

2025 IEEE CHILEAN Conference on Electrical, Electronics Engineering, Information and Communication Technologies (CHILECON 2025)

**Valparaíso, Chile
28-30 October 2025**

Pages 1–629

IEEE Catalog Number:
ISBN:

CFP25CHK-POD
979-8-3503-5737-0



Copyright © 2025, IEEE

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:	CFP25CHK-POD
ISBN (Print-On-Demand):	979-8-3503-5737-0
ISBN (Online):	979-8-3503-5736-3
ISSN:	2832-1529

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
Web:	www.proceedings.com

TABLE OF CONTENTS

E-Museum: Exploring the History of Informatics in a Virtual Environment	1
<i>Alexandre Takeshi Ogassahara Gonzaga, Sediane Carmem Lunardi Hernandes, Angelita Maria De Ré</i>	
Improved Power Quality Control of a Single-Stage Bidirectional AC to DC EV Charger	11
<i>Emmanuel Osei-Mensah, Tabish Mir, Marco Rivera, Patrick Wheeler, Jakson Bonaldo</i>	
A Low-Cost IoT-Cloud-Based System for Environmental Monitoring in Poultry Farms: A Case Study in Rural El Salvador	17
<i>Omar Otoniel Flores-Cortez, Alberto Oviedo-Argueta, José Miguel Chopin Rodríguez Mirna Rocío Alvarado-Palacios, Carlos Osmin Pocasangre Jiménez, Fernando Arévalo</i>	
Multi-Objective Optimal Scheduling of Smart Microgrid with Uncertainty Analysis of Electric Vehicle	23
<i>Moslem Dehghani, Seyyed Mohammad Bornapour, Jose Rodriguez</i>	
Beyond Compliance: A User-Centered Approach to Web Accessibility through the Accessibility Qualifier	30
<i>Ivana Harari, Sergio Luján-Mora, F. Javier Díaz</i>	
A Feature Space Maturity Model for ABM Frameworks: Definition and Experimentation	38
<i>Luis Carlos Lara-Lopez, José Helo-Guzmán, Ignacio Trejos-Zelaya, Santiago Núñez-Corrales</i>	
Perspectives on Advancing Cybersecurity Pedagogy in Higher Education	46
<i>Marbin Pazos Revilla, Sriram Chellappan, Yasna Godoy Perez</i>	
Assessment of Digital Maturity Level in Universities: Key Performance Indicators and Continuous Improvement Strategies	51
<i>Alejandro Alvarez Toro-Moreno</i>	
Evaluation of Modulation Techniques in MIMO-VLC Systems: Mitigating Ambient Light Interference for Enhanced Performance	57
<i>Javier Guña-Moya, Milton Román Cañizares, Laura Romero, Pablo Palacios Játiva Cesar A. Azurdia-Meza, David Zabala-Blanco, Ismael Sotoll, Maria Camila Reyes</i>	
IoT-Based Monitoring of Radio Base Stations: Design, Implementation, and Future Enhancements	64
<i>Jorge Luis Cruz Vergara, Brayan Hernan Ligña Estévez, Román Alcides Lara Cueva</i>	
Pedagogical Experience in AI Teaching for Technical High Schools: a Regional Approach From UNLP	70
<i>Isabel Miyuki Kimura, Claudia Alejandra Queiruga, Francisco Javier Díaz</i>	
qWard: A Unified Toolkit for Pre- and Post-Runtime Quantum Circuit Metrics	76
<i>Cristian Marquez, Daniel Sierra, Kelly Garcés</i>	
A Data-Driven Approach to Forecasting Emergency Attendance During Easter and Labour Day Holidays	87
<i>Adán Somoza López, Hugo Álvarez Chaves, Ana Carrero Fernández, Maria D. R-Moreno</i>	
Emergency Department Forecasting: COVID-19 Impact on Machine Learning Models	93
<i>Adán Somoza López, Hugo Álvarez-Chaves, Ana Carrero Fernández, Maria D. R-Moreno</i>	
Quantifying the Carbon Footprint in Machine Learning: A Measurement Model for Cloud and Edge Computing	99
<i>Patricio Elías Reyes, Cristian León Fuentes, Juan Felipe Calderón</i>	

Data Science in Education: Analyzing and Mitigating Bias from an Intersectional Perspective	105
<i>Carmen Beatriz Salinas De la Vega, Maria Victoria Tournier Nieto, Noelia Beltramelli, Lorena Etcheverry Aiala Rosá</i>	
Detection of Armillaria Pathogen in Cherry Trees Through Extreme Learning Machine	112
<i>Patricio Hernández, David Zabala-Blanco, Roberto Ahumada-García, Mary Carmen Jarur Julio Barzola-Monteses, Diego A. Martínez-Pereira</i>	
YOLO Approaches in Cherry Color Detection and Classification	118
<i>Simon Rüffelmacher Rojas, David Zabala-Blanco, Roberto Ahumada-García, Mary Carmen Jarur Marco Flores-Calero, Patricia Möller-Acuña</i>	
Model-Free Predictive Control for Nonlinear Processes with Variable Delay	124
<i>Jorge Espin, Oscar Camacho</i>	
Experiments on Automatic Alignment of Spoken Spanish and Uruguayan Sign Language Glosses	130
<i>Martín Dutra, Roberto Aguirre, Luis Chiruzzo</i>	
Structuring Ontologies for Bayesian Reasoning in LLM Contexts	134
<i>David Araya, Catalina Valle, Carla Taramasco</i>	
Intelligent Information Systems for Precision Livestock Farming in Dairy and Poultry	138
<i>Mateus de Castro Duarte Cardoso, Julio Cesar Schendroski, Andre Sirikaku Miyashiro Iran José Oliveira da Silva, Thiago Luís Lopes Siqueira</i>	
Towards a Large Language Model for Guarani-Jopara: Challenges, and Early Outcomes	146
<i>Margarita Ruiz-Olazar, Rubén Díaz, Diego Díaz, Emilio Díaz, Diego Ihara, Marvin Agüero-Torales</i>	
Adaptative Serious Game as a Support Tool for Children with Reading and Writing Difficulties	152
<i>Matias Ricardo Villanueva Paz, Hernan Alejandro Quintana Cruz</i>	
Facilitating Open Data Discovery and Exploration: A Case Study on Uruguay's Open Data Catalog	160
<i>Nicolás Buero, Raúl Maglione, Agustina Simoncelli, Lorena Etcheverry, Adriana Marotta</i>	
An Approach to Variable Clustering: K-Means in Transposed Data and its Relationship with Principal Component Analysis	167
<i>Victor Saquicela, Kenneth Palacio, Mario Chifla</i>	
From Diversity to Academic Inclusion: Case Study of First Year Students in Software Engineering and Business Informatics (2023-2024)	175
<i>Kattia Rebeca Rodríguez Brenes, Karlinna Chaves González, Juan Diego Rodríguez Cambroneror</i>	
Hybrid Architectures with Attention Mechanisms and Evolutionary Hyperparameter Optimization for Robust Pneumonia Detection	183
<i>Marco Fidel Mayta Quispe, Leonid Alemán Gonzales, Charles Ignacio Mendoza Mollocondo Juan Carlos Juarez Vargas</i>	
Challenges in the Development of a Block-based Programming Environment for Arduino	189
<i>Christian Cossio-Mercado, Gonzalo Pablo Fernández</i>	
Closed Loop V/F Control Fed Induction Motor Under IGBT Open Circuit Fault	196
<i>Noureddine Horri, Jakson Bonaldo, Ahmed Hamida Boudinar, Marco Rivera, Patrick Wheeler Sergio Toledo</i>	

Tracking in the Classroom: A Novel BLE-Based Micro-Location Platform for Collaborative Learning Analytics	202
<i>Héctor Cornide-Reyes, David Rojas, Diego Monsalves, Fabián Riquelme</i>	
ZooSQL: Interactive Serious Game to Strengthen SQL and Relational Algebra Skills for University Students	209
<i>Eduardo Patrick Miñan Panduro, Paolo Giuliano Zapata Albújar, José Jesús Valdivia Caballero</i> <i>Edwin Escobedo Cárdenas</i>	
Comparing Fetal Liver Analysis with Pure CNN vs. Complex Preprocessing Pipelines	217
<i>Felipe Soares Muylaert Barroso, Alex Sandro Roschidt Pinto, Aldo von Wangenheim, Luis Otavio Santos</i> <i>Karine Souza da Correggio, Thiago Zimmermann Loureiro Chaves</i>	
Comparative Analysis of Consensus Protocols in Blockchains: IBFT 2.0, QBFT, and SmartBFT	222
<i>Carlos D. S. Bunn, Milton P. Pagliuso Neto, Maurício A. Pillon, Charles C. Miers</i> <i>Pedro H. Barcha Correia, Marco A. Marques, Marcos A. Simplicio</i>	
A Brief Overview of PID Control: From Classical to Modern Approaches	228
<i>Oscar Camacho, Jorge Espin, Alexis Montalvo</i>	
Modeling Income Declaration Behavior in Chilean Student Loans: A Dataset and Baseline Predictive Analysis of the FSCU Program	234
<i>Álex Paz, Broderick Crawford, Eric Monfroy, Andrés Yáñez, Ricardo Soto, José Barrera-García</i> <i>Felipe Cisternas-Caneo, Benjamín López Cortés</i>	
Multi-Class Disease Identification in Cauliflower Plants Using YOLOv11 and DINOv2	242
<i>Viviana Moya, Juan Pablo Vásquez, A. Córdova T. Luis, Pablo Vaca F. Juan, William Chamorro</i> <i>Andrea Pilco</i>	
A Reconfigurable Embedded Platform for Accurate Ultrasonic TOF Estimation	248
<i>Enrique A. Vargas Cabral, Vicente A. Gonzalez Ayala, Federico D. Morán Fretes</i>	
Level Control Using a Variable Parameter Sliding-Mode Controller	255
<i>Jose Suárez, Matteo Romero, Luis Morales</i>	
Neural PID-Based Speed Control of a Three-Phase Induction Motor	261
<i>Matteo Romero, José Suarez, Luis Morales</i>	
SDR Testbed for RF Fingerprinting in Wireless Networks	267
<i>Daniel Quillay G., René Játiva E.</i>	
A Comparative Study of Grid Search and TPE for Tuning PPO on Atari Games	274
<i>Enrique Escalona V., Patricio Olivares R.</i>	
Comparison of Nonlinear PI and PID Controllers for DC Motor Speed Regulation with Local Monitoring and IoT-Based Web Interface	280
<i>Ronald Pillajo, Pablo Proaño, Viviana Moya, Juan Pablo Vásquez, Andrea Pilco, William Chamorro</i>	
Design and Simulation of a High-Gain 4×1 Microstrip Patch Antenna Array at 2.45 GHz for Wi-Fi 6 and IoT Applications	286
<i>Cristian Ahumada, Héctor Kaschel, Roman Osorio-Comparan, Sergio Cordero, Claudio Valencia</i>	

Artificial Neural Network-Based Color Prediction of Tempranillo and Cabernet Sauvignon Red Wines Using Sensory Data	292
<i>Nadia Paola Valadez-de la Paz, Aideé Hernández-López, Salvador Manuel Malagón-Soldara Ismael López-Juárez, Vicente Figueroa-Fernández, José Antonio Vázquez-López</i>	
What the #*&% Is a Shader and How Is It Implemented in Unity?	298
<i>Dr. Carlos Astengo Noguez, Dra. Lorena Martínez Elizalde, Dra. María Raquel Landa Cavazos Lic. Daniel Lãpez Salas</i>	
Strategic Location and Generation Optimization in Radial Power Systems Using Voltage Stability Indices and Fuzzy Logic Optimization	305
<i>Hernan Ramirez Pereira, Rodney Fariña Martinez, David Franco Leon</i>	
Towards Intelligent 5G Networks: Design and Simulation of RIC-Enabled O-RAN Architecture Using ns-3	310
<i>Luis Felipe Lastra Saavedra, Christian Fernández-Campusano, Mario Zapata-Herrera</i>	
Evaluation of Loss Modeling and Efficiency Estimation of SiC-Based Half-Bridge Rapid Prototyping Platform	316
<i>Sebastián Arenas-Pérez, Polidoro S. Canales, Hugues Renaudineau, Jaime W. Zapata Francisco González-Tijerino, Christian A. Rojas, Samir Kouro, Jose Rodriguez</i>	
Blending Potential Fields and Hough Transform for Advanced Obstacle Avoidance in Mobile Robotics Systems	322
<i>Esteban Pérez, Richard López, William Chamorro, Viviana Moya, Marco Herrera Alvaro Javier Prado-Romo</i>	
Detection of Larval Foci Through Computer Vision in Multispectral Drone Images Using Faster R-CNN	328
<i>Angelica M. Vidal, Mathias P. Solis, Maira Santacruz, Derlis O. Gregor</i>	
Deep Learning for Gas Emission Localization in Open-Air Dump Using Uav-Based Thermal Imaging	336
<i>Angelica M. Vidal, Mathias P. Solis, Maira Santacruz, Derlis O. Gregor</i>	
Personalized Makeup Look Generation Using Evolutionary Algorithm Based on Skin Tone and Desired Intensity	343
<i>Scarleth Bazaes, Nicolás Rojas-Morales</i>	
Global Maximum Power Point Coupling in Cooperative Game Theory for Power Loss Reduction	351
<i>Walter Cedillo, Javier Cabrera-Mejía</i>	
An Optimized ANN-PI Controller-Based MPPT of Photovoltaic System with a Zeta Converter	357
<i>Julio López Seguel, Piero Olavarría, Moslem Dehghani, Felipe Ruiz, Mokhtar Aly, José Rodríguez</i>	
Trajectory Tracking Control of Omnidirectional Mobile Robots: A Comparison between SMC and Null-Space Controllers	363
<i>Richard López, Esteban Pérez, William Chamorro, Viviana Moya, Marco Herrera Alvaro Javier Prado-Romo</i>	
Deep Reinforcement Learning based Swarm Motion for Collision Avoidance via Self-Configurable Potential Formation	369
<i>Marlon Soza, Marco Herrera, Oscar Camacho, Juan Pablo Vásquez, Roberto Andrade Alvaro Javier Prado-Romo</i>	

Semantic Segmentation for Pest Detection on Organic Banana Leaves	375
<i>Pierina García, Javier Machacuay, José Manrique, William Ipanaqué</i>	
Digital Twins and Augmented Reality in Mining and Wind Training: Applied Experience at UNL	383
<i>Leonardo Benavides M., José Ochoa A., Cristian Ortega R., Carlos Conza Z., Jessica N. Castillo Julio Cuenca T.</i>	
Strategic LED Placement for Blooming Mitigation in Optical Camera Communication	389
<i>Leonardo Muñoz Rosel, Francisca Vera Vera, Lisandra Bravo Alvarez, Gabriel Saavedra</i>	
Comparative Analysis of VSI Vs. NPC Inverter Topologies in Grid-Connected PV Systems Under Rapid Irradiance Transitions	395
<i>Adolfo Gonzalez, Gianyacomio Zucchini, Osvaldo González, Raúl Gregor, Julio Pacher, Eduardo Espinosa</i>	
Detecting and Tracking of Individuals in Crowded Environments	401
<i>Josué Endara, Eduardo Alba, Noel Pérez-Pérez</i>	
Cascaded H-Bridge-Based Battery Storage Systems: A Distributed Control Approach for SoC Equalization of Second-Life Batteries	407
<i>Carlos Smart, Andrés Mora, Claudio Burgos Mellado</i>	
Classification of COVID-19 From Chest X-Rays Using Convolutional Neural Networks	413
<i>Juan Pablo Vásquez, Diana Parra Meléndez, Álvaro Javier Prado-Romo, Pablo Torres Ingrid Nicole Vásquez, Oscar Gonzales-Zurita</i>	
Temporally-Structured PID Reward Shaping in Reinforcement Learning for Robust Path Planning of Mobile Robots in Mining Environments	419
<i>Christian Camacho, José Alcayaga, Marco Herrera, Oscar Camacho, Alvaro Javier Prado-Romo</i>	
Design and Validation of an Open-Source Platform for Autonomous Missions in Precision Agriculture	425
<i>Ariel Guerrero, Micaela Jara Ten Kathen, Enrique A. Vargas</i>	
The AIM Triad at Scale: A Microservice Architecture for Context-Aware Cybersecurity Maturity	431
<i>Julio E. Fenner, Gemita Escalona, Mauricio Dieguez, Jorge Hochstetter, Belfor Acuña</i>	
Faults in Overhead HVDC Transmission Lines: a Case Study Based on the Kimal-Lo Aguirre HVDC System	437
<i>Camilo Villegas, Cristián Pesce, Rodrigo Villalobos, Gabriel Olquin, Eduardo Richard</i>	
When is an Observer-Based Controller Equivalent to a Proportional-Integral-Derivative Controller?	445
<i>Ivan O. Acencio, Alejandro J. Rojas</i>	
ALMA-IA: A Real-Time System for Automatic Analog Gauge Reading Using Edge Devices and Deep Learning	453
<i>Micaela Jara Ten Kathen, Maximiliano Bonnin, Ariel Guerrero, Mario Arzamendia</i>	
Scalable and Decentralized Urban Traffic Optimization With Verifiable Storage for Smart City Deployments	459
<i>Kevin M. Galeano, María J. Duarte, Marcos D. Villagra, Derlis O. Gregor</i>	
Load Observer-Based Deadbeat Predictive Control for LC-Filtered Grid-Forming Inverter to Shape a Master-Slave Islanded Microgrid	465
<i>Mahdi S. Mousavi, Moslem Dehghani, Felipe Ruiz Allende, Mokhtar Aly, S. Alireza Davari, Jose Rodriguez</i>	

Evaluation of Behind-the-Meter Battery Energy Storage Systems for Frequency Regulation Services	471
<i>Jorge Angamarca-Armas, Danny Espín-Sarzosa, Esteban Gil</i>	
Enhancing Remote Monitoring Applications Using Hybrid IoT, Cloud Services and AI-Driven Tools	477
<i>Luciano E. Chiang</i>	
Hybridization of the Ishikawa Method with the PSI Method in an MCDM Environment	483
<i>Alejandra Holguín Ávila, Laura Alejandra Galarza Alfaro, Luis Asunción Pérez-Domínguez</i>	
<i>Karla Gabriela Gómez Bull, Arlet Rebeca Salas Esquivel</i>	
Occlusion-Proof Vehicle Counting Using Computer Vision and Artificial Intelligence	489
<i>Diego Palacios, Derlis Gregor, Mario Arzamendia, Fabian Palacios, Kevin Galeano, Sergio Toral Marin</i>	
Complexity of the Unit Price of Household Electricity in México	497
<i>Martínez-Patiño Jesús, Lozano-García José Merced, Pizano-Martínez Alejandro</i>	
<i>Muñoz-Mujica Roberto José, Ruiz-Almanza Marlen Elizabeth</i>	
From Argumentation to Action: Building Science from REDIVJ Through the TZEPIRC Methodology	502
<i>Carlos Astengo Noguez, Lorena Martínez Elizalde, Eduard Leonardo Sierra Ballén</i>	
<i>Daniela López De Luise, Mario Andrés Bruno Meléndez, Daniel López Salas</i>	
Automated Water-Quality Assessment via YOLO Detection of Aquatic Macroinvertebrate Bioindicators	508
<i>Jorge Luis Suañ Chambi, Vanessa Carmona, Angelica Torres, Claudia Gómez-Leguizamón Chambi</i>	
<i>Osvaldo D. Frutos, Regina León-Ovelar, Derlis O. Gregor</i>	
Determination of Effective Capture Radius at Processes of Cell Uptake with Poisson Equation	516
<i>Huber Nieto-Chaupis</i>	
Development of an ECG Phantom Prototype for Educational and Training Applications	521
<i>Togo Arredondo, Antonio Rienzo, Valeria Muñoz</i>	
Dynamic and Fair Allocation of Shared Energy Resources in Energy Communities	527
<i>Eduardo J. Salazar, Sebastián Salazar-Pérez, Veronica A. Rosero Morillo, Mauro Jurado, Sebastián Vaca</i>	
Wireless Propagation Characterization in Multi-Level Building at 2.4 GHz	533
<i>Felipe V. Garay, Marcelo García, Farid A. Díaz-Cid, Melissa E. Diago-Mosquera</i>	
Implementation of an Agricultural Monitoring System Based on Vegetation Indices	538
<i>Renato Meléndez Meléndez</i>	
Estimating the Direction of Arrival Using Convolutional Recurrent Neural Networks	544
<i>Bastián Estay Zamorano, Ali Dehghan Firoozabadi, Alessio Brutti, Pablo Adasme, David Zabala-Blanco</i>	
<i>Pablo Palacios Játiva, Cesar A. Azurdia-Meza</i>	
Development of a Calculator to Estimate the Potential for Generating Electricity from Biogas Produced from Municipal Solid Waste	550
<i>Gabriela González Troche, Daniel Ríos Festner</i>	
A Novel Adaptive Framework for Hybrid NLP in B2B Product Matching	557
<i>Martín Burgos Miranda, Alejandro Rivero Santamaria, Christian Fernández-Campusano, Ernesto Pastén</i>	
Design of a Remote Monitoring Device for Physiological Variables for Toddlers	563
<i>Francisca Zamorano, Bruno Fernández, Esteban J. Pino</i>	

Model Predictive Control with PWM for Reactive Power Compensation in Three-Level NPC Converters	569
<i>Fernando Antúnez, Adolfo Gonzalez, Matías Aguilar, Jairo De Oliveira, Juan Insfran, Raúl Gregor Leonardo Comparatore, Osvaldo González</i>	
Modelling of Structural Vibrations Excitation on RTG Cranes	575
<i>Nelson Cáceres Venegas, Constanza Ahumada Sanhueza, Doris Saez Hueichapan</i>	
Real-Time Implementation of Field-Oriented Control Enhanced with Fuzzy Logic for BLDC Motor Drives	581
<i>Souheyb Mohammed Belhadj, Jakson Bonaldo, Marco Rivera, Pat Wheeler, Jaime Rohten Eduardo Espinosa, Bouziane Meliani, Nassr Allah Guezouli</i>	
A 5G-Based Autonomous Aerial System for Real-Time Anomaly Prevention and Response in Smart Urban Environments	588
<i>Julio Lucero, Matias Muñoz Catalán, Christian Fernández-Campusano, Jonathan Pereira Mendoza</i>	
A Source of Income for Elderly People: Opportunities in Oral Storytelling	595
<i>Lucio Cañete Arratia, Pablo Adasme, Enrique San Juan Urrutia</i>	
Design of an Extended Kalman Filter for Sensorless Grid Synchronisation of a Doubly Fed Induction Generator	601
<i>Knapoj Chaimanekorn, Jakson Bonaldo, Marco Rivera, Javier Muñoz, Nady Rocha, Patrick Wheeler</i>	
Model Predictive Current Control of a Fuel Cell Stack with an Interleaved Boost Converter	607
<i>Marcos Gomez-Redondo, Alfredo Renault, Marco Rivera, Javier Muñoz, Patrick Wheeler, Jakson Bonaldo</i>	
A Modulation Scheme for a Single-Phase AC/AC Matrix Converter	612
<i>Marcos Gomez-Redondo, Marco Rivera, Javier Muñoz, Patrick Wheeler, Jakson Bonaldo, Sergio Toledo</i>	
Sensitivity-Driven Optimization of a Batch Cultivation DAE Model of Mycobacterium smegmatis	618
<i>Camila Díaz Figueroa, Michelle Gibert Jélvez, Rodrigo Tapia Bravo, Celeste Vargas Barrera José Ricardo Pérez Correa</i>	
Inner-Loop Model Predictive Control for Droop-Regulated Matrix Converters	624
<i>Marcos Gomez-Redondo, Marco Rivera, Javier Muñoz, Patrick Wheeler, Jakson Bonaldo, Sergio Toledo</i>	
Spatial Fusion and Multivariate Analysis for Powdery Mildew in Vineyards: a Pca, Clustering, and Geostatistical Approach	630
<i>Yordanis Garcia-Dousat, Miguel Araya-Alman, Héctor Valdés-Gómez, Ruber Hernández-García</i>	
Optimization of the Polyisocyanurate (PIR) Panel Manufacturing Process Using a LiDAR-Based Monitoring System Integrated with Six Sigma Methodology	638
<i>Rodrigo Azcurra, Fabio Eduardo Maidana, Diego Stalder, Andrea Insfran-Rivarola, Ana Pamela Arevalos</i>	
Humidity Range for Pollution Estimation in High Voltage Electrical Insulators	644
<i>Eduardo Richard, Rodrigo J. Villalobos, Cristian Pesce</i>	
Modular and Explainable Architectures for Expert Systems in Industrial Process Control: A Critical Review	650
<i>Saul De la Fuente Ruiz, José Antonio Vázquez López, Ismael López Juárez, Carlos Eduardo Belman López Diana Guadalupe Molina Bermúdez</i>	

Advanced Power Quality Assessment Using Real-World Measurements and Powerfactory Simulation	656
<i>Sebastián Salazar-Pérez, Sebastián Vaca, Gabriel Salazar-Yépez, Eduardo J. Salazar Verónica A. Rosero-Morillo</i>	
Use of Artificial Intelligence in Everyday Life	662
<i>Martina Mardones-Bernal, Carolina Lagos, Juan Pedro Sepulveda-Rojas, Eduardo Viera, Hugo González Raúl Carrasco</i>	
Optimization of Bacteriophage Production in Batch Bioreactors	668
<i>Gabriel Castro Sahli, Marina Contreras Lafaury, Fernanda Santos Astudillo, Jairo Pinto Sánchez José Ricardo Pérez Correa</i>	
Adaptive Machine Learning for Intrusion Detection in IoT Environments Under Concept Drift: A Comparative Study Using IoT-23	674
<i>Jorge Andrés González-Quintana, Juan Ignacio Iturbe-Araya, Helena Rifà-Pous</i>	
Bidirectional Encoder Representations from Transformers in Brazilian News Classification of a Public Security Agency	681
<i>Thiago R. Lobo, Karla S. Silva, Claudia A. Martins, Raphael S. R. Gomes, Anderson C. S. Oliveira</i>	
Sound-To-Image Synesthesia: Generative Painting Using an Emotion-Guided Metaheuristic Algorithm	689
<i>Carlos Bracamonte-Espinoza, Nicolas Rojas-Morales</i>	
Metaheuristic-Enhanced PV Power Forecasting using Hybrid Machine Learning: A Case Study in Cuba	697
<i>Lionnis Osorio, Víctor Tuninetti, Laurent Duchêne, Jaime Rohten, Sunny Narayan, Mailyn Moreno-Espino</i>	
Transcription of Large-Scale Sculptural Works to Their Digital Twins	703
<i>Luis García Lara</i>	
Evaluation of PV Cooling Demands in Northern Chile Using a Heat Map Approach	709
<i>Felipe A. Díaz, Daniela Martínez A., Ernesto Castillo</i>	
Spectrogram-Based EMG Classification Tool for Intraoperative Neurophysiological Monitoring	714
<i>Valentinna Montoya, Pablo Roncagliolo</i>	
Development and Design of a Pi Control for Continuous Influenza Virus Production in Cell Culture	720
<i>Rodrigo Salazar, Carlos Fuhrhop, Felipe Tapia, Felipe Valencia, Paolo Mercorelli</i>	
Field-Oriented Vector Control for a Synchronous Reluctance Machine Fed by Two Independent Three-Phase Winding Through Two Converters for EV Applications	726
<i>Alberto I. Said, Félix F. Llanquileo, Matías I. Mendoza, Agustín H. Esper, Nelson H. Aros</i>	
Bifunctional Metasurface for Simultaneous Absorption and Polarization Conversion	732
<i>Thayana Mayrink Lessa de Sousa, Maurício Weber Benjô da Silva, Pedro Vladimir Gonzalez Castellanos Antônio Luiz P. de Siqueira Campos, Francisco Diego Martins Nobre, Raimison Bezerra de Almeida</i>	
Convex Hull Pricing via Ramp-Constrained Network-Flow Unit Commitment Models	738
<i>Lucas Bórquez Cerda, Alejandro Angulo, Nicolás Rojas Jeria</i>	
Early Nutrient Deficiency Detection in Hydroponic Lettuce Via CNN-Based Image Analysis	744
<i>Yessica Recalde, Alfredo Renault, Diego F. Palacios, Alba Chaparro, Alejandro Carissimo Juan S. Gonzalez, Maira Santacruz, Mario Arzamendia, Derlis O. Gregor</i>	

Developing a Modular Framework for IEC 61850 Compliant Communication and Data Modeling in Smart Photovoltaic (PV) Power Plants	751
<i>Yessica Monges, Maiara Palacios, Enrique Buzarquis, Sonia Silvera</i>	
Active Learning and Gamification in Six Sigma Education	757
<i>Andrea Insfran-Rivarola, Ana Pamela Arevalos, Emilio Bordón, Sharon Macias-Velasquez Fabrizio Recalde</i>	
Data Science and Privacy in Secure Predictive Analysis with Homomorphic Encryption and Partial Anonymization	763
<i>Alan Rodrigo Corini Guarachi, Juan Pablo Vásconez</i>	
Wireless Channel Characterization Using LoRa and Zigbee IoT Technologies on University Scenarios	769
<i>Hernán Felipe Urzúa Suárez, Melissa Eugenia Diago-Mosquera</i>	
Predictive Maintenance in Textile Manufacturing Using Artificial Intelligence	775
<i>Nelson Chambi, Celso Sanga, Alejandra Sanga, Piero Sanga</i>	
Evaluation of Weibull Parameters and Wind Energy Potential: A Case Study in Palca - Peru	781
<i>Ubaldo Yancachajlla Tito, Celso Antonio Sanga Quiroz, Edilberto Velarde Coaquira Nelson Esteban Chambi Quiroz</i>	
An Experimental Validation of an Adaptive Optimal Backstepping Sliding Mode Controller in Voltage-Frequency Control of a Single-Phase UPS Inverter	788
<i>Moslem Dehghani, Mahdi S. Mousavi, Mina GhasemiGarpachi, Felipe Ruiz, Mokhtar Aly, Jose Rodriguez</i>	
A Comprehensive Comparison of Three- and Five-Level NPC Converters	794
<i>Oscar Paredes, Julio Pacher, Alfredo Renault, Jorge Rodas, Leonardo Comparatore, Carlos Paredes Paola Maidana, Christian Medina, Marco Rivera, Patrick Wheeler</i>	
EcoGrow: Automatic Greenhouse for Personal Plant Care with IoT and AI Integration	800
<i>Elsa Yolanda Torres Torres, Antonio Carlos Bento, Maria Claudia Cavada Felix Fiorella de Medina Castro, Andrés Garza Mancilla, Juan Pablo Escalona Castellanos París Ramonfaur Martínez, Daniel Couto Gatti</i>	
Low-Cost Wireless Sensor Node for Real-Time Measurement of Key Variables in CWSI Estimation: Field Feasibility Test	806
<i>Fernando Fuentes-Peñailillo, Emmanuel Torres Quezada, Karen Gutter, Ma. Luisa del Campo-Hitschfeld Javiera Jaramillo</i>	
Development of a Safe Disassembly and Diagnostic Protocol for Electric Vehicle Battery Packs for Second-Life Applications	812
<i>Vicente Castro, Enrique Espina, Felipe Quezada</i>	
IoT-Based Platform for Monitoring, Control, and Intelligent Assistance in Farm Environments	819
<i>Daniel Pérez-Guzmán, Mario Fernández-Fernández, Matias Camilla Godoy, Javier Sánchez-Contreras Ricardo Pérez Guzmán, Yamisleydi Salgueiro Sicilia</i>	
Signal-to-Noise Ratio Fundamental Limits for Cascade Networked Control Systems	825
<i>Alejandro J. Rojas, Héctor Ramírez</i>	
A Sequential Model-Based Predictive Control for ANPC Shunt Active Power Filters for Power Quality Improvement in Three-Phase Four-Wire Systems	831
<i>Matias Aguilar, Juan Insfran, Alfredo Renault, Leonardo Comparatore, Julio Pacher, Osvaldo Gonzalez Marco Rivera, Patrick Wheeler, Eduardo Espinosa</i>	

Sequential Model Based Predictive Current Control for a Three-Phase Four-Wire Shunt Active Power Filter Based on Three-Level NPC Converter	837
<i>Juan Insfran, Matias Aguilar, Alfredo Renault, Leonardo Comparatore, Julio Pacher, Osvaldo Gonzalez Marco Rivera, Patrick Wheeler</i>	
Review of Artificial Intelligence Solutions for the Wood Processing Industry	843
<i>Felipe S. Gutiérrez, Alejandro J. Rojas, Mario A. Ramos</i>	
Comparative Analysis of Q-Learning and Deep Q-Learning for Pi Speed Control Optimization in DC Motors	849
<i>Leonardo Elizalde, Boris Rosero, William Montalvo</i>	
Towards Adaptive and Safe Human-Robot Collaboration: a Multimodal Ai Framework for Cross-Domain Cobot Integration	855
<i>Gastón Lefranc, Gustavo Schleyer, Román Osorio-Comparán IIMAS, Ismael López-Juárez</i>	
Dynamic Economic Dispatch of Microgrid with Renewable and Conventional Generation	861
<i>José M. Lozano-García, M. Julisa Ramírez-Lara, Alejandro Pizano-Martínez, J. Gabriel Aviña-Cervantes Luis R. Merchan-Villalba, Jesús Martínez-Patiño</i>	
Improving Deep Reinforcement Learning Efficiency in PMSM Drive Control Using Transfer Learning	867
<i>Luciano Radrigan, Anibal S. Morales</i>	
Dynamic Weighing Using MLP Neural Network Implemented on ARM Board Equipped with NPU	873
<i>Fernando Passold, Davi Schena da Silva</i>	
Remote Monitoring, Control, and Update Triggering Via LoRaWAN in an Edge-Based Vehicle Counting System	879
<i>Fabian Palacios-Pereira, Marcelo Palma, Mario Arzamendia, Derlis O. Gregor, Diego Palacios Ariel Fleitas, Hernán Lezcano</i>	
Personalized Learning in Programming: Evaluating a Chatbot Using Naive Bayes Versus IRT	886
<i>María Morales, Joaquín Silva, Claudio Cubillos, Rafael Mellado</i>	
A Python Framework to Find Local Structural Identifiable Lumped Parameter Bioprocess Models	892
<i>Sofía Breton Montero, José Tomás Suazo Zavando, Felipe Guzmán Arce, José Ricardo Pérez Correa</i>	
Data-Driven Model-Free Predictive Control of Quadratic Buck Converter for an Electrolyzer Load	898
<i>M. Rahmani, S. Alireza Davari, F. Flores-Bahamonde, Mahdi S. Mousavi, Shirin Azadi Carlos Andrés Torres-Pinzón, J. Rodríguez</i>	
Real-Time Ultrasonic Inspection System for Oil Content in Emulsions for Production Lines	904
<i>Renato Galleguillos, Paloma Ponce</i>	
Embedded Hardware-in-the-Loop Platform for Observer-Based Drug Delivery Control with Remote Monitoring	910
<i>Rodrigo F. de Souza, Cecília F. Morais, Jonathan M. Palma, Diana C. González</i>	
Finite-Set Model Predictive Control of a Dynamic Voltage Restorer Based on a Nine Switch Converter Topology Solid State Transformer	916
<i>Felipe Alvarado, Carlos A. Reusser, Domingo Ruiz-Caballero</i>	
Integration of Augmented Reality for Spatially-Guided Respiratory Auscultation in Clinical Training	922
<i>Antonio Rienzo, Togo Arredondo, Omar Acevedo, Álvaro Huirimilla, Daniel Ciudad, María Rubio José Lorient, Ignacio Carvajal</i>	

Hierarchical Control and Power Converter Topology for an Isolated DC Microgrid for EV Charging	928
<i>Diego Roman, Jose Aguilar, Enrique Espina</i>	
One-Step Continuous Control Set Model Predictive Control of a Modular Multi-Level Hexverter	934
<i>Felipe Herrera, Roberto Cárdenas</i>	
System for Detecting Diseases in Grapevines Using Digital Image Processing and Convolutional Neural Networks Applied to Viticulture	940
<i>Sebastián Sanchez, Héctor Kaschel, Sergio Cordero</i>	
Technical Evaluation and Challenges of LoRa Technology Applied to Smart Agriculture 5.0	946
<i>Héctor Kaschel, Sergio Cordero, Carlos Navarro, Pablo Adasme</i>	
Automatic Generation of Signed Networks from Argumentative Text-Based Discussions	952
<i>Fabián Riquelme, Diego Monsalves, Pablo Olivares, Marco Antonio Vivar</i>	
Virtualization of the Data Room Methodology for Academic Monitoring: A Pilot Study at the University of Atacama	960
<i>Nahur M. Meléndez Araya, Maximiliano Muñoz Valderrama, Jocelyn A. Soto Castillo</i>	
A Review of Communication Protocols for Vehicle-Grid Integration Through Charging Infrastructure: Enabling Ancillary Services	965
<i>Simon Cerda, Enrique Espina, Javier Vargas</i>	
Computational Analysis of the Plastic Zone at the Crack Tip in Nanocrystalline Aluminum for Industry 4.0 Applications	973
<i>Ignacio Díaz-Contreras, Rodrigo Silva-Valenzuela, José Pérez-Ruíz, Luis López-de-Lacalle</i>	
<i>Alejandro Pacheco-Sanjuán, Wilmer Velilla-Díaz</i>	
Zero-Ripple Converter: Membrane Protection in Electrolyzers and Pem Fuel Cells	979
<i>Sebastián Riffo, Natalia Soto, Catalina González-Castaño, Carlos Restrepo</i>	
Randomly Initialized Networks can Learn from Peer-to-Peer Consensus	985
<i>Esteban Rodríguez-Betancourt, Edgar Casasola-Murillo</i>	
Partial Power DC-DC Converter Interface for Second-Life Battery with Signal Injection for Online Battery Monitoring	991
<i>Hugues Renaudineau, Nicolas Muller, David Ulloa, Francisco González-Tijerino, Jose Rodriguez</i>	
Development of a Compact and Affordable Differential Mobile Robot for Educational Purposes	997
<i>Gustavo Schleyer, Felipe Cid, Daniel Vicente Lühr Sierra, Juan Manuel Schilling</i>	
Proposal of an Intelligent Irrigation Model Based on Machine Learning Applied to Smart Farming 5.0	1003
<i>Marco Fernández B., Héctor Kaschel C.</i>	
Electrical Substation Digitalization Case Study With Merging Unit in the Paraguayan Power System	1009
<i>Diego Rojas, Percy Salas, Enrique Paiva, Cesar Adorno, Ubaldo Fernández, Rodney Fariña</i>	
Electric Vehicles in Microgrids: A Review of Control Architectures and Integration Approaches	1015
<i>Ignacia Loyola, Enrique Espina, Karina Barbosa</i>	
Design and Implementation of a Matrix Muon Detection System Using Silicon Photomultipliers (SiPMs)	1021
<i>Alan Cuevas, Lucas Boscarino, Jorge Molina, Edgar Maqueda</i>	

Design and Implementation of a Particle Detection System for the MUA Mission Aboard the GuaraniSat-2 Nanosatellite	1028
<i>Maximiliano Romero, Sebastián Monje, Giovanni Secchia, Lucas Cho, Alan Cuevas, Diego Stalder Jorge Molina</i>	
A Hailo-Accelerated System for Precision Agriculture: Real-Time on-Board YOLO Inference on a Drone Platform	1034
<i>Bárbara Vergara, Christian Fernández-Campusano, Hector Kaschel</i>	
Intelligent Grid Support with VPPs: A Scalable Solution for PMGD Integration Challenges	1040
<i>Felisa Córdova, Fernando Yanine, Thierry de Saint Pierre, Hans Rother, Mokhtar Aly</i>	
Future Challenges for Electrical Systems Stability	1046
<i>Isabela Andrade Fernandes, Miguel Edgar Morales Udaeta, André Luiz Veiga Gimenes Viviane Tavares Nascimento, Vanessa Meloni Massara</i>	
Assessment of Commercial Photodetectors for VLC Systems in NLoS Scenarios Utilizing Ray-Tracing	1053
<i>Diego Castillo, Cesar Azurdia-Meza, Pablo Palacios Játiva, David Zabala-Blanco, Fernanda Borja Jonas Peñailillo</i>	
A Novel RGB-Guided Thermal Masking Pipeline for Low-Cost Vineyard Canopy Temperature Extraction	1059
<i>Fernando Fuentes-Peñailillo, Ma Luisa del Campo-Hitschfeld, Emmanuel Torres-Quezada, Ricardo Vega Arturo Bisonó, Francisco Orgaz</i>	
Comparative Analysis of mmWave Microstrip Antennas for 5G and Optimization Proposal Using Machine Learning	1066
<i>Tomás Bavestrello, Héctor Kaschel, Sergio Cordero</i>	
Leveraging Llms for Functional Clustering of Microservices	1072
<i>Santiago Di Sabatto, Guillermo Rodriguez, Claudia Marcos, Santiago Vidal</i>	
Nonlinear Model Predictive Control N-MPC for a Conical Tank	1079
<i>Luis Enrique Vargas Paredes, Karina Belen Montaluísa Herrera, Jacqueline Del Rocio Llanos Proaño Paola Velasco</i>	
Discrete-Time Approximations for Port-Hamiltonian Systems and Controllers Using Collocation Methods	1085
<i>Emilio José Olivares-Labraña, Maximilian Mogler, Laurent Lefèvre, Alessandro Macchelli, Yann Le Gorrec Hector Ramirez</i>	
Experimental Characterization of Power-Aware OSNR Error in EDFA Links for Data-Driven QoT Modeling	1091
<i>Leonardo Muñoz Rosel, Cristóbal Melo, Harry Verspagen, Ariel Leiva, Gabriel Saavedra</i>	
Didactic Transformation of Data Analysis in Higher Education: From Proprietary Tools to an Open Ecosystem with Python, Google Colab and Generative AI	1096
<i>Milin Erica, Quiroga Silvia, Flecha Rubén</i>	
Direct Model Predictive Control in a Double-Input Single-Output DC-DC Converter in PV Applications	1098
<i>Diego Rojas, Duberney Murillo-Yarce, Freddy Flores-Bahamonde</i>	
Special Points for Montgomery Elliptic Curves	1105
<i>Rodrigo Abarzúa, Álvaro Soto</i>	

Real-Time Autonomous Navigation With Resnet-18 and Pytorch Based on AI Computer Jetson Nano	1111
<i>Gabino Rey Vidangos Ponce, Marco Antonio Quispe Barra, Russel Allidren Lozada Vilca</i>	
<i>Susan Machaca Condori, Jimena Inés Coila Monje, James Rolando Arredondo Mamani</i>	
Mainstreaming Gender in Engineering Research Training: A Chilean Case Study	1117
<i>Karina Vilches-Ponce, Alma Calderón-López, Daniela Soto</i>	
Assessing the Impact of Cyberattacks Through the Integration of a Honeypot in a Controlled Environment	1123
<i>Jorge Andrade Gómez, Christian Lazo Ramírez, Luis Veas-Castillo, Carlos Melo Paredes</i>	
A Review of Artificial Intelligence Methods for Carbon Capture Estimation in Regenerative Agriculture	1129
<i>Gabriel Gatica, Rodrigo Ortega, Edison Vásquez, Bárbara Díaz, Gastón Lefranc</i>	
On the Design and Optimization of a 10 Port Directional Coupler at Microwave and Millimeter Wave Frequencies Using Waveguide Technology	1135
<i>Raul Haro-Baez, Evelin E. Hidalgo, Evelin N. Sanguano, Carlos G. Romero, Fabián G. Sáenz</i>	
<i>Rodolfo Gordillo-Orquera, Diego S. Benítez</i>	
Dynamic Hydrogen Microgrid Control: A Dual-Domain MPC Approach with Local Flow Loops	1141
<i>Juan S. Gómez Q, Antonia Azar, Angel Ulloa, Nadia Yasic, Cristobal Carrasco, Cristobal Parrado</i>	
Comparative Performance Evaluation of Sliding Mode Control and Finite Control Set Model Predictive Control for a Six-Phase IM	1147
<i>Gustavo Ojeda, Jorge Rodas, Paola Maidana, Christian Medina, Osvaldo Gonzalez, Esteban Leguizamón</i>	
<i>Yassine Kali, Amabilis Hernandez, Néstor Villamayor</i>	
Comparative Study of DTC and PTC with Constrained Voltage Vectors in Multiphase Drive	1153
<i>Esteban Leguizamón, Paola Maidana, Christian Medina, Jorge Rodas, Osvaldo Gonzalez, Gustavo Ojeda</i>	
<i>Amabilis Hernandez</i>	
Design and Implementation of Model Predictive Controllers with FPGA-based Acceleration	1159
<i>Francisco Abusleme, Angel L. Cedeño, Juan C. Agüero, César Silva, Gonzalo Carvajal</i>	
Finite State Machine-Based Smart Contracts on Tezos: A Time-Locked Vault Implementation in Jus	1165
<i>Jefferson Oliveira Andrade, Larissa P. V. Randow, Karin Satie Komati</i>	
Reward-Driven Strategy Formation in Reinforcement Learning for Real-Time Fighting Games: A Street Fighter II Case Study	1171
<i>Nicolás Henríquez, José Benítez, Christian Camacho, Claudio Meneses, Alvaro Javier Prado-Romo</i>	
Machine Learning-Based Determination of Social Hierarchies in Domestic Sheep	1177
<i>Christian Lazo R, Claudia Letelier V, Roxana Cayul N, Paula Mancilla A</i>	
Four-Valued Model Checking for Byzantine Fault Tolerant Consensus Verification	1183
<i>Jefferson O. Andrade</i>	
Towards the Utilization of Lensless Camera Sensors for Star Tracking Systems in Femto-Satellites	1189
<i>Alexander Hilgarth, Michael Dorin, Matthias Jung, Sergio Montenegro</i>	
Low-Cost Autonomous Station for Particulate Matter Monitoring with Solar Energy	1195
<i>Silvia Barreto Cristaldo, Diego Stalder, Carolina Recalde, Angel Rincon, Luis Bernal</i>	

Energy, Economic, and Environmental Evaluation of the Incorporation of Electric Buses into the Public Transportation System of the Metropolitan Area of Asunción, Paraguay	1201
<i>Diana Valdez, Dana Aguilera, Félix Fernández, Enrique Buzarquis, Estela Riveros, Josá Riveros Diego Pinto</i>	
Inexpensive Robotic Hand Prosthesis Controlled by EMG Signals: Design, Implementation and Functional Validation	1207
<i>Felipe Cid, Gustavo Schleyer, Daniel Vicente Lühr Sierra, Pablo Ulloa</i>	
High-Efficiency Routing of Hydrogen Fleets Using MILP and Quantum Search Algorithms	1213
<i>Marcelo Aguayo, Ismael Soto, Sebastian Seguel, Pablo Palacios</i>	
Battery Degradation and Reuse WITH Quantum Optimization: A Data-Driven Approach for the Circular Economy	1218
<i>Sebastian Moya, Ismael Soto, Sebastian Seguel, Enrique Espina, Cesar Azurdia</i>	
Reference Tracking in Sampled-Data Systems: A DLMI-Based Purely-Discrete PID Framework	1224
<i>Roberto M. Fuentes, André M. de Oliveira, Gabriela W. Gabriel, Márcio J. Lacerda, Jonathan M. Palma</i>	
Explainable Artificial Intelligence (Xai) for Voltage Prediction in a Molten Carbonate Fuel Cell	1230
<i>Valeria Barra Pradenas, Andrés Escalona Inzunza, Hugo O. Garcés, Jaroslaw Milewski</i>	
Estimation of Heart Rate and Respiratory Rate from NIRS Signals in Athletes using Empirical Mode Decomposition and Continuous Wavelet Transform	1237
<i>Selim Echeverría, Raúl Caulier-Cisterna, Jorge Vergara-Quezada, Felipe Contreras-Briceño Patricio Fuentealba</i>	
Development of a Low-Cost Polarization and Spatial Mode Controller for Quantum and Optical Applications in Optical Fibers	1243
<i>Alex Schaak, Bastián Aroca, Angelo Barbieri, Daniel Quezada, Gustavo Cañas, Alvaro Alarcón</i>	
Calculation of the Impact of Overvoltage Transients in Hydroelectric Plants and the Electric Power Industry	1249
<i>Álvaro Soto A., Vladimir Esparza H., José Mahomar J., Daniel Quezada M., Jaime Rohten C.</i>	
Large-Scale Energy Storage Systems: Comparative Analysis between BESS and HSS	1255
<i>Amaro Krob, Carlos Frederico, Miguel Udaeta, Viviane Nascimento, Vanessa Massara, Andrea Collin</i>	
A Short Survey and Brief Tutorial on the State of the Art in Internet Routing Security	1262
<i>Carlos Martínez Cagnazzo, Cristina Mayr, Claudio Risso</i>	
Performance Analysis and Enhancement of DC-DC Pseudo Partial Power Converter Fast EV Chargers Using FCS-MPC	1270
<i>Daniel Pesantez, Mokhtar Aly, Hugues Renaudineau, Samir Kouro, Jose Rodriguez</i>	
Hybrid Transformer as an Active Filter	1276
<i>Samuel Rebolledo Isla, José Espinoza C., Pablo Epul Santana</i>	
Characterization of Electricity Consumption Demand Profiles in Residential Users	1282
<i>Clement Torres, Victor Viveros, Diego Stalder, Hans Mersch, Carlos Sauer, Alan Cuevas</i>	
Towards Agentic Manufacturing Using Sim2Real and DRL Approaches	1288
<i>Ismael Lopez-Juarez, Luis A. Castillo-Barrientos, Carlos A. Anguiano-Gijon, Ahmad Lotfi</i>	

Multi-Dimensional Assessment of Infrastructure Gaps on the Integration of Large-Scale Intermittent Renewables: The Case of Brazil	1294
<i>Rafael Nascimento, Daniel Rodrigo Falconi, Viviane Tavares Nascimento, Vanessa Meloni Massara Miguel Edgar Morales Udaeta, Eduardo Coelho Marques da Costa</i>	
Model Predictive Control for Active Bridge Active Clamp Electric Mobility Applications	1301
<i>Henry Zapata-Fonseca, Luca Tarisciotti</i>	
Optimized Sliding Mode Current Sensorless Controller for Single-Phase F-Type PFC Converters	1307
<i>Mokhtar Aly, Ahmed Shawky, Moslem Dehghani, Mahdi S. Mousavi, Ahmed Elsanabary Ahmad Bala Alhassan, José Rodríguez</i>	
XAI-Driven Root Cause Analysis (XAI + RCA)	1313
<i>Raymi Vásquez M, Werner Kristjanpoller, Grinda Sierra G</i>	
Semi-Automatic Attendance Control System with Facial Recognition	1323
<i>Juan Ignacio Ascione, Juan Manuel Hermida, Federico Agustín Vazquez, Analía Conde, Nicolas Rondan</i>	
Toward Smart LoRa Network Management Through System Identification and Digital Twins: Mérida Case Study	1331
<i>Yumil Rueda Flores, Julio Heredia Lozano, Renan Quijano-Cetina, Alejandro Castillo-Atoche Johan Estrada-López, Javier Vázquez-Castillo, Ismael López-Juárez</i>	
Predictive Analysis of Electricity Consumption in a Substation Using Gru in Alto Paraná, Paraguay	1337
<i>Sebastián Vazquez Villalba, Pedro Gardel Sotomayor, Micaela Jara Ten Kathen, Micaela Jara Ten Kathen</i>	
Mathquest: An Educational Software to Reinforce First-Degree Equations	1343
<i>José Pailamilla, Nathalia Trigo, Claudio Cubillos, Daniela Quiñones, Nicolás Acuña</i>	
Data Partitioning Into Homogeneous Groups Using a Genetic Algorithm	1349
<i>Margarita Ruiz-Olazar, Diego Ihara, Benjamín Barán</i>	
Design and Construction of a Low-Cost Automated Flotation Cell for Mining Process Control	1355
<i>Juan Ignacio Parraguez Garrido, Diego Montoya-Acevedo, Freddy Flores-Bahamonde Catalina González Castaño, Carlos Restrepo Patiño</i>	
Design of an Automated System for the Control and Monitoring of Sedimentation Tests With Flocculants in Mining Applications	1361
<i>René Contreras Barrios, Julian Vega Muñoz, Sebastian Rizzo Villagra, Catalina González Castaño Carlos Restrepo Patiño</i>	
Attribute-Based Consent Management System: A Cryptographic Architecture for Data Privacy Compliance	1367
<i>Gabriela Suntaxi, Julie Galarza</i>	
Vision-Based Path Planning for a Small-Scale Autonomous Vehicle with Neural Networks	1375
<i>Rodrigo Báez, Micaela Jara Ten Kathen, Mario Arzamendia</i>	
Model-Free PLL-Based Sensorless Predictive Control of Surface-Mounted PMSM Drives	1381
<i>Mahdi S. Mousavi, S. Alireza Davari, Freddy Flores-Bahamonde, Jose Rodriguez</i>	
Alternatives and Requirements for Electric Bus Charging Terminals, Case Study: Public Transport in the Metropolitan Area of Asunción, Paraguay	1387
<i>Marcos Benítez, Mauricio Galeano, Carlos Sauer</i>	

Study on the Challenges and Future Trends of IoT and 5G/6G Networks in Smart Agriculture 5.0	1393
<i>Héctor Kaschel, Sergio Cordero, Pablo Adasme, Cristian Ahumada</i>	
A Novel Metric Based on Linear Probes to Analyze Learning Progression in Deep Neural Networks	1399
<i>José Luis Vázquez Noguera, Carlos U. Valdez, Miguel García-Torres, Sebastian Alberto Grillo</i>	
Scalable Fault-Tolerant Predictive Current Control for Multi-Modular DC-AC Converters	1405
<i>Sergio Núñez, Rodrigo Romero, Hernán Lezcano, Bruno Sanabria, Sergio Toledo, Carlos Romero</i> <i>Raúl Gregor, Marco Rivera</i>	
Role Play as a First Approach to the Professional Role in Students of Electrical Engineering	1411
<i>Felipe Alarcón, Matías Pavez, Alvaro Hoffer, Constanza Lazcano, Camilo Maury</i>	
A Layer-by-Layer Backpropagation Approach for Image Classification	1417
<i>José Luis Vázquez Noguera, Carlos U. Valdez, Julio César Mello-Román, Marvin M. Aguero, José Colbes</i> <i>Sebastián A. Grillo</i>	
Part I – Design and Technical Validation of a Modular Thermocouple Grid for Low-Cost Thermal Mapping Systems	1423
<i>Fernando Fuentes-Peñailillo, M^a Luisa del Campo-Hitschfeld, Emmanuel Torres-Quezada, Karen Gutter</i> <i>Valentina Saavedra, Francisco Mateo</i>	
Electromagnetic Transient Simulations Using Hypersim and Matlab Simscape	1429
<i>Brian Muñoz Cabrera, Héctor Chavez Orástica, Gonzalo Toledo Ordñez</i>	
Techno-Economic Analysis of a Diesel-Windphotovoltaic Hybrid System With Battery Storage for an Off-Grid Household on Amantani Island, Peru	1437
<i>Ubaldo Yancachajlla Tito, Celso Antonio Sanga Quiroz, Edilberto Velarde Coaquira</i> <i>Nelson Esteban Chambi Quiroz</i>	
Control System for the Formation of a Balanced Hybrid Single/Three-Phase Microgrid From Three Isolated Single-Phase Microgrids	1445
<i>Bárbara Contreras Bustamante, Patricio A. Mendoza-Araya</i>	
Impacts of Incorporating End-User Behavior Into Demand Side Management Programs	1451
<i>Isidora González V., Patricio A. Mendoza-Araya</i>	
Design and Evaluation of an Energy-Efficient Hybrid Cooling System for Poultry Processing	1457
<i>Leandro Ambrosio-Flores, Daniel Felipe Sempértegui-Tapia, Renán Jorge Orellana-Lafuente</i>	
A Computational Economic Complexity Model for Regional Economic Integration: Analysis of the EU, MERCOSUR, URUPABOL, and the AndeanCommunity	1464
<i>Cristhian Marchuk, Luis Ríos, Arturo González, Sanny González, Gabriel Pereira, Christian von Lücken</i>	
Comparative Analysis of Machine Learning Models for Misogynistic Hate Speech Detection in Brazilian Portuguese: a Study Using the Mina-Br Dataset	1472
<i>Ana Rúbia Ramos Vicente, Jefferson Oliveira Andrade, Kelly Assis de Souza Gazolli, Karin Satie Komati</i>	
Vehicular Crowdsensing: A Comprehensive Review of Applications, Challenges, and Future Directions	1478
<i>Jonatan Mora-Gonzales, Jack Bravo-Torres, Esteban Ordoñez-Morales, Julio Montesdeoca</i>	
Estimation of NaCl Concentration in Aqueous Solution Using Partial Least Square Regression and Raman Spectroscopy	1484
<i>Edgardo Pérez Chambi, Daniel Sbárbaro Chambi, Rodrigo Fuentes, Fernando Castillo</i>	

Evaluating the Impacts of Realistic Communications on a Microgrid Central Controller Through Real Time Simulation	1489
<i>Cristóbal Undurraga, Patricio A. Mendoza-Araya</i>	
Analysis of Characteristics of Incoming Students to Informatics Programs at the Facultad Politécnica of the Universidad Nacional De Asunción	1494
<i>Ellen L. Mendez Xavier, Rita Cantero, Christian von Lücken</i>	
Predictive Modeling of the COVID-19 Reproduction Number Using Auto-ARIMA and Machine Learning Techniques	1501
<i>Pastor E Pérez-Estigarribia, Ayrton Giménez, Diego Stalder, Hyun Ho Shin, Carlos Sauer, Sebastián Grillo</i>	
A Robust Hybrid Fuzzy-Fuzzy Cascade and Sliding Mode Control Scheme for Tracking in Aerial Manipulators	1507
<i>Gabriela M. Andaluz, Paulo Leica, Guillermo Palacios-Navarro, Oscar Camacho</i>	
Assessment of Clustering-Based Segmentation Techniques for Multispectral Agricultural Imagery	1513
<i>Lídice Reyes-Hung, Ismael Soto</i>	
A LLM-Based Approach for Semantic Extraction and Linking of RDF Triples from Unstructured Text	1518
<i>Jesamin Zevallos-Quispe, Ana Aguilera, Irvin Dongo</i>	
Bio Lab Escape: An Educational Game for Teaching Cellular Biology	1524
<i>Oscar Rojas, Benjamín Robles, Sebastián Jeria, Makarena Abarca, Silvana Roncagliolo, Claudio Cubillos Verónica Rojas</i>	
Impact Assessment of Connecting an On-Grid Photovoltaic Generation System to the Electrical Distribution Network in Chillán	1532
<i>Eduardo Iraira, Jaime Rohten, Jorge Varela, Javier Muñoz, Johan Guzmán, José Silva</i>	
Autonomous Beach Cleanup Robot for the Chilean Coastline Using Edge AI and Computer Vision	1538
<i>Felipe Zambrano, Jaime Pavesi, Néstor González, Tamara Villegas, Iván Ramírez</i>	
Maloney-Wandell Spectral Recovery for Estimating Temperature, Radiation, and Sodium Distributions in Biomass Pellet Flames	1544
<i>Fernando Castillo, Hugo Garcés, Guillermo Zieballé, Marcel Gutiérrez, Edgardo Pérez, Matias Espinoza</i>	
Study of Demagnetization in a Coreless Axial-Flux Permanent Magnet Synchronous Generator for Small Hybrid Vertical-Axis Wind Turbines	1550
<i>Alvaro Hoffer, Felipe Alarcón, Matís Jiménez, Diego Obando, Boris Pavez, Héctor Young, Javier Coloma Jonathan Mac-kay, Felipe Ruiz, José Rodríguez</i>	
Hardware-in-the-Loop Validation of a Basic PV Model Using OpenModelica and OPAL-RT	1556
<i>Nadia Yasic, Angel Ulloa, Cristobal Carrasco, Cristobal Parrado, Juan S. Gómez Q.</i>	
Robust MPC Strategy for Markovian Jump Systems with Multiplicative and Additive Uncertainty Applied to Precision Medicine	1562
<i>Marcelo Aravena-Arellano, Diego Muñoz-Carpintero, Jonathan M. Palma</i>	
Preliminary Study of Learning Patterns in Engineering Students	1568
<i>Carolina Zambrano, Carlos Hernandez</i>	
Adaptive Polynomial Models for Analysis and Recovery of High-Frequency Meteorological Data	1574
<i>Oswaldo Delgado-González, Lien Rodríguez-López, Samuel Montejo-Sánchez</i>	

Linear Quadratic Integral Control with Double Integrator for Platooning System: A Numerical Study of String Stability	1580
<i>Carlos Escobar, Luis Severino, Héctor Ramírez, Andrés Peters, Francisco Vargas</i>	
Spectral Analysis of Sodium and Potassium Emissions in Wood Combustion for Tree Structure and Provenance Assessment	1586
<i>Matias Alfonso Espinoza Merino, Fernando Antonio Castillo Rivera</i>	
Triage Level Prediction Using Machine Learning with Tree-Based Gradient Boosting Algorithms	1592
<i>Jonathan Moya-Carvajal, Felipe Tirado, Xaviera A. López-Cortés, Ana Maria Carvajal Silva</i>	
Quadruped Robot Prototype Based on Artificial Intelligence Using Deep Reinforcement Learning Through the ROS Framework	1598
<i>Juan Soto, Gerson La Rosa Lama, Jesús Izquierdo Arcaya</i>	
Part II - Application-Oriented Functional Validation of a Modular Thermocouple Grid System Under Laboratory-Simulated Scenarios	1604
<i>Fernando Fuentes-Peñailillo, Ma Luisa del Campo-Hitschfeld, Emmanuel Torres-Quezada, Valentina Saavedra, Francisco Mateo</i>	
Harmonic Prediction of Load Current via Kalman Filtering for CCS-MPC of a Three-Level NPC UPS	1611
<i>Pablo Jiménez, Cristóbal Duarte, Andrés Mora</i>	
Fault-Tolerant Predictive Current Control in Nine-Phase Generation System Driven by a Multi-Modular Matrix Converter	1617
<i>Carlos Piris, Bruno Sanabria, Edgar Maqueda, Sergio Toledo, Osvaldo González, Marco Rivera, Gustavo Ojeda, Matias Aguilar, Gianyacomio Zucchini</i>	
PICTOS-AI: Generating Cognitively Accessible Pictograms with Artificial Intelligence for Inclusive Visual Communication	1623
<i>Gabriel Olmos Leiva, Ashley Jara Goicovich, Herbert Spencer González, Gabriel Hermosilla Vigneau</i>	
Marginal Costs in the Chilean Electricity Market with Inter-Hourly Linkage	1630
<i>David Sanhueza, Rodrigo Rozas, Leonardo Gacitua</i>	
Machine Learning for Cognitive Assessment in Virtual Reality Environments	1636
<i>Cristian Molina Pedernera, Mauro Mercado Fleiter, Gabriel Gatica Cassanova, Alejandra Acuña Villalobos, Claudio Alcota Henríquez, Diego Fernández Barrientos</i>	
An Affordable Robotic Manipulation Platform with Flexible Gripper and Vision for AI-Driven Control	1643
<i>Ismael Lopez-Juarez, Kieran I Lopez-Valadez, Roman Osorio-Comparan, Luis A. Castillo-Barrientos, Daniel Arrequin-Jasso</i>	
Zero-Shot Robotic Control via Custom LLM Agents: A Lightweight Framework for Embodied Learning	1648
<i>Ismael Lopez-Juarez, Kieran I Lopez-Valadez, Luis A. Castillo-Barrientos</i>	
AI-Enhanced Supercomputing Centers: Architectural Convergence and Scientific Applications in Latin America	1652
<i>Gabriel Gatica, Gastón Lefranc, Edison Vásquez, Roberto Muñoz, Roberto León, Andrés Silva</i>	
Analytically Estimated Cut-Off Frequency as a Decision Criterion Between Hairpin and Conventional Windings	1660
<i>Carlos Gálvez-Araya, Carlos Madariaga-Cifuentes, Cesar Gallardo, Juan A. Tapia</i>	

Linear Quadratic Integrator & Sliding-Mode Control Comparison for a Transfemoral Prosthetic Knee	1666
<i>Antonio Gallardo Montti</i>	
Finite Element Validation of MCSA-Based Algorithm for Rotor Fault Diagnosis in Low-Power Induction Machines	1672
<i>Gonzalo Fonseca-Yanez, Carlos Madariaga-Cifuentes, Cesar Gallardo, Carlos Galvez-Araya Juan A. Tapia</i>	
From Classification to Captioning: Adapting Vision-Language Models for Fruit Quality Description	1678
<i>José Donoso, Orietta Nicolis, Christian Pieringer, Billy Peralta</i>	
Emoticlass: Harnessing Artificial Intelligence for Emotion Detection to Enhance Learning in the Classroom	1684
<i>Gonzalo Garcia Cañete, Gabriel Gatica Cassanova, Cristian Molina Pedernera</i>	
Earthquake Forecasting Using Temporal Transformers on Spatial Grids in Chile	1692
<i>Yerko Farfán, Orietta Nicolis, Billy Peralta</i>	
A Case Study of Deep Learning-Based Image Enhancement for Skin Disease Detection	1698
<i>Marco Flores, Mauricio Riquelme, Luis Caro, Orietta Nicolis, Billy Peralta</i>	
Main Challenges of National Transmission Network Expansion: A Study on Energy Efficiency and Development	1704
<i>Patricia Sebaños Vaz, Miguel Edgar Morales Udaeta, André Luiz da Veiga Gímenes Viviane Tavares Nascimento, Vanessa Meloni Massara</i>	
Unveiling the Secrets of Successful Game Design	1711
<i>Dra. Lorena Martínez Elizalde, Carlos Astengo Noguez, Lic. Daniel López Salas</i>	
Heuristics for Ethereum Block Building With Semantic Interactions	1715
<i>Jazmín María del Luján Gamarra Benítez</i>	
Proposed Design of an Immersive Simulation: Virtual Reality and Mathematical Modeling	1720
<i>Francisco Guantecura, Elisabeth Ramos-Rodríguez, Felipe Muñoz La Rivera</i>	
Analysis of Grid Connection Requirements for Grid-Forming Inverters Using EMTP Software	1727
<i>Sebastian Seguel Barrios, Luis Gonzalez Pincheira, Hector Chavez, Roberto Perez, Juan Quiroz Carlos Fuentes</i>	
Analysis of Pre-Dispatch Scenarios to Determine the Value of Demand Disconnection as a Frequency Control Ancillary Service	1733
<i>Brayan Alucema, Héctor Chávez, Roberto Pérez, Luis González</i>	
Techno-Economic Analysis for the Implementation of a Photovoltaic System in Goat Farming Facilities in the Coquimbo Region	1739
<i>Daniel Castro, Gonzalo Toledo, Luis Gonzalez, Héctor Chávez</i>	
Impact of Operational Minutes Modeling on the Operation Forecast of Generadora Metropolitana's Assets	1745
<i>David Lefin, Julio Zavaleta, Hector Chavez, Carlos Fuentes, Luis Gonzalez, Roberto Perez</i>	
Control of a Single-Phase Ev Charger for V2G Applications	1751
<i>Tomas Ravet Orellana, Matias Diaz, Patricio Pizarro Jimenez</i>	

Hardware-in-the-Loop Validation of a Transformerless Electric Vehicle Charger	1757
<i>Daniel Velasquez, Alexander Rojas, Matias Diaz, Luis Pua, Luca Tarisciotti, Yeiner Arias-Esquivel</i>	
Experimental Assessment of a DC/DC Interleaved Converter for Hydrogen Generation	1763
<i>Luis Pua, Alexander Rojas, Daniel Velasquez, Macarena Villa, Matias Diaz, Mauricio Espinoza</i>	
Smart Traction and Gripping: Machine Learning Innovations for Robots	1768
<i>Fernando Passold</i>	
Agentic Manufacturing: Enabling Autonomous, AI-Powered Industrial Robotics	1774
<i>Ismael Lopez-Juarez</i>	
Biosystems Engineering for the Digital Transformation of Agriculture: Integrating Hardware, Software, and Global Collaboration	1782
<i>Fernando Fuentes-Peñailillo, Ma. Luisa del Campo-Hitschfeld, Emmanuel Torres-Quezada Gilda Carrasco Silva, Gaston Lefranc</i>	
Artificial Intelligence for Social Well-Being in Latin America	1787
<i>Gastón Lefranc</i>	
Systematic Mapping of Functional Characterization of Adaptability in Post-Quantum Homomorphic Cache Schemes: An Extension	1794
<i>Marlon Estiven Vargas Muñoz, Sebastián Muñoz Carvajal, Juan Sebastián Manquillo Lara Luis Freddy Muñoz Sanabria, Oscar Santiago López Erazo</i>	
A Comparative Study of the Performance of Traditional and Immersive Drones in Structural Inspection Tasks	1801
<i>Cristopher Guzman Perez, Felipe Muñoz La Rivera, Mathias Proboste Martínez</i>	
A Service for the Parallelization of Quantum Circuits	1805
<i>Jaime Alvarado-Valiente, Javier Romero-Alvarez, Jorge Casco-Seco, Enrique Moguel, Jose Garcia-Alonso Juan M. Murillo</i>	
The Variational Quantum Classifier from Qiskit Machine Learning Applied to the Classification of Pulsar Stars	1809
<i>Anna B. M. Souza, Clebson Cruz, Marcelo A. Moret, Otto M. Pires</i>	
Variational Quantum Models for Knowledge Graph Embeddings on NISQ Devices	1818
<i>Guido Bellomo, Martín Santesteban, Patricio Bruno, Santiago Cifuentes, Gustavo Martin Bosyk</i>	
A Review on Applications of Improved Quantum Genetic Algorithms	1822
<i>Lucas Apablaza, Iván Oyarzún Rojas, Ian Rossi A, Mauricio Solar</i>	
Automatic Qiskit Code Refactoring Using Large Language Models	1828
<i>José Manuel Suárez, Luis Mariano Bibbó, Joaquín Bogado, Alejandro Fernandez</i>	
QSimplify, Less is More: Reduction of Quantum Circuits	1836
<i>Víctor Mardones, Samuel Sepúlveda</i>	
Bridging Theory and Practice in Quantum Game Theory: Optimized Implementation of the Battle of the Sexes with Error Mitigation on NISQ Hardware	1840
<i>Germán Díaz Agreda, Carlos Andres Duran Paredes, Mateo Buenaventura Samboni Jhon Alejandro Andrade, Sebastián Cajas Ordoñez</i>	

A Survey on Fuzz Testing for Quantum Computing	1850
<i>Fernando Betanzo S´nnchez</i>	
Implementing Shor's 9-Qubit Code: Encoding, Decoding, and Correction on IBM and IONQ	1856
<i>Federico Fuidio, Mateo Stipanivic, Marco Zunino, Laura Gatti, Rafael Sotelo</i>	
Abstractions and Modularity in Quantum Programs Design	1862
<i>Julio Ariel Hurtado, Libardo Pantoja, C�sar Collazos, Enrique Moguel, Jos� Garc�a-Alonso</i>	
<i>Leandro Antonelli, Alejandro Fernandez, Luis Mariano Bibb�</i>	
Quantum Resource Management in the NISQ Era: Challenges, Vision, and a Runtime Framework	1872
<i>Marcos Lammers, Federico Hern�n Holik, Alejandro Fernandez</i>	
Q ² SAR: A Quantum Multiple Kernel Learning Approach for Drug Discovery	1880
<i>Alejandro Giraldo, Daniel Ruiz, Mariano Caruso, Javier Mancilla, Guido Bellomo</i>	