animal Manure Biodigester to Analyze Its Dynamic Behavior	345
<i>Carlos Rodolfo Bermúdez Gómez, Gabriel Ordoñez Plata, Miguel Angel Díaz Hernández, Jorge Hernando Ramón Suárez</i>	
Controlled Synchronization of Complex Networks: A Geometrical Control Approach	351
<i>G. Solís-Perales, D. Rodríguez, G. Obregón-Pulido</i>	
Success Factors for Creating a PMO Aligned with the Objectives and Organizational Strategy	357
<i>José Carrillo, Marco Abad, Armado Cabrera, Danilo Jaramillo</i>	
Modelling and Simulation of a Multi-Commodity Pipeline Network	363
<i>José F. Noguera, Sylvain Leirens</i>	
Modeling of the Mineral Particle-Size Evolution Through Stochastic Input Signals in a Balls Mill Grinding Circuit	369
<i>Juan Tisza-Contreras, Huber Nieto-Chaupis</i>	
Avionics System for a Mini-Helicopter Robot in a Rapid Software Prototyping Environment	372
<i>Carlos Mario Vélez, Mónica Hernández, Andrés Agudelo</i>	
Electric Arc Furnace Modeling for Power Quality Analysis	377
<i>Alfonso Alzate Gomez, Jesser J. Marulanda Durango, Andres Escobar Mejia</i>	
Analysis and Simulation of Radio Resource Management for Quality of Service in Universal Mobile Telecommunications System	383
<i>Avendaño Fernandez Eduardo, Hector Fernando Garzón</i>	
Towards a Methodology to Define Service Level Agreements in a Convergent Network Scenario	389
<i>Luis Guillermo Martínez Ballesteros</i>	
Full Comparison Between Analytical Results, Electrical Modeling and Measurements for the Noise Behavior of a SiGe HBT	392
<i>Anibal Pacheco-Sánchez, Mauro Enciso-Aguilar, Luis Rodriguez-Mendez</i>	
Analysis of the Electric Field of a 500 kV Transmission Line	397
<i>Jovanio S. Santos Jr., Carlos Emanuel A. Henrique, Rogério M. Da Silva, C. A. Tenório Jr.</i>	
Propagation Models in DTTV Using DVB-T Standard in Metropolitan Environments (Bogotá D.C. – Colombia)	402
<i>Luis C. Ariza, Ingrid P. Páez</i>	
Tests of Hybrid Volterra-Type Models Through NMPC Schemes at a Batch Reactor	410
<i>Carlos Medina-Ramos, Huber Nieto-Chaupis</i>	
Model-Aircraft Instrumentation System	416
<i>David Medina, Nicolás Beltrán, Yesid Barrera</i>	
Velocity and Pressure Analysis for Microchannel Networks	422
<i>Camilo Vélez, Luis F. Ariza, Johann F. Osma, Alba Avila</i>	
Power and Voltage Regulation of Green Energy Resources VSC-Based Conditioning Systems	427
<i>Juan David Vasquez Jaramillo, Juan David Hincapie Zea</i>	
Adaptive Intelligent Agents Based on Efficient Behaviour Differentiation Models	433
<i>Mario Gongora, David Irvine</i>	
DAC Topologies for GSM ΣΔ Modulators	439
<i>Carlos D. Bula, Manuel Jiménez</i>	
Reverse Logistics Process Automation with BPMS	444
<i>Castellanos A. Johanna, Aguirre M. Santiago, Fuquene R. Carlos, Parra R. Carlos</i>	
Mathematical Modelling on Hybrid Dynamical Systems: An Application to the Bouncing Ball and a Two-Tanks System	449
<i>Tatiana Manrique, Diego Patiño</i>	
Study of the Out-of-Phase Connection of Doubly Fed Induction Generators	457
<i>Sebastián Martín Nesci, Juan Carlos Gómez</i>	

Reliable and Secure Operation of Electric Power Systems Based on Standards.....	463
<i>Olga Patricia Veloza Salcedo, R. Céspedes</i>	
Programmable Current Converter Synthesis for the Evaluation of UV Radiation of Excimer Lamps.....	468
<i>David Flórez, Rafael Díez, Abdel Karim Hay, Gabriel Perilla, F. Ruiz, Hubert Piquet</i>	
Temperature, Humidity and Luminescence Monitoring System Using Wireless Sensor Networks (WSN) in Flowers Growing.....	474
<i>Carlos Andrés Lozano Garzón, Oscar Javier Rodríguez Riveros</i>	
The New Challenge: From Power to Energy Systems	478
<i>R. Céspedes, E. Parra, A. Aldana, C. Torres</i>	
Land Mobile Platform for Incursion on Semi-Structured Environments.....	483
<i>Juan C. Hernández, William Gomez, L. Solaque</i>	
Classification of Voice Aging Using ANN and Glottal Signal Parameters.....	488
<i>Leonardo Alfredo Forero Mendoza, Edson Cataldo, Marley Vellasco, Marco Aurélio Silva, Alvaro David Orjuela Cañón, Jose Manoel De Seixas</i>	
System for Measuring the Arterious Venous Rate (AVR) for the Diagnosis of Hypertensive Retinopathy.....	493
<i>Daniel Ortiz, Mauricio Cubides, Andres Suarez, M. Zequera, Julian Quiroga, Jorge A. Gómez, Nubia Arroyo</i>	
Performance Comparison Between H∞ and PID Control Strategies Applied to Boost Power Converters.....	497
<i>John Sandoval-Moreno, Edinson Franco-Mejía</i>	
Education Software Architecture: Facing Student Desertion in Colombia Higher Education with an Intelligent Knowledge Based Coaching System.....	503
<i>Alfonso Pérez-Gama, Guillermo Hoyos, Leyini Parra-Espitia, Miguel Ortegón, Luis Giovanny Rozo-Pardo, Byron Perez-Gutierrez</i>	
LMI's Control Using a System of Three Power Generators Based on Differential Algebraic Model	508
<i>Juan M. Salamanca, Oscar O. Rodriguez</i>	
Design and Implementation of an Adaptive Neuro-Fuzzy Inference System on an FPGA Used for Nonlinear Function Generation.....	514
<i>Henry José Block Saldaña, Carlos Silva Cárdenas</i>	
Using Cross-Property Relations Between Electrical Conductivity and Compressional Wave Velocity, Obtained from Well Logs, to Estimate the Porosity of the Rock	519
<i>Gloria Judith Palacio Osorio, Herman Raúl Vargas Torres, William Mauricio Agudelo Zambrano, Yaqueleine Figeredo Báez</i>	
Robust Compression Using Compressive Sensing (CS).....	527
<i>L. M. Meriño, L. E. Mendoza</i>	
Calibration of Force Sensing Resistors (FSR) for Static and Dynamic Applications.....	534
<i>J. A. Flórez, A. Velásquez</i>	
Hardware and Software Architecture of a Mobile Robot with Anthropomorphic Arm	540
<i>O. García, L. Solaque, O. Aviles, P. Niño</i>	
Automated Wear label Assessment in Carpets by Using Local Binary Pattern Statistics on Depth and Intensity Images	546
<i>Sergio A. Orjuela, Filip Rooms, Wilfried Philips, Simon De Meulemeester, Robain De Keyser</i>	
Cardiac, Respiratory and Oxymetric Telemonitoring Through a Web Application Using JSP	551
<i>César Viloria-Núñez, Maruan Abouantoun, Anuar Sosa, Hernando Baquero-Latorre</i>	
Evaluation of Scheduling Algorithms in WiMAX Networks	556
<i>Hermes Javier Eslava Blanco, Ingrid Patricia Paez Parra</i>	
PLT Passive Coupling for Distribution of TV Signals in a House	560
<i>Marlon Patiño Bernal, Henry Bastidas Mora, Gilma Inés Angel Castillo</i>	
Prospects of Voltage-Sourced Converters (VSC) Applications in Power Transmission Systems	564
<i>A. L. P. De Oliveira, C. E. Tibúrcio, M. N. Lemes, D. Retzmann</i>	
Author Index	