

2009 Electronics, Robotics and Automotive Mechanics Conference

(CERMA 2009)

**Cuernavaca, Mexico
22-25 September 2009**



IEEE Catalog Number: CFP0946A-PRT
ISBN: 978-1-4244-5341-2

2009 Electronics, Robotics and Automotive Mechanics Conference

CERMA 2009

Table of Contents

Message from General Chair
Organizing Committee
Reviewers

Communications and Computer Networks

Performance of V-BLAST Receivers Using Limited-Precision QR Decomposition	3
<i>Joaquín Cortez, Armando Garcia, Raymundo Márquez, Andrés Pizarro, and José Manuel Campoy</i>	
Aggregated Regularization of Remote Sensing Image Restoration Using Deterministic and Statistic Techniques	9
<i>Stewart René Santos Arce and José Tuxpan Vargas</i>	
Cryptographic Key Generation from Biometric Data Using Wavelets	15
<i>H. A. Garcia-Baleon and V. Alarcon-Aquino</i>	
Enhanced Remote Sensing Imaging in Uncertain Environment Fusing Adaptive Least Squares and Variational Analysis Methods	21
<i>José Tuxpan Vargas and Stewart René Santos Arce</i>	
Multipath Characterization of Micro and Macrocellular Environments for Mobile Radio Systems	27
<i>Jesús G. Aguilar, Cesar J. Fregoso, José D. Cortez García, Anabel Martinez, and Angel Gabriel Andrade</i>	
Inaudibility and Robustness Analysis for Patchwork Based Audio Watermarking Algorithms	33
<i>Carlos Genaro, Mariko Nakano, and Gonzalo Duchon</i>	

Bluetooth Performance Analysis in Wireless Personal Area Networks	38
<i>Juan Ivan Nieto Hipólito, Norma Candolfi Arballo, José Antonio Michel-Macarty, and Elitania Jiménez García</i>	
An Efficient Detector for STBC-VBLAST Space-Time Code for MIMO Wireless Communications	44
<i>Joaquin Cortez, Miguel Bazdresch, Armando Garcia, Jose M. Campoy, and Andres Pizarro</i>	
Co-channel Interference for Terrestrial and HAPS Systems in a Cellular Structure	50
<i>José Luis Cuevas-Ruiz, Alejandro Aragón-Zavala, and Beatriz Bautista-León</i>	
Proposal for an m-Health System	55
<i>Javier Pindter Medina, Javier Eduardo Gonzalez Villarruel, and Blanca Tovar Corona</i>	
Artificial Intelligence and Computer Science	
A Corporative Information System: from Legacy Systems to Executive Digital Dashboards	63
<i>Manuel Mejía-Lavalle and Gustavo Arroyo-Figueroa</i>	
A Proposal for a Semantic Intelligent Document Repository Architecture	69
<i>Alejandro Rodríguez, Ricardo Colomo, Juan Miguel Gómez, Giner Alor-Hernandez, Ruben Posada-Gomez, Ulises Juarez-Martinez, Jose Emilio Labra Gayo, and Krishnamurthy Vidyasankar</i>	
Empirical Transformation of Job Shop Scheduling Problem to the Hydraulic Networks Problem in a Water Distribution System	76
<i>Marco Antonio Cruz-Chávez, Erika Yesenia Ávila-Melgar, Fredy Juárez-Pérez, and Wiston G. Torres-Sánchez</i>	
Monotonicity Analysis for Paraphrase Detection	82
<i>Diego Uribe</i>	
Neural Networks Applied to Solve the Voltage Sag State Estimation Problem: An Approach Based on the Fault Positions Concept	88
<i>Elisa Espinosa-Juárez and Araceli Hernández</i>	
Simulated Annealing Algorithm for the Weighted Unrelated Parallel Machines Problem	94
<i>Marco Antonio Cruz-Chávez, Fredy Juárez-Pérez, Erika Yesenia Ávila-Melgar, and Alina Martínez-Oropeza</i>	
Knowledge Capitalization in the Automotive Industry Using an Ontology Based on the ISO/TS 16949 Standard	100
<i>Beatriz D. Rodríguez-Rocha, Francisco E. Castillo-Barrera, and Horacio López-Padilla</i>	
Analysis of Distributed Generation Impact on the Optimal Location of Voltage Sag Monitors by Applying Genetic Algorithms	107
<i>Elisa Espinosa-Juárez, Jorge Lucio, and Araceli Hernández</i>	

A Computational Tool Design for Evolutionary Artificial Neural Networks in Neutron Spectrometry and Dosimetry	113
<i>J.M. Ortiz-Rodriguez, M.R. Martinez-Blanco, Gallego Eduardo, and H.R. Vega-Carrillo</i>	
A New Object Path Planner for the Box Pushing Problem	119
<i>Ezra Federico Parra-González, José Gabriel Ramírez-Torres, and Gregorio Toscano-Pulido</i>	
A Security and Privacy Survey for WSN in e-Health Applications	125
<i>Maria de los Angeles Cosio León, Juan Ivan Nieto Hipólito, and Jesús Luna García</i>	
NSDann, a LabVIEW Tool for Neutron Spectrometry and Dosimetry Based on the RDANN Methodology	131
<i>Martinez-Blanco M.R., Ortiz-Rodriguez J.M., and Vega-Carrillo H.R.</i>	
OptimPlot3D: A Novel and Interactive Software Package for Analysis of Three Dimensional Surfaces	137
<i>Max A. González-Palacios, Carlos A. Bernal-Martínez, and Luz A. Aguilera-Cortés</i>	
How is CMMI-DEV Applying when Using TSPi Project Planning	143
<i>Jose A. Calvo-Manzano, Gonzalo Cuevas, Jezreel Mejia, Mirna A. Muñoz, and Tomas San Feliu</i>	
Computer Vision and Robotics	
Embedded Control System for a 5-DOF Manipulator by Means of SPI Bus	151
<i>Angel Flores-Abad and Adrian Arpidez</i>	
Experimental Comparison of Extended Kalman and Particle Filter in Mobile Robotic Localization	157
<i>Julian Mauricio Angel and Fernando de la Rosa</i>	
A Mobile Data Acquisition Platform for Photometric Stereo	163
<i>Felipe Hernández-Rodríguez and Mario Castelán</i>	
Genetic Algorithm Applied to Robotic Squad Coordination	169
<i>Gustavo Pessin, Fernando Osório, Denis F. Wolf, and Maurício A. Dias</i>	
Haptic Guidance Based on Sub-optimal Passivity Control	175
<i>Alejandro Jarillo-Silva, Omar A. Domínguez-Ramírez, Vicente Parra-Vega, and Jesus P. Ordaz-Oliver</i>	
Position and Force Control of a Parallel Robot Capaman 2 Bis Parallel Robot for Drilling Tasks	181
<i>Juan Antonio Briones, Eduardo Castillo, Giuseppe Carbone, and Marco Ceccarelli</i>	
AxeBot Robot the Mechanical Design for an Autonomous Omnidirectional Mobile Robot	187
<i>Tiago P. do Nascimento, Augusto Loureiro da Costa, and Cristiane Correa Paim</i>	
PHANToM OMNI Haptic Device: Kinematic and Manipulability	193
<i>Alejandro Jarillo Silva, Omar A. Domínguez Ramirez, Vicente Parra Vega, and Jesus P. Ordaz Oliver</i>	
Simulation of Multi-robot Architectures in Mobile Robotics	199
<i>Fernando de la Rosa and Martín E. Jiménez</i>	

A Simple Algorithm for Image Denoising Based on Non-local Means and Preliminary Segmentation	204
<i>Carlos Alberto JÚnez-Ferreira and Fernando Augusto Velasco-Avalos</i>	
Outdoor Mapping Using Mobile Robots and Laser Range Finders	209
<i>Alberto Yukinobu Hata and Denis Fernando Wolf</i>	
Object Location in Manufacturing Cells Using Artificial Vision	215
<i>M. Peña-Cabrera, H. Gómez, R. Osorio, and I. López-Juárez</i>	
Smoother FIR Hybrid Structure to Ultrasound Image Processing	220
<i>L. J. Morales-Mendoza, Y. Shmaliy, O. G. Ibarra-Manzano, S. Perez-Caceres, and E. Morales-Mendoza</i>	
A Combined Wiimote-Camera Tracking System for Small Aerial Vehicles	226
<i>Héctor Vargas, Enrique Preza, and Ramiro Velázquez</i>	
Mutual Synchronization of Nonidentical Open Kinematic Chains	232
<i>Ricardo Peón-Escalante, Daniel Arjona-Valdez, Gualberto Solís-Perales, and Guillermo Obregón-Pulido</i>	
Operational Space Control Implemented in Robot Motion Planning for Multiple Moving Objects Interception Task	238
<i>Juan Alejandro Flores Campos, Emmanuel Carlos Dean Leon, and Candido Palacios Montufar</i>	
Analysis of Dynamic Behavior of an EOD Mechatronic Unit	244
<i>Luis Adrian Zuñiga Aviles, Jesús C. Pedraza, E. Gorrostieta, and J.M. Ramos</i>	
Damage Detection in Multi-wire Cables Using Continuous Wavelet Transform Analysis of Ultrasonic Guided Waves	250
<i>Cesar Daniel Hernandez Salazar, Arturo Baltazar Herrejon, and Jorge Isidro Aranda Sanchez</i>	
Semiconductors and Circuit Design	
Dependence of Active Layer Thickness of Polymer Thin Film Transistors on Electrical Characteristics of Inverter Circuit	259
<i>L. Resendiz, V. Cabrera, M. Castillo, and R. Ramírez</i>	
An Efficient Design Approach for High-Frequency Analog Filters Using PSoCs or FPAAs	263
<i>John Jairo Cabrera López and Jaime Velasco Medina</i>	
Noise and Interference in Power Line channels	269
<i>Hernán Paz Penagos and Germán Castellanos Tache</i>	
Parallel Architecture for the Solution of Linear Equation Systems Implemented in FPGA	275
<i>Ruben Martinez Alonso and Domingo Torres Lucio</i>	
Traffic Monitoring: Improving Road Safety Using a Laser Scanner Sensor	281
<i>Nieves Gallego, Antonio Mocholí, Miguel Menéndez, and Raymundo Barrales</i>	
AC Electrical Characterization of Au/Porous Silicon/p-Si Thin Films	287
<i>Mario Andres Chavarria and Faruk Fonthal Rico</i>	

Acoustic Signal Processing in a Fluid-Filled Borehole to Obtain the Stoneley Wave Parameters	293
<i>Irina Markova and Sergey Sadovnychiy</i>	

Control Systems

Fault Diagnosis in an Industrial Process Using Bayesian Networks: Application of the Junction Tree Algorithm	301
<i>Julio C. Ramírez, Guillermina Muñoz, and Ludivina Gutierrez</i>	
The Fault Diagnosis Problem: Residual Generators Design Using Neural Networks in a Two-Tanks Interconnected System	307
<i>J. Anzures-Marin, O. Cuevas-Silva, and N. Pitalúa-Díaz</i>	
Virtual Laboratory of Intelligent Control for a Level Process	313
<i>Monica Alejandra Delgado and Jesus Alfonso Lopez Sotelo</i>	
An Application of the Proximal Point Algorithm to Optimal Control Problems with Constraints	319
<i>Vadim Azhmyakov and Rubén Velázquez</i>	
Reactive Shunt Compensation Planning by Optimal Power Flows and Linear Sensitivities	326
<i>Uriel A. Rangel Díaz and José H. Tovar Hernández</i>	
Optimal PI Control of a Wind Energy Conversion System Using Particles Swarm	332
<i>Santiago Sánchez, Maximiliano Bueno, Edilson Delgado, and Eduardo Giraldo</i>	
Implementation of Decoupled Model-Based Controller in a 2-DOF Pneumatic Platform Used in Low-Cost Driving Simulators	338
<i>R. Ernesto Rubio, S. Luis Hernández, S. Rafael Aracil, P. Roque Saltarén, and Jorge A. Guerra</i>	
Three-Dimensional Reconstruction System Based on a Segmentation Algorithms and a Modified Fourier Transform Profilometry	344
<i>Jesus Carlos Pedraza Ortega, Sandra Luz Canchola Magdeleno, Efren Gorrostieta Hurtado, Marco Antonio Aceves Fernandez, Juan Manuel Ramos Arreguin, and Manuel Delgado Rosas</i>	
State Variables Estimation for a Counter-Flow Double-Pipe Heat Exchanger Using Multi-linear Model	349
<i>Betty López Zapata, R.F. Escobar, Manuel Adam Medina, and Carlos M. Astorga Zaragoza</i>	
Parameter Estimation of Linear Systems Based on Walsh Series	355
<i>I.I. Lázaro, J. Anzures, and J.D. Roman</i>	
Activation on Ensembles of Neurons via Controlled Synchronization	361
<i>Gualberto Solís-Perales, Eduardo Ron-Gradilla, and Daniela Valle-Rodríguez</i>	
Comparative Analysis of PI Controller Gain-Scheduling through Fuzzy Systems	366
<i>Arnulfo Rodriguez-Martinez and Raul Garduno-Ramirez</i>	

PID Control for Gearless Orbital Infinitely Variable Transmission	372
<i>Orlando Palma Marrufo, Ricardo Peón Escalante, and Arodi Carvallo Domínguez</i>	
Robust IFOC Induction Motor Controllers Using Classical Tools	378
<i>Jesús Liceaga-Castro, Luis Amezcuita-Brooks, and Eduardo Liceaga-Castro</i>	
A Structural Characterization of Diagnosability and On-Line Fault Detection and Location Methodology	384
<i>Elvia Ruiz Beltran and Jorge Luis Orozco Mora</i>	
Nonlinear Control of a Magnetic Levitation System	391
<i>Jesús Liceaga-Castro, Diana Hernandez-Alcantara, and Luis Amezcuita-Brooks</i>	
Data Acquisition System for Steady-State Hydraulic Soil Conductivity Measurements	397
<i>Jose Antonio Gutierrez Gneccchi, Gerardo Marx Chavez Campos, and Alberto Gomez Tagle Chavez</i>	
Characterization of a Piezoelectric Ultrasonic Linear Motor for Braille Displays	402
<i>Hermes Hernández, Enrique Preza, and Ramiro Velázquez</i>	
Power Electronics	
Comprehensive Wind Park Model Including a Reduced Order Model for an Induction Generator and a STATCOM for Reactive Compensation	411
<i>Christian Pérez Negrón and Norberto García</i>	
Short Pulsed Voltage Dielectric Barrier Discharge on Tubular Fluorescent Lamps	417
<i>V.H. Olivares, M. Ponce, J.A. Gutiérrez, A. Téllez, and D. Mora</i>	
A Virtual Instrument for a Linear Voltage Inverter Applied to a Three-Phase Induction Motor	423
<i>Merit Cisneros-Gonzalez, Marco A. Arjona, and Concepcion Hernandez</i>	
A Space-Vector PWM Voltage-Source Inverter for a Three-Phase Induction Motor Based on the dsPIC30F3011	429
<i>Fernando A. Ramirez, Marco A. Arjona, and Concepcion Hernandez</i>	
Matrix Converters Applied to Wind Energy Conversion Systems, Technologies and Investigation Trends	435
<i>J.L. Elizondo, M.E. Macías, and O.M. Micheloud</i>	
Distribution Network Reconfiguration Starting from Fuzzy Multicriteria Decision Making Algorithms	440
<i>D. P. Bernardon, Vinícius Jacques Garcia, Adriana Scheffer Quintela Ferreira, Luciane Neves Canha, and Alzenira da Rosa Abaide</i>	
Average Current Mode Control of Three-Phase Boost Rectifiers with Low Harmonic Distortion Applied to Small Wind Turbines	446
<i>Oscar Carranza Castillo, Emilio Figueres Amoros, Gabriel Garcerá Sanfeliú, and Luis Gerardo González Morales</i>	

Modeling and Analysis of a TCR-FC Reactive Power Compensator Using the Harmonic Domain	452
<i>Héctor García and Manuel Madrigal</i>	
Design and Construction of a Portable EEG for Auditory Evoked Potential Measurements	457
<i>Jose Antonio Gutierrez Gneccchi, Ruth Doñan Ramirez, and Carlos Felipe Esquivel Gordillo</i>	
On the Emulation of an Isolated Wind Energy Conversion System: Experimental Results	462
<i>Roberto Galindo del Valle, Maria Cotorogea, Balduino Rabelo, and Wilfried Hofmann</i>	
Optical-Fiber Refractometric Sensor with Semi-cylindrical Optical Detection Element for Measuring the Level of Gasoline	468
<i>Sergei Khotiaintsev, Enrique Llanito-Caudillo, Selene Perez-Garcia, and Jordi Morales-Farah</i>	

Author Index