

# **2022 IEEE ANDESCON**

**Barranquilla, Colombia  
16 – 19 November 2022**



**IEEE Catalog Number: CFP2261J-POD**  
**ISBN: 978-1-6654-8855-6**

**Copyright © 2022 by the Institute of Electrical and Electronics Engineers, Inc.  
All Rights Reserved**

*Copyright and Reprint Permissions:* Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

***\*\*\* This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP2261J-POD
ISBN (Print-On-Demand):	978-1-6654-8855-6
ISBN (Online):	978-1-6654-8854-9

**Additional Copies of This Publication Are Available From:**

Curran Associates, Inc  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: (845) 758-0400  
Fax: (845) 758-2633  
E-mail: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com

# Table of Contents

## Circuits, Systems and Electron Devices

Monocular Vision-Based Trout Detection on Floating Cages using YOLO V3.....	1
<i>Bryan Calisaya, Julia Trujillo, Luis A. Alfaro Casas and Wilder Nina Choquehuayta</i>	
IoT platform for level detection of CO2 in closed environments .....	6
<i>Eduardo A. Chocano Choque, Javier A. Figueroa Tapia, Wilder Nina Choquehuayta and Luis A. Alfaro Casas</i>	
Distributed Generation Impact in a Microgrid: Case Study El Valle-Cuenca .....	12
<i>Diego Morales, Javier Cabrera, Javier Arevalo and Víctor Arévalo</i>	
Synthesis of Early Output Quasi Delay-Insensitive Combinational Circuits .....	19
<i>Duarte Oliveira, Nicolly Cardoso and Gracieth Batista</i>	
A Partitioning Tool for Designing Low-Power Partitioned Finite-State Machines .....	25
<i>Duarte Oliveira, Gabriel Dalalio, Luiz Ferreira and Gracieth Batista</i>	
Implementation of a JPEG packetization code for Wireless Sensor Networks in animal monitoring applications .....	31
<i>Joel Palomino</i>	

## Communications

Backscatter Communications with Self-Radiated Nodes.....	35
<i>Alex Cartagena Gordillo</i>	
Design of a Blade Dipole Antenna for Radio Astronomy .....	40
<i>Sergio Mora, Jose Sotelo, Oscar Restrepo and Jhon Edwin Vera Vera</i>	
Vivaldi antenna design procedure from a conventional slot antenna .....	45
<i>Omar Ariel Nova Manosalva</i>	
Receiver for ISDB-Tb standard with low-cost SDR and interactive application extractor ..	50
<i>Gonzalo Olmedo, Bryan Chanataxi and Nelson Benavides</i>	
Archimedean Spiral Antenna in UHF band for Military Applications .....	56
<i>Andres Oñate, Rubén León, Alexis Tinoco, Manolo Paredes and Fernando Lara</i>	
Compact MIMO Antenna for 5G Applications.....	62
<i>Kiran Chand Ravi, Jayendra Kumar, Taha A. Elwi and Mustafa Mahdi Ali</i>	
Determining QoE in Real Time from Video Streaming on SDN Networks.....	68
<i>María Ternera, Luis Solis, Jairo Alberto Cardona and Daladier Jabba</i>	
Development of System for Monitoring and Geopositioning for Cattle Using IoT.....	73
<i>Javier Alfonso Veintimilla Piedra, Monica Huerta and Jose-Ignacio Castillo-Velazquez</i>	

## Computational Intelligence

Peak Hour Performance Prediction based on Machine Learning for LTE Mobile Cellular Network .....	79
<i>Maria de Los Angeles Carrión Herrera, Katty Rohoden, Patricia Ludeña González and Javier Martínez Curipoma</i>	

Numerical simulation of a greenhouse coffee drying system using a continuous flow of hot air .....	85
<i>Jose A. Casas, Julio Chavez, Leonardo Vincas and José Oliden</i>	
Potatoes furrow line detection using aerial RGB image processing .....	91
<i>Javier Chaparro and Manuel Gantiva</i>	
Neural Text Classification for Digital Transformation in the Financial Regulatory Domain	97
<i>Nelson Correa and Antonio Correa</i>	
Detection and Classification of ventura-blueberries in five levels of ripeness from images taken during pre-harvest stage using Deep Learning techniques .....	103
<i>Percy Brayam Cubas Muñoz, Erick Martin Fiestas Sorogastua and Sixto Ricardo Prado Gardini</i>	
Computational Tool for Technological Risk Assessment in the Transport of Chemical Products .....	109
<i>Brayan Diaz, Duban Restrepo, Christian Quintero, César Viloría and Jonathan Quiroga</i>	
Anatomical Patterns Recognition of Impulse Control Disorders of Parkinsonian Patients Using Deep Learning of MRI structural images .....	115
<i>Jocellyn Luna, Enrique Pelaez, Francis Loayza, Alexander Saravia, Ignacio Obeso and Victor Asanza</i>	
Machine learning assisted composition of traditional music from the colombian caribbean region .....	121
<i>Darwin Pico, Winston Percybrooks and Cesar Viloría</i>	

## **Education in Engineering**

The Use of Immersive Technologies in Industry 4.0: A State-of-Art Review .....	126
<i>Rodrigo Arancibia de la Sota, Ricardo de la Cruz Chavez, Alvaro Trinidad Palacios, Yair Salinas Bolaños, Luis Rosa Rodriguez and Deyby Huamanchahua</i>	
Analysis of the Capabilities for Research, Development, and Innovation in Telecommunication Engineering Careears .....	131
<i>Jose-Ignacio Castillo-Velazquez, Monica Huerta and Rafaela-Blanca Silva-Lopez</i>	
Evolution and Trends in E-Learning Approaches to STEM, Engineering Education and Corporate Learning: A Bibliometric Analysis to 2021 .....	137
<i>Jose-Ignacio Castillo-Velazquez and Rafaela-Blanca Silva-Lopez</i>	
Minecraft, The New Border Of The Snap World .....	143
<i>Jhonatan González and Oscar Rodríguez</i>	
AR and VR Training System for Children with ASD: A Detailed and Innovative Review	146
<i>Deyby Huamanchahua, Yadhira Valenzuela Lino, Jhon Ortiz Zacarias and Fiorela Manco Fernandez</i>	
Peer Project Learning Methodology: a novel implementation in the context of teaching-learning transformation in Latin America higher education .....	152
<i>Erick Lamilla Rubio, Eduardo Montero, Daniela Guzman, Jorge Roblero, Esther Gutierrez, Luis Pabón, Arturo Pazmino, Victor H. Velasco-Galarza and Alex David Romero Vera</i>	

Building a Training Suitcase for Control Engineering .....	158
<i>Arturo Rojas Moreno</i>	
Natural Language Processing Approach for Learning Process Analysis in a Bioinformatics Course .....	164
<i>Andrés Romero-Gómez and Alvaro David Orjuela-Cañón</i>	
Importance of the Metering Aggregator in Brazilian Energy Market Model with the Incrementing DERs Participation on the Electric Matrix .....	169
<i>Jovanio Santos and Victor Ribeiro</i>	
Remote Laboratory for Learning on Automation of Systems and Control Process with easy access and low-cost .....	175
<i>Jimmy Ticona, Pablo Raul Yanyachi and Daniel Domingo Yanyachi</i>	

### **Smart Mobility and Smart Cities**

Development of an intelligent platform for obtaining environmental data .....	181
<i>Miriam Alejandra Carlos Mancilla, José Raúl Castañeda Rosas, Mónica Lozada-Muñoz, Omar Alí Zatarain Duran, Yehoshua Aguilar Molina, Miriam González Dueñas and Rodolfo Omar Domínguez García</i>	
IIoT system for monitoring and analysis of the transplanting process of the artichoke seedling .....	187
<i>Percy Brayam Cubas Muñoz, Jorge Luis Alva Alarcón and Sixto Ricardo Prado Gardini</i>	
Analysis of Efficiency of an Electric Micromobility System Based in Scooter Electric .....	192
<i>Santiago Díaz, Diego Rojas and Efrén Fernandez</i>	
Spatial and cost model of individual public transport in a midsize Colombian city .....	198
<i>Nohora España, Jackeline Murillo and Eduardo Caicedo</i>	
Method for Improving Battery System of the Medium Power Electric Traction System. . .	204
<i>Efrén Fernandez Palomeque, Daniel Cordero and Diego Morales</i>	
Presidential preferences in Colombia through Sentiment Analysis .....	211
<i>Pablo Andrés Pertuz-Duran, Edwin Puertas and Juan Carlos Martínez-Santos</i>	
Smart-Water: Digital Transformation of Urban Water Measurement .....	216
<i>Erwin J. Sacoto Cabrera, Ismael Castillo, Wison Pauta, Paúl Trelles, Pablo Tamariz and Leimer Guambaña</i>	
A proposed embedded system for indoor noise pollution monitoring via IoT .....	222
<i>Rodrigo Vázquez-López, Esther Viridiana Vázquez-Carmona, Juan Carlos Herrera-Lozada, Karen Miranda and Jacobo Sandoval-Gutierrez</i>	

### **Technology & Engineering Management**

The confluence of Lean Manufacturing and Industry 4.0: A Literature Review .....	228
<i>Deby Huamanchahua and Max Alejandro Ledesma Rojas</i>	
Perspectives and parameters for the use of digital banking .....	234
<i>Yersi-Luis Huamán-Romaní, María-Verónica Seminario-Morales, María-Gregoria Sánchez-Prieto and Lucy-Marisol Reyes-Arteaga</i>	

Potential environmental impacts of a computer tool for the mutual assistance management in technological emergencies .....	240
<i>Melissa Serpa, Katherine Pachón, Carlos Pacheco, Aymer Maturana, César Viloría and Daniel Romero</i>	

A review of the digital transformation maturity models for SMEs in search of a self-assessment .....	246
<i>César Viloría, Francisco Vázquez and Carlos Fernández</i>	

## **Robotics and Automation Systems**

A soft grip design using Finite Element Analysis for mango handling on the KUKA KR3 robot .....	252
<i>Luis Auris, Marco Gallegos, Leonardo Vincés and Julio Ronceros</i>	

Proof of Concept of an ROV to Measure the Contamination Level of Natural Waters in Peruvian High Andean Zones.....	257
<i>Antony Garcia, Jhon Huaripata, Elián Ramos and Deyby Huamanchahua</i>	

Design and Implementation of an Automated Protocol for Spectral Signatures Acquisition on Colombian Agricultural Soil Samples Into the Visible and Infrared Range .	263
<i>Pablo Gomez Toloza, Ariolfo Camacho Velasco and Henry Arguello Fuentes</i>	

Autonomous Navigation of a Four-Wheeled Robot in a Simulated Blueberry Farm Environment.....	269
<i>Ricardo Jesus Huaman Kemper, Clayder Gonzalez and Sixto Ricardo Prado Gardini</i>	

Wireless measurement system with potential application in the diagnosis of construction machinery.....	275
<i>Sergio Reyes-Medina, Alejandro Toro-Ossaba, Adriana Noguera, Juan C. Tejada and Santiago Rúa</i>	

Implementation of a Cartesian robot XYZ for the control of agricultural parameters in seed germination.....	280
<i>Hugo M Torres, Iván A. Cordero and Francisco D Salgado</i>	

## **Engineering in Medicine and Biology**

Sensitivity Optimization of Kretschmann’s Optical Sensors .....	286
<i>Ricardo Araguillin, Francisco Veiras, Liliana Perez, Jaime Cepeda and Ligia Ciocci</i>	

Electrooculography Signals Classification for FPGA-based Human-Computer Interaction .	292
<i>Víctor Asanza, Jesús Miranda, Enrique Peláez, Francis Loayza, Diego Hernan Peluffo-Ordóñez, Jocelyn Miranda, Leiber Rivas and Otilia Alejandro</i>	

Implementation of a computer-assisted surgical instrument sterilization system based on deep learning for health centers .....	299
<i>Andy Oscar Campos Montes, Cristhofer Josue Vega Urquizo, Marina Gabriela Sadith Pérez Paredes and Kevin Acuna-Condori</i>	

Detection and Analysis of ERPs for Social Cognition Evaluation.....	305
<i>Sonia Contreras Ortiz, Yina Paola Cabarcas-Mena, Kiara Campo-Landines and Karol Gutierrez-Ruiz</i>	

MAMBU: A Bolivian Case of Response to Artificial Ventilators Shortage . . . . .	311
<i>Fabio Richard Diaz Palacios, Jhon Ordoñez, Gabriel Antonio Rojas Silva, Miguel Angel Clavijo Quispe, Guillermo Sahonero Alvarez, Rodrigo Ruben Botelho Oblitas, Juan Manuel Valverde Velasquez, Guillermo Enrique Manning Soria Galvarro, Renan Andres Espinar Saavedra, Anna Montevilla, Diego Alberto Suarez Traverso, Oscar Crispin Nina and Khalil Nallar Camacho</i>	
Quality control strategy of remote heart rate monitoring devices in a health center in Peru	317
<i>José Félix Rosales, Luis Ojeda Prado, Alexander Paredes Arellano, Mauricio Sifuentes Llatas, Fernando Panduro Tello, Mauricio Córdova Torres and Sandra Pérez-Buitrago</i>	
Characterization of Dermatoscopic Images for Melanoma Diagnosis by means of the ABCD Criteria . . . . .	322
<i>Maria Marquez-Sosa and Diego Muñoz-Gordillo</i>	
Supervised Machine Learning Applied in Non- Invasive EMG Signal Classification for an Anthropomorphic Robotic Hand . . . . .	328
<i>Bolívar Nuñez-Montoya, Mauricio Valarezo Añazco, Alexander Saravia-Avila, Francis R. Loayza, Edwin Valarezo Añazco and Efraín Terán</i>	
Human hand prosthesis simulation and control using electromyography signal classification by least-squares boosting ensemble . . . . .	334
<i>Laura Orona-Trujillo, Mariel Alfaro-Ponce and Isaac Cháirez</i>	
Polarized and non-polarized digital dermatoscope: design and construction . . . . .	340
<i>Juan Carlos Priego-Jiménez, Aaron Ernesto Marure-Rojano, Adolfo Guadalupe Rojas, María Monserrat Díaz-Hernández, Iván Matehuala-Morán, Lizeth Machado-Jaimes, Ruben Fuentes-Alvarez, Judith Guadalupe Domínguez Cherit and Mariel Alfaro-Ponce</i>	
Detection of Pathologies in X-Ray Chest Images using a Deep Convolutional Neural Network with Appropriate Data Augmentation Techniques . . . . .	346
<i>Sebastian Quevedo, Federico Domínguez and Enrique Peláez</i>	
A numerical simulation of the mechanical structure of an ankle exoskeleton oriented to elderly people . . . . .	352
<i>Ammir Rojas, Leonardo Vincés and Julio Ronceros</i>	
Design and simulation of a geriatric wheelchair with automatic bipedestation system . . . . .	358
<i>Wenceslao Roncal and Roberto Furukawa</i>	
PRD as an indicator proposal in the evaluation of ECG signal acquisition prototypes in real patients . . . . .	362
<i>Elvis Supo, Marcelo Delgado, Richard Huamani, Jarelh Galdos, Jorge Rendulich and Erasmo Sullá</i>	
Evaluation of the Skin Fixation Method of a Haptic Device to Provide Proprioceptive Information for a Sensory Feedback Prosthesis . . . . .	366
<i>Emir Trujillo-Trujillo, Kevin Acuña-Condori and Marina Gabriela Sadith Pérez Paredes</i>	
Automatic Brain White Matter Hyperintensities Segmentation with Swin U-Net . . . . .	372
<i>José A. Viteri, Enrique Peláez, Bryan V. Piguave and Francis R. Loayza</i>	

## Power and Energy

Co-simulation of a Two Area Power System Using an Adaptive Macro Step Size Method Based on Richardson Extrapolation .....	378
<i>Andrés Acosta, Ernesto Pérez, Jairo J Espinosa and Antonello Monti</i>	
Direct Torque Control Model of an Induction Motor using ATPDraw and MODELS .....	384
<i>Jose Aller and Daniel Naranjo</i>	
Clustering Techniques Performance for the Coordination of Adaptive Overcurrent Protections .....	390
<i>Adrian Barranco Carlos, Cesar Orozco Henao, Juan Marín Quintero, Andres Herrera Orozco and Juan Mora Florez</i>	
Computer Tool to Analyze the Effects of Opportunity and In-Motion Charging on Distribution Systems .....	396
<i>Javier Bayter, Erick Narváez-Villa, Andrea De La Hoz, Andrés De La Hoz, Mauricio Restrepo and Adriana Arango-Manrique</i>	
Sensitivity Analysis of Grid-Forming Converters with Generalized-Droop .....	402
<i>Manuel Fernando Bravo López and Alejandro Garcés Ruíz</i>	
Optimal reconfiguration of electrical distribution networks due to the incorporation of home electrical chargers. ....	408
<i>Celso Calero, Carlos Proaño and Jorge Rojas</i>	
Equitable Participation of PV Prosumers in LV Distribution Networks .....	414
<i>Juan Gabriel Cruz Mora, Ivan Camilo Duran Tovar, Agustin Marulanda Guerra and Josimar Tello Maita</i>	
Economic Dispatch of Power Systems using Spatio-temporal Kriging-based Wind Forecasts .....	420
<i>Julio Cuenca Tinitana, Carlos Correa, Diego Patiño, José Vuelvas, Francisco Aleaga and Jorge Carrión</i>	
Implementation analysis for grid-forming converter considering primary energy source effect .....	426
<i>Carlos Garcia, Kevin Ruiz and Juan Mora-Florez</i>	
Modeling of the Conductive Loop Method to Mitigate the Magnetic Field Beneath Urban Power Lines .....	432
<i>Pedro Sebastian Gonzales San Martin</i>	
Hybrid energy system combining renewable sources with hydrogen energy storage .....	439
<i>Natalia González Mackenzie, Mateo Fernández de la Rosa, Marcos Díaz Ardila, Mauricio Pardo González and Diana Rueda Delgado</i>	
A brief review of some energy harvesters including improvements in their power conversion systems: Roadways and road speed bumps .....	445
<i>Ruben Hidalgo-Leon, Javier Urquizo, Christian E. Silva, Jorge Silva-Leon, Pritpal Singh and Guillermo Soriano</i>	
Detection of broken bars in three-phase motors by using curve fits and classification algorithms .....	451
<i>Gabriel Andres Hoyos-Gomez, Edwin Puertas, Juan Carlos Martinez-Santos and Jose Luis Villa-Ramirez</i>	



Novel PID-SMC Controller for Cûk Coverter in Permanent Magnet Synchronous Wind Generator with MPPT Control.....	457
<i>Samuel A. Jurado, Jorge Medina, Marcelo Pozo, Pablo R. Rivera, Leonardo D. Ortega and Alberto Sánchez</i>	
Solar Irradiance Modeling using Stochastic Methods with Probability Functions.....	463
<i>Miriam Lucero-Tenorio and Walter Mariscal</i>	
An integrated testbed IEC61850-IIoT for Gas Insulated SF6 Monitoring in SCADA systems.....	470
<i>Yessica Monges, Mario Lopez and Enrique Chaparro</i>	
Protection schemes for active distribution networks: implementation opportunities and current requirements in the Colombian context.....	476
<i>Giovanni Enrique Muñoz Arango and Juan José Mora Flórez</i>	
Use of Optimization, Clustering and Classification in Active Distribution Network Protection: A Qualitative Analysis.....	482
<i>Giovanni Enrique Muñoz Arango, Juan José Mora Flórez, Sandra Milena Pérez Londoño and Cesar Augusto Orozco Henao</i>	
QFT robust controller for Buck-Boost DC-DC converters in solar PV applications.....	488
<i>Rafael A. Nuñez and Omar Pinzon-Ardila</i>	
Study and simulation of the use of an active filter for the mitigation of current harmonics in electrical systems.....	494
<i>Anthony Rolando Ocaña Huaman, Israel Said Ortiz Monzon and Edilberto Horacio Vásquez Díaz</i>	
Set Point of the Thermal Overload Protection of Great Induction Motors by Simulated Testing.....	500
<i>Noel de Jesús Orozco Morales, Enrique C. Quispe, Julio R. Gómez Sarduy and Percy R. Viego Felipe</i>	
Systematic review for Gaps Identification in Protection Schemes Implementation in Active Distribution Networks Using SGAM Framework and the IEC 62559-2 Methodology.....	505
<i>Juan David Orozco Álvarez, Andrés Ricardo Herrera Orozco, Juan José Mora Flórez and César Augusto Orozco Henao</i>	
Analysis of Wide Voltage Variation in LLC Converters Using Variable Transformers.....	511
<i>Sergio Perez Pesca, Diego Bernal Cobaleda, Camilo Suarez, Rafael Diez and Wilmar Martinez</i>	
Natural Self-Excitation of the Induction Generator.....	517
<i>Roberto Ramirez-Arcelles, Enrique C. Quispe and Salome Gonzales</i>	
General Methodology for Asymmetrical Fault Analysis in Linear and Symmetrical Multi-phase Power Systems.....	523
<i>Jorge Rojas and Jose Aller</i>	
Optimal Power Flow for Three-phase Unbalanced Active Distribution Networks with Delta Connections.....	529
<i>Simón Sepúlveda, Alejandro Garcés and Juan José Mora</i>	

Inclusion of AGC Models in a Reduced Model of the Spanish Electric Power System.....	535
<i>Elmer Sorrentino and Ángel Alonso</i>	
Effect of line model on experimental test results of travelling wave functions of a commercial relay .....	541
<i>Elmer Sorrentino and Eduardo Cabeza</i>	
A Reduced Model of the Electric Power System of Spain for Teaching Primary Frequency Control .....	546
<i>Elmer Sorrentino, Pablo Cagiao and Miguel Montilla</i>	
Systematic Review of Wired Communication's Technologies for Active Distribution Networks.....	552
<i>Jhon Ronald Terreros Barreto, Alejandro Garces Ruiz and Arley Bejarano Martínez</i>	
Application of Distance Protection on Active Distribution Networks: A Quantitative Comparison .....	558
<i>Sara María Velasco-Gómez, Sandra Milena Pérez-Londoño and Juan José Mora-Flórez</i>	
Lifetime Degradation Study of Batteries Operating as Community Energy Storage Systems.....	564
<i>Hernán Javier Yepes-Fernández, Mauricio Restrepo and Adriana Arango-Manrique</i>	
 <b>Computer and Software Engineering</b>	
Intelligent Virtual Assistants: A Look at Their Privacy Issues .....	570
<i>Rafael Bonilla, Steven Araujo, Aron Caballero, Kenny Camba and Evelyn Mejía</i>	
Real-time eye blinking detection for reducing the effects caused by computer vision syndrome .....	576
<i>Hugo Negreyros, María Neira and Victor Murray</i>	
Optimal Selection of the Regularization Parameter for pyGIMLi: Inversion and Modelling Library.....	582
<i>Brayan A. Quiceno, Andrés M. Muñoz, Juan G. Paniagua and Moisés O. Bustamante</i>	
Data management and visualization architecture to measure the competitiveness and digitization of SMEs and startups.....	587
<i>Germania Rodríguez-Morales, Ramiro Ramírez Coronel, María Paula Espinoza-Vélez and Segundo Benitez Hurtado</i>	
Comparison of facial recognition systems Fisherfaces and LBPH for access control to restricted areas.....	591
<i>Dina Miluska Valdeos Acevedo, Lucero Victoria Espinoza Luis, Darío Huamani Oscco, Marina Gabriela Sadith Pérez Paredes and Kevin Acuna-Condori</i>	
 <b>Industrial Electronics</b>	
Comparative analysis of a Synchronous Reluctance and a Solid-Rotor Induction Machine for high-speed applications.....	596
<i>César Gallardo Sánchez, Carlos Madariaga, Vanesa Rodríguez-Merchan and Juan A Tapia</i>	

Methods and challenges for the fault detection and diagnosis in power electronic converters: An overview .....	602
<i>Ramiro Alejandro Plazas Rosas, Édinson Franco Mejía and Martha Lucia Orozco Gutierrez</i>	
Single-Phase Grid-Connected MicroInverter for Low Power Photovoltaic Residential Applications .....	608
<i>Pablo R. Rivera and Jorge A. Flores</i>	
3D-Integrated Scalable Voltage Regulator Featuring a Distributed Current-Balancing Controller in 10nm CMOS .....	614
<i>Christopher Schaef, Shunjiang Xu, Humberto Caballero-Barragan and Luis Carlos Pizarro-Espinoza</i>	

### **Systems and Control**

Detection and Diagnosis of Faults in a Four-Tank System using Artificial Neural Networks	617
<i>Eduardo Apaza Alvarez and Elvis Jara Alegria</i>	
Piezoelectric manipulation robotic system for automatic handling of micrometric objects using visual servoing control techniques .....	623
<i>Victor Castillo Madrigal, Jesus Castillo Madrigal and Isaac Chairez</i>	
Fuzzy Controller Design for Rotary Inverted Pendulum System Using Genetic Algorithms	629
<i>Anthony Gutarra, Styven Palomino, Jose Cisneros and Elvis Jara</i>	
Smith predictor based LAMDA Sliding-Mode Control applied to a Mixing Tank with Variable Dead Time .....	635
<i>Luis Morales</i>	
Control of a Water Tank Level Process Using IMC Controller .....	641
<i>Styven Palomino, Anthony Gutarra, Angel Quispe, Elvis Jara and Carlos Diaz</i>	

### **Signal Processing & Aerospace and Electronic Systems**

Fault Diagnosing for Electric Motors Based in Noise Data Classification Using Deep Learning .....	646
<i>Josue Eulises Davalos Carrera, Joan Paulette Vázquez Matute, Colon Enrique Pelaez Jarrin and Francis R. Loayza</i>	
On Improving Comb Aliasing Rejection by Separating Multiple Zeros on Unit Circle.....	652
<i>Gordana Jovanovic Dolecek</i>	
Main analysis for the disturbance torques over the Altiplano region for 1U CubeSat nadir earth pointing.....	657
<i>Franklin Josue Ticona Coaquira, Fabio Richard Díaz Palacios, Karen Wendy Vidaurre Torrez, Christian Ricardo Conchari Cabrera, José David Valda Peñaranda and Jaime Alejandro Condori Machaca</i>	