

2015 IEEE 2nd Colombian Conference on Automatic Control (CCAC 2015)

**Manizales, Colombia
14-16 October 2015**



**IEEE Catalog Number: CFP15D61-POD
ISBN: 978-1-4673-9306-5**

TABLE OF CONTENTS

COMPARISON OF RGA-BASED DECOMPOSITION METHODS FOR LARGE-SCALE SYSTEMS DISTRIBUTED STATE ESTIMATION	1
<i>Lenis, L. ; Giraldo, M. ; Espinosa, J.</i>	
MULTIZONE ILLUMINANCE CONTROL BASED ON REPLICATOR DYNAMICS	8
<i>Espana, N. ; Pantoja, A.</i>	
COEVOLUTION OF OPINION DYNAMICS IN EVOLVING NETWORKS	14
<i>Acosta-Escorcía, D. ; Cusguen, C. ; Mojica-Nava, E.</i>	
DEVELOPMENT OF A 3D PRINTER AND A SUPERVISION SYSTEM TOWARDS THE IMPROVEMENT OF PHYSICAL PROPERTIES AND SURFACE FINISH OF THE PRINTED PARTS	20
<i>Blandon, S. ; Amaya, J.C. ; Rojas, A.J.</i>	
OXYGEN TRANSFER IN AEROBIC PROCESSES: A REVIEW OF PHENOMENOLOGICAL MODELING	27
<i>Ruiz-Botero, Maribel ; Ospina-Alarcon, Manuel ; Garcia-Tirado, Jose</i>	
RESPONSE AND RECONFIGURATION OF CYBER-PHYSICAL CONTROL SYSTEMS: A SURVEY	33
<i>Combita, L.F. ; Giraldo, J. ; Cardenas, A.A. ; Quijano, N.</i>	
CENTRALITY MEASURES FOR VOLTAGE INSTABILITY ANALYSIS IN POWER NETWORKS	39
<i>Caro-Ruiz, C. ; Mojica-Nava, E.</i>	
DESIGN OF DISCRETE EVENT SYSTEMS SUPPORTED ON WIRELESS SENSORS AND ACTUATOR NETWORKS USING COLORED PETRI NETS	45
<i>Mena Moreno, J.C. ; Martinez Castro, D. ; Villa Ramirez, J.L.</i>	
DRIP IRRIGATION SYSTEM BASED ON DISTRIBUTED CONTROL - PART 1: DESIGN AND MODEL	51
<i>De la Cruz, Y. ; Martinez, C. ; Pantoja, A.</i>	
DRIP IRRIGATION SYSTEM BASED ON DISTRIBUTED CONTROL - PART 2: IMPLEMENTATION	57
<i>De la Cruz, Y. ; Martinez, C. ; Pantoja, A.</i>	
DISTRIBUTED RESOURCE MANAGEMENT BY USING POPULATION DYNAMICS: WASTEWATER TREATMENT APPLICATION	63
<i>Barreiro-Gomez, J. ; Quijano, N. ; Ocampo-Martinez, C.</i>	
A MATHEMATICAL MODEL OF PEDESTRIANS IN SIGNALIZED INTERSECTIONS	69
<i>Portilla, C. ; Marquez, A. ; Espinosa, J.</i>	
DSP IMPLEMENTATION OF THE FXLMS ALGORITHM FOR ACTIVE NOISE CONTROL: TEXAS INSTRUMENTS TSM320C6713DSK	75
<i>Garcia, M. ; Patino, D. ; Quintana, R.</i>	
A SET MEMBERSHIP APPROACH TO OXYGEN TRANSPORT MODELING WITH UNMODELED DYNAMICS	81
<i>Ruiz, F. ; Sanchez, F. ; Arevalo, H. ; Almeciga-Diaz, J. ; Rodriguez-Lopez, A.</i>	
PREDICTION OF METAL TRANSFER MODES IN THE GMAW PROCESS	87
<i>Rudas, J.S. ; Restrepo, J.S. ; Gomez, L.M.</i>	
DESIGN AND STATISTICAL ROBUSTNESS ANALYSIS OF FOPID, IOPID AND SIMC PID CONTROLLERS FOR THE CONTROL OF AN INPUT-OUTPUT LINEARIZED PLANT MODEL	93
<i>Viola, J. ; Angel, L.</i>	
FRACTIONAL PID AND THE EFFECT OF CHANGING THE DIFFERENTIATOR'S ORDER	99
<i>Cardona Rivera, R. ; Garcia, F.A.</i>	
TRACKING OF LOCAL OPTIMAL POINTS INTRODUCTION TO LUKE'S METHOD	104
<i>Devia, C.A. ; Patino, D.</i>	
CONTROLLY: OPEN SOURCE PLATFORM FOR LEARNING AND TEACHING CONTROL SYSTEMS	110
<i>Alvarez Ariza, J.</i>	
DISTRIBUTED RESOURCE ALLOCATION OVER STOCHASTIC NETWORKS: AN APPLICATION IN SMART GRIDS	116
<i>Obando, G. ; Quijano, N. ; Rakoto-Ravalontsalama, N.</i>	

DEMAND RESPONSE: UNDERSTANDING THE RATIONAL BEHAVIOR OF CONSUMERS IN A PEAK TIME REBATE PROGRAM	122
<i>Vuelvas, J. ; Ruiz, F.</i>	
MICROGRIDS COORDINATION BASED ON HETEROGENEOUS MULTI-AGENT SYSTEMS	128
<i>Toro, V. ; Mojica-Nava, E.</i>	
MARKET POWER MITIGATION IN THE COLOMBIAN ELECTRICITY MARKET THROUGH ON-SITE GENERATION AND DEMAND RESPONSE.....	133
<i>Rojas, J.A. ; Quijano, N. ; Cadena, A.</i>	
MODELING, SIMULATION AND EXPERIMENTAL SET-UP OF A BOOST-FLYBACK CONVERTER.....	139
<i>Florez, F. ; Munoz, J. ; Angulo, F.</i>	
AUTOMATION OF A SMALL SCALE PEM FUEL CELL SYSTEM FOR DISTRIBUTED GENERATION UNDER VARIABLE LOAD.....	143
<i>Guavita, J. ; Nino, J. ; Marino, D. ; Mejia, D. ; Patino, D.</i>	
DESIGN AND MANUFACTURING OF A SCALE RMU	149
<i>Diaz, C. ; Patino, D.</i>	
MINIMUM-ENERGY REGULATION OF A POWER CONVERSION CIRCUIT.....	155
<i>Vega, C.J. ; Alzate, R.</i>	
FREQUENCY AND VOLTAGE CONTROL OF A POWER SYSTEM WITH INFORMATION ABOUT GRID TOPOLOGY	160
<i>Horta, R. ; Espinosa, J. ; Patino, J.</i>	
GPI OBSERVER BASED LINEAR CONTROL OF THE STEWART-GOUGH PLATFORM.....	166
<i>David Munoz, J. ; Cortes-Romero, J. ; Sofrony Esmeral, J. ; Mendez, L.M.</i>	
VISUAL SERVOING OF A FIVE-BAR LINKAGE MECHANISM	172
<i>Navarro Mora, S. ; Martinez-Santos, J.C.</i>	
IMAGE RECOGNITION APPLICATION FOR ROBOTIC MANIPULATION OF MOVING OBJECTS	177
<i>Builes Gomez, A. ; Correa Rodriguez, J.C. ; Londono, J.M. ; Palacio Velasquez, E.</i>	
UNFALSIFIED ADAPTIVE CONTROL FOR MANIPULATORS WITH PARAMETER UNCERTAINTIES	182
<i>Arango, J. ; Ocampo-Martinez, C. ; Bianchi, F. ; Osorio, G.</i>	
MOBILE ROBOT MODELLING AND AUTONOMOUS GUIDANCE	188
<i>Perez-Montenegro, C. ; Canuto, E. ; Cardenas-Olaya, A. ; Acuna-Bravo, W.</i>	
POSITION CONTROL SYSTEM FOR HUMAN GAIT THERAPY ON A TREADMILL USING COMPUTER VISION.....	194
<i>Hoyos-Diaz, A. ; Ramirez-Scarpetta, J.-M. ; Buitrago-Molina, J.-T. ; Rueda-Escobar, J.</i>	
A DEEP ARCHITECTURE FOR VISUALLY ANALYZE PAP CELLS.....	199
<i>Chang, O. ; Constante, P. ; Gordon, A. ; Singania, M. ; Acuna, F.</i>	
GENERALIZED BONHOEFFER-VAN DER POL OSCILLATOR FOR MODELLING CARDIAC PULSE: PRELIMINARY RESULTS	205
<i>Peluffo-Ordonez, D.H. ; Rodriguez-Sotelo, J.L. ; Revelo-Fuelagan, E.J. ; Ospina-Aguirre, C. ; Olivard-Tost, G.</i>	
RECENT ADVANCES IN MATHEMATICAL MODELS FOR THE UNDERSTANDING AND TREATMENT OF TYPE 1 DIABETES MELLITUS.....	211
<i>Lema-Perez, L. ; Aguirre-Zapata, E. ; Garcia-Tirado, J.</i>	
DYNAMIC OPERATIONAL MODES: ANALYZING DYNAMICAL PROCESSES BEHAVIOR.....	217
<i>Obando-Montoya, A.F. ; Alvarez, H.</i>	
DYNAMIC MODELING OF COFFEE BEANS DRYER	223
<i>Zuluaga-Bedoya, C. ; Gomez, L.M.</i>	
FLASH DISTILLATION MODELING AND A MULTILoop CONTROL PROPOSAL	229
<i>Morales, R.K.L. ; Alvarez, H.</i>	
TEMPERATURE REGULATION OF A PILOT-SCALE BATCH REACTION SYSTEM VIA EXPLICIT MODEL PREDICTIVE CONTROL	237
<i>Sanchez-Cossio, J. ; David Ortega-Alvarez, J. ; Ocampo-Martinez, C.</i>	
CO-SIMULATION FOR THE DESIGN OF CONTROLLERS IN URBAN DRAINAGE SYSTEMS.....	243
<i>Riano-Briceno, G. ; Ramirez-Jaime, A. ; Barreiro-Gomez, J. ; Quijano, N. ; Ocampo-Martinez, C.</i>	
A FIXED-TIME CONVERGENT OBSERVER FOR BIOMASS IN A BATCH PROCESS	249
<i>Diego Sanchez-Torres, J. ; Isaza, J.A. ; Jaramillo, O. ; Jimenez, E. ; Botero, H.</i>	
SOFTWARE SENSORS DESIGN FOR MONITORING OF VARIABLES IN REACTORS: A BIOLOGICAL PROCESSES APPLICATION	254
<i>Ruben, R.-N.J. ; Castillo-Baltazar, O.S. ; Pena-Caballero, V. ; Ortega Quintana, F.A. ; Botero Castro, H.</i>	

ESTIMATION BASED ON ACCELERATION MEASURES OF AN ACTIVE SUSPENSION PLANT	261
<i>Garcia, S.D. ; Patino, D.</i>	
OXYGEN TRANSFER IN AEROBIC PROCESSES: A REVIEW OF PHENOMENOLOGICAL MODELING	267
<i>Ruiz-Botero, M. ; Ospina-Alarcon, M. ; Garcia-Tirado, J.</i>	
THUNDERSTORM LOCATION USING ELECTROSTATIC FIELD SENSOR NETWORK.....	273
<i>Villa, A. ; Marquez, A. ; Espinosa, J.</i>	
FRACTIONAL CONTROL AND ROBUSTNESS ANALYSIS OF AN INVERTED PENDULUM SYSTEM.....	279
<i>Viola, J. ; Angel, L.</i>	
ON OPTIMAL AND PREDICTIVE CONTROLS FOR SWITCHED SYSTEMS SUBJECT TO MIXED CONTROL-STATE CONSTRAINTS.....	285
<i>Cortes, F. ; Patino, D.</i>	
POSITION CONTROL WITH ELECTROMECHANICAL ACTUATORS IN DIDACTIC PLANTS.....	291
<i>Cabrera, J.C. ; Pantoja, A.</i>	
INDOOR MAPPING USING SLAM FOR APPLICATIONS IN FLEXIBLE MANUFACTURING SYSTEMS	297
<i>Schueftan, D.S. ; Colorado, M.J. ; Mondragon Bernal, I.F.</i>	
NONLINEAR ANALYSIS OF THE LORENZ SYSTEM AND BUCK CONVERTER USING GPU	303
<i>Gallo, G. ; Tabarest, R. ; Osorio, G.</i>	
AGROMETEOROLOGICAL MONITORING STATION BASED MICROCONTROLLER AND BLUETOOTH COMMUNICATION	309
<i>Gutierrez Junco, D.F. ; Cruz Forero, M.S. ; Diaz Caro, D.F. ; Ruge Ruge, I.A.</i>	
MAP GENERATION AND LOCALIZATION FOR A LEGO NXT ROBOT	314
<i>Lee, J.F.M. ; Buitrago, J.A.</i>	
INTELLIGENT CONTROL APPLIED TO CONTROLLED ENVIRONMENT CHAMBER	319
<i>Uribe, A. ; Monsalve, J.C. ; Osorio, M.</i>	
POLYNOMIAL APPROXIMATION OF THE SINGULAR CONTROL: APPLICATION FOR A BOOST DC-DC POWER CONVERTER	324
<i>Ponce, J.P. ; Ponce, E. ; Atuesta, C. ; Manrique, T. ; Patino, D.</i>	
MEDICAL ROBOTIC SYSTEM GUIDED BY ACTIVE VISION: HANDLING A LAPAROSCOPE.....	332
<i>Prieto Ceron, C.E. ; Rodriguez, O.</i>	
Author Index	