IECON 2025 - 51st Annual Conference of the IEEE Industrial Electronics Society

Tuesday, 14 October 2025

09:30-12:30	*Escorial* **Tutorial 10**
	El Jardin **Tutorial 1**
	Comendador **Tutorial 4**
	Doblon **Tutorial 9**
	Escudo **Entrepreneurship workshop**
13:30-17:30	*Galeria* **Tutorial 7**
	Doblon **Tutorial 5**
14:30-17:30	*Escorial* **Tutorial 2**
	El Jardin **Tutorial 8**
	Comendador **Tutorial 3**
	Escudo **Tutorial 6**
18:30-19:30	*Tapices* **Welcome reception**
19:30-21:00	*Tapices* **IES Officer Candidates Forum**

Wednesday, 15 October 2025

08:30-10:00	*Escorial* **S05-I-SS04 - Advanced Control and its Application in Complex Industrial Systems** **Sparse Modeling for Multiple Data-Driven Predictors in High-Mix Production Systems** *Sanga TAKAGI, Osamu Kaneko* **Modified Equivalent-Input-Disturbance Strategy and Fractional-Order Phase-Adaptive Feedforward Repetitive Control for PMSM Current Disturbance Suppression** *Jiaxing Ye, Mingyi Wang, Shun Cai, ruiqi xu, Sihang Cui, Junchi Li, chengming Zhang, Liyi Li*

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Soft-Actor-Critic-based Anti-Sway Control for Port Crane Systems with Bounded Disturbances *Zhenxiang WANG, Yilian ZHANG, Weimin XU*

A non-singular predefined-time sliding mode tracking control for PMSM Servo System *ruiqi xu, Zhuang Liu, Xinpo Lin, Shun Cai, Qiaoman Zhu, Jianxing Liu*

Energy management strategy for solid oxide fuel cell and photovoltaic integrated systems based on swarm intelligence optimization *Yingxue Chen, Changyu Ni, Zhixing Ji*

Robust Control of Drill String in Horizontal Boreholes of Coal Mines Considering Wall Friction *liu xiao, Luefeng Chen, Chengda Lu, Min Wu, Pedrycz Witold*

Direct Torque Controller with Fuzzy-Tuned Switching Gain for Torque Ripple Suppression in Switched Reluctance Motor Drives *Xijian LIN, Zifeng Chen, Shuo ZHANG, Lei Yang, Dianxun Xiao*

Inductance Parameter Online Identification-Based Super-Twisting Control of NPC Converters *Zhuang Kang, Xiaoning Shen, Yijie Wang, Guangxin Liu, Jianxing Liu, Sergio Vazquez*

Robust Nonlinear Control of Laser Scanning System under Stochastic Mechanical Disturbances *José A. Núñez-López, Oleg Sergiyenko, Ruben Alaniz-Plata, Dennis Molina-Quiroz, Cesar Sepulveda Valdez, Fernando Lopez-Medina, David Meza-Garcia, Vera Tyrsa, Wendy Flores-Fuentes, Julio Rodriguez, J. Fabián Villa-Manríquez, Fabian Murrieta, Marina Kolendovska, Paolo Mercorelli*

Transformer-based Human Action Recognition for Fine-Grained Industrial Assembly Tasks *Mayra Vanessa Alvear Gallon, Cosimo Patruno, Gadea Mata, Cesár Domínguez, Grazia Cicirelli*

Hidalgo

S02-I- TT01-2 - Electric Machines and Industrial Drives II

Time-efficient prediction of the complex spatial harmonic leakage inductance of DFIGs considering slot openings and magnetic saturation effects *Xi Zhu, Bernd Ponick*

Simultaneous Assessment and Fault-Tolerant Optimization of Flux-Switching Wound Field Machines Under Rotor Eccentricity Faults *Chiweta Abunike, Ogbonnaya Okoro, Sumeet Aphale*

A Fast Open-Circuit and Short-Circuit Fault Diagnosis of AMB Amplifiers Driven by Switching States and Multi-Current-Sensor Data *Yihua Chen, Dong Jiang, Yixuan Shuai, Mingqu Zhou, Jianfu Ding, Zicheng Liu*

Transient response shaping and its application to nonlinear PI-based current control systems *Christoph Hackl*

Development of a State and Disturbance Observer for a Wind Turbine and Implementation on a Machine Test Bench *Tim Tölle, Benedikt Spichartz, Lars Siepelmeyer, Constantinos Sourkounis*

Distributed cast tooth-coils in electrical machines: Opportunities and Challenges *Kora Winkler, Amir Ebrahimi*

Parameterized Topologies for Enhanced Electromagnetic Design Optimization of Radial-Flux Synchronous Machines *Fernando J. T. E. Ferreira, Inês Ferreira, André Silva*

Star Point Overvoltage Resonance Effects in Traction Motor Windings Caused by Close-in-Time Inverter Phase Switchings *Paul Aspalter, Markus Vogelsberger, Uwe Drofenik, Hans Ertl*

Analysis of Startup Characteristics of Single-Phase Wound-Brushless Exciters Using Analytical Modeling for Aircraft Integrated Starter

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Generator *Tuan Nguyen, Sarbajit Paul, Ji-Heon Lee, Jae-beom Kang, Hyeong-Jin Kim, Ji-Young Lee*

Novel Encoderless Detection of Motor-Bogie Suspension Failure in Railway Applications *Eduardo Rodriguez Montero, Markus Vogelsberger, Cedric Zanutti, Thomas Wolbank*

Toledo

IEEE Life Members Affinity Group Meeting

El Jardin

Meet IES Technical Comms.

Galeria

IES TC on Smart Grid Workshop

Comendador

S06-I-SSGT-7 - Advanced Control Techniques for Power Electronics Converters

In-Situ Diagnosis of Lithium-ion Batteries via Dynamic Electrochemical Impedance Spectroscopy *Xinghao Du, Jinhao Meng, YASSINE AMIRAT, Fei Gao, Mohamed Benbouzid*

Core Temperature Estimation of Lithium-Ion Batteries Using Physics Informed Neural Network and Kolmogorov-Arnold Network *Dominic Karnehm, Antje Neve*

State of Charge Estimation for Lithium-Ion Batteries Based on Rapid Dynamic Impedance and Time-Frequency Feature Analysis *Wenchao Liu, Zhengxiang Song, Yuhao Pan, Tao Zhang, Le Huan, Jinhao Meng*

Probabilistic Prediction of Li-ion Battery RUL using Large Time-Series Model *Xiaoyong Zhang, Haotian Luo, Xiaoyang Chen, Wenyu Deng, Heng Li, Weirong Liu*

Beyond Accuracy: Performance Evaluation Considering Testing Data Volume and Proportions for Photovoltaic Fault Classification *WEIQING LU, Claude DELPHA, Demba Diallo, Anne Migan-Dubois*

Induction motor modeling using modified winding function for fault simulation under variable speeds and loads using regime normalization *Mahfoud Bouzouidja, Abdenour SOUALHI, Mohamed El Badaoui*

A PSO-Optimized VMD–Transformer Hybrid Model for Lithium-Ion Battery RUL Prediction *LU ZHANG, Xinghao DU, Demba Diallo, Claude DELPHA, Mohamed Benbouzid*

Cyber-Secured Battery Digital Twin for the Reliable Power Supply of Modern Telecommunication Networks *Darshan Bhaskarbhai Soni, Masoud Amirrezai Haradasht, Hans D. Schotten, Stefan Goetz*

Synthetic Data Generation for AI-Driven Fault Detection in Wind Turbines *Elías Rafael Gracia Sosa, FCO JAVIER Rodríguez, Antonio José Jiménez Calvo, Pedro Martín Sánchez, Miguel Tradacete Ágreda, Pablo José Hueros-Barrios*

Design and Performance Evaluation of a Two-Stage 3-Phase 4-Wire AC-DC for High-Voltage Battery Charging Applications *Kuntal Mandal, Ubaid Ahmad, Javier Corea-Araujo, Abdelali El Aroudi*

A New Approach to Evaluating Aging in Passive Networks of Traction Inverters via Impedance Variation *Quirc Perez-Farre, Luis F Gomez-Rivera, Carlos López Torres, Antoni García Espinosa, Alejandro Paredes Camacho*

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Active Balancing of Parallel-Connected Battery Modules in EV Systems: A DAB-Based Architecture with AUKF-Enhanced SOC Estimation *Guangze Sun, Pengxiang Jing, Dongze Li, Abhisek Ukil, Akshya Swain*

Performance Analysis of Dual Active Bridge-Based Wireless Power Transfer Systems Under Coupling Variations and Non-resonant operation *Afaf Dagher, Jean Sawma, Hadi Kanaan*

Monitoring the degradation of SiC MOSFETs undergoing thermo-mechanical stresses *Margo Molenaar, Aditya Shekhar, Pavol Bauer*

Fast Single-Phase Integrated Battery Charger Based on Open-Winding Motor Drives and Model Predictive Control *Mahdi S. Mousavi, Mokhtar Aly, Alireza Davari, Freddy Flores-Bahamonde, José Rodríguez*

Castilla

S01-I-TT01-1 - Electric Machines and Industrial Drives -I

A Sequential Optimization Strategy for Electric Machines Targeting Torque Ripple Reduction and Energy Efficiency in Industrial Drive Applications *Chiweta Abunike, Ogbonnaya Okoro, Sumeet Aphale*

Derivation of Clarke and mutual inductance coupling factors in (d,q)-reference frame for synchronous machines with several multi-phase winding systems *Niklas Monzen, Johannes Roßmann, Christoph Hackl*

Zero-Sequence Current Mitigation in Open-End Winding PMSM Drives: A Comparative Study *Arda Tüfekçi, Æ°œ †–ÐÂarya Ahmet Kocaba ð*

Fault-tolerant Control of Open-Phase Faults With Non-Sinusoidal Current Patterns in DTP-PMSM Drive Systems *Xingquan Ai, Lan Xiao, Qunfang Wu, Qin Wang, Hao Niu*

Design and Investigation of a Hybrid Axial- and Radial-Flux Permanent Magnet Synchronous Machine *Yongkang Zhang, jiyao wang, Youkang Hu, Wei Xu, Qiyun Zhang*

Fast Startup Tuning with Motor Type Identification for Induction and Permanent Magnet Machines *Yoshiyasu Takase, Kazuhiro Ohyama, Yasumasa Hamabe, Noor Baloch*

Comprehensive analytical framework for harmonic behavior study of a PMSM under inter-turn short-circuit faults *Gontran Lance, Najla Haje Obeid, Fabien Vidal-Naquet*

A Novel Low-Complexity 6-DoF Magnetic Levitation Linear Motor Design *Koichi Matsuda, Jie Luo*

Selective EMI band suppression based on carrier phase-shifting and uniform Distribution PWM *Jiwen Gong, Dong Jiang, Yuanhao Xie, Hui Liu, Yafei Ma, Hongyang Liu*

Guideline for Simulation of Actuation Systems in Miniature Circuit Breakers *Trung Duong, Jianye Shi, Arda Tueysuez*

Doblon

S07-I-TT11 - Electronic System on Chip and Embedded Systems

An Embedded PIL Simulation Platform for Real-Time Debugging of a Traction System's Control Software *Iraitz Carretero Caballo, Lander Lejarza*

A 7nm CMOS Anomaly-Detection Deep-Learning Processor with Embedded A/D Converters and Pseudo-Image Generation for Sensor Fusion *Takashi Oshima, Keisuke Yamamoto, Seiji Miura, Keita Yamane, Goichi Ono*

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Boundary Search-Based Power Budgeting Method for Heterogeneous Systems *Ning Yan, Xin Li, Yilin Han, Yubo Zhang, Xia Dong, Teng Long*

An Edge AI-Enabled UAV System based on FPGA for Water Quality Monitoring with Hyperspectral Imaging *Chun-Hsian Huang, Yu-Chieh Lin, Shu-Ting Huang, Jo-Lin Li, Tsiai-Jung Li*

Low-Latency Serial-to-Parallel Conversion for Feedback Shift Registers via Semi-Tensor Product *Fengqiu Liu, Jianmin Wang*

Analysis and Implementation of Dynamic Consensus Algorithms in IoT Sensor Networks for the Secondary Control of DC Microgrids *Alejandro Redondo-Ayala, Gabriel Mujica, Airán Frances*

Accurate Real-Time Simulation of CLLLC Converters on FPGA: A Study of Sampling Resolution and Beating Effect *Téo Robert, Tarek Ould-Bachir, Valentin Combet, Mohammed Kenzi, Romain Monthéard*

From PyTorch to CUDA and TensorRT: Optimizing the Deployment of EfficientAD for Real-Time Visual Anomaly Detection *Andrea Quintans Fernandez, Roberto Fernandez-Molanes, Carlos Gonzalez, Juan J. Rodriguez-Andina, José Fariña Rodríguez*

Research on Multi-Core Thermal-Aware Task Scheduling Method Based on Reinforcement Learning *Xia Dong, Xin Li, Teng Long, Yubo Zhang, Yilin Han, Hepeng Wang*

A Digital Twin Approach for Health Conditioning of DC-DC Buck Converter using Analog-Digital Co-simulation *Henil Shah, Anupama Kowli, Mukul Chandorkar*

Segovia

S03-R-TT02-1 - Power Electronics and Energy Conversion

Two-three level DAB soft-switching and low current Triple Phase-Shift modulation *Pau Moreno, Macia Capo-Lliteras, Daniel Montesinos, Daniel Heredero-Peris*

A Partial-Power-Processing LLC-DAB DC/DC converter with a bridge arm reusing rectifier *Zhaiyi Shen, Kangan Wang, Keke Yang, Min Huang, Zhilei Yao, Weimin Wu*

Model Predictive Control for Zero Voltage Switching in Dual Active Bridge Converters *Ivan Ruiz, Pablo Moreno-Torres Concha*

Defining Operating Ranges for Efficient Magnetic Design in Dual Active Bridge Converters *Nishan Withana, Bishwas Basnet, Prasad Jayathurathnage, Paavo Rasilo, Tomi Roinila*

A Triple Active Bridge-Based Topology for Power Management in Green Hydrogen Production *Giuseppe Bossi, Alfonso Damiano*

Circular Economy R-Strategies for Reliability-Oriented Modular DAB EV Charging with Phase Shedding *Francesca Grazian, Lorenzo Ceccarelli, Riccardo Mandrioli, Ariya Sangwongwanich, Mattia Ricco*

Escudo

S08-I-SSGT-16 - Advanced Motor Drive and Control for High-Performance Robotic Joints

Acoustic Feature-Driven Cross-Domain Fault Diagnosis of Industrial Equipment: An Adaptive Feature Fusion Approach *Shengwei Li, Zhaoquan Ye, Lin Zhang, Hao Yang, Xiang Wu, Fanghong Guo*

Concept of Condition Monitoring System for Wind Turbine Drive Trains using Observer and Strain Gauge Bolts Sensors *Lars Siepelmeyer, Tim Tölle, Constantinos Sourkounis*

A YOLOv12-based Framework for Failure Diagnosis in Photovoltaic

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	System Modules *Rahmouni Djemaa, Leïla-Hayet Mouss, Mohamed Djamel Mouss, Mohamed Benbouzid* **Towards interpretable failure detection in induction motors via stray magnetic flux and fuzzy inference** *Luis Morales Velazquez, Arturo Y. Jaen-Cuellar, Jonathan Cureno-Osornio, Dunai Larisa, Jose Antonino Daviu* **Dual-Domain Separation Deconvolution Algorithm of Speed Signal for Gear Fault Detection under Variable-Speed Conditions** *Xu Huang, Jianzhong Zhang, Shuai Xu, Zheng Xu, Ning Wang, Guohua Li* **Transfer Learning–Driven Offline Diagnosis of Typical Faults in Permanent Magnet Synchronous Motors Using Open–Circuit Back EMFs** *Saeed Afrandideh, Edmund Marth, Gerd Bramerdorfer* **Current Sensor Fault Diagnosis Based on Digital Filter and Shallow Neural Network** *Maciej Skowron, Krystian Teler, Teresa Orlowska-Kowalska* **Digital Twin-based Bearing Fault Diagnosis Using a 4-DOF Model and Hybrid Deep Learning** *Habbouche Houssem, YASSINE AMIRAT, Demba Diallo, Mohamed Benbouzid* **A Digital Twin Approach for Enhancing Early Detection of Rotor Faults in Induction Motor Using Graph Convolutional Network** *Haraprasad Badajena, Bivash Chakraborty, Aurobinda Routray, Mamata Jenamani, T P Yuvaraj* **Assessment of Bearing Corrosion in Soft-started Induction Motors Computing the Permutation Entropy** *Vicente Biot-Monterde, Angela Navarro, Jose E. Ruiz-Sarrio, Jose Antonino Daviu* **An Improved and Lightweight DeepLabV3+ for Efficient and High-Precision Real-Time Semantic Segmentation** *Yu Mei, Haifeng Song, Min Zhou, Hairong Dong* **Effect of Load Variations on Rotor Rotational-related Frequency amplitudes in Induction Motor Current Signals with Eccentricity Faults** *Citlalli Zamudio, Isaias Cueva-Perez, Vicente Biot-Monterde, Dunai Larisa, Jose Antonino Daviu* **Optimal Scheduling Method for Virtual Power Plant Considering Electric Vehicle Priority Ranking** *Yirui Sun, Hongpeng Liu, Ruilu Wang, Fanli Meng* **Control Mode Detection of Inverter Based Resources in Grid Operations** *Alexandre Fiset, Zhihua Qu, Kenneth McDonald* **Decentralized Energy Management for Rural Communities: A Blockchain-Based Virtual Power Plant with AI-Driven Forecasting** *Daniel Martínez-Calleja, Carlos Santos, Jorge Pérez-Aracil, Cesar Lozano, Matteo Troncia, Imene YAHYAOUI, Carlos Cruz, Raquel Hernández-Marcos*
10:20-10:50	*Auditorio* **Opening Cerimony**
10:50-11:50	*Auditorio* **Keynote 1**
10:50-12:50	*Escorial* **S88-I-SS18 - Aerial Manipulation Systems in Dynamic Environments: Intelligent Modeling, Planning, and Control** **A Hierarchical Reinforcement Learning Method in Multi-UAV Target-Attacker-Defender Games** *Xilun Li, Xubin Zhou, Yipeng Yang, Zhan Li*

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A Formation Reconfiguration Mechanism for Aerial Cable Towed Systems against Thrust Loss *Xu Lidan, Bin Yang, Taihang Chen, Jianzhong Qiao, Dong Zhao*

Hierarchical Heuristic for Large-Scale Automatic Optical Inspection Route Scheduling Based on Neighborhood Search *Junhu Cao, Guangyu Lu, Qiqi Pi, Baoqing Yin, Jinyong Yu, Zhitai Liu*

Integral Sliding Mode Observer-Based Adaptive Output Feedback Control for PMLSMs *Zhongjin Zhang, Zhitai Liu, Weiyang Lin, Mengmeng Hu, Changlin Wen*

Attitude Tracking and Vibration Suppression During Flexible Spacecraft Maneuver under Input Nonlinearities and Measurement Errors *Umair Javaid, Michael Basin, Salman Ijaz*

Cooperative Task Assignment of Multi-FW-UAV System Using Adaptive Genetic Algorithm for Maritime Rescue Operations *Umair Javaid, Muhammad Imran Baig, Sami Shahid, Michael Basin*

A Simulation-based Pipeline for Data Generation and Validation in Learning-Based Visual Servoing *Yang Liu, Haoyu Zhang, Weiyang Lin, Chao Ye*

A Prescribed-Time Disturbance Estimation Method for Aerial Manipulator System *Jianwei Ma, Yipeng Yang, Sichen Yang, Jinhui Liu, Huanchen Yao, Zhan Li*

Adaptive Backstepping Sliding Mode Attitude Control for Aerial Manipulator under Variable Load and Disturbance Uncertainties *Liu Yang, Wenchao Tian, Junhui Zhang*

Non-local Feature Fusion and Mixed Multi-Metric Learning Enhanced Sketch-based Image Retrieval *Nannan Liu, Zhiming Zheng*

Trajectory Optimization for Multi Operator 5G-Enabled UAVs in Urban Environments *CELSO BUIAR, Marcelo Pellenz, Marco Teixeira*

Generalizable Height Estimation from Single Aerial Images across Datasets *Nannan Liu*

El Jardin

IES TC Meetings

Galeria

S90-R-TT16 - Mechatronics and Robotics

Camera-based Online Torque Estimation of a Multi-link Pendulum via Extended Kalman Filtering *Haydar Karhan, Zafer Bingul*

Compensation of the Transmission Errors in Electrically Preloaded Rack-and-Pinion Drives *Lukas Steinle, Valentin Leipe, Armin Lechler, Alexander Verl*

A Temperature-Dependent Proportional Valve Model of a Hydraulically Actuated Tower Crane *Tim Boye, Oliver Sawodny*

Adaptive Super-Twisting Sliding Mode Impedance Control for Cooperative Multi-Robot Manipulation *Lucas Wan, Ya-Jun Pan*

Proposal of a Multi-Flexible Wheel Robot Equipped with a Meridional Rotational Mechanism for Locomotion in Confined Spaces with Non-Circular Cross-Sections *Yuki Ono, Yosuke Monma, Fumio Ito, Taro Nakamura*

A Dual Calibration Framework for Exploring Environments using Heterogeneous Robot Swarms *Yun GAO, Hao Gao, Yang Shi, Jinni Zhou, Yiding Ji*

Multi-Sensor SLAM in Smart Factories: A Comparative Study on LiDAR and Visual Techniques using the ROS2 framework *Krithiga*

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	Ramesh, Maxim Friesen, Lukasz Wisniewski, Tullio Facchinetti **Quasi-Real-Time Motion Control via Measured Sampling Periods** *Kosuke Shikata, Seiichiro Katsura*
11:20-12:50	*Toledo* **Industry Panel: EMTP**
11:50-12:50	*Auditorio* **Keynote 2**
12:50-15:30	*Tapices* **WIE luncheon**
14:10-16:10	*Escorial* **S13-I-TT14-1 - Control Systems and Applications** **Stability Margins of Disturbance Observer: Addressing Uncertainty and Time Delay in Line-of-Sight Stabilization Systems** *Jiuqiang Deng, Qianwen Duan, Yao Mao, Qiliang Bao* **Stability analysis for delayed neural networks based on a delay-interval-adjustable-based method** *Xukang Chang, Yong HE* **Multi-Scale Feature-Probability Consistency for Domain Concept Drift Detection in Non-Stationary Industrial Fault Diagnosis** *Penglong Lian, Junlin Song, Jiyang Zhang, Jianxiao Zou, Shicai Fan* **Active Disturbance Rejection Control of the Motors of a Mobile Robot with Hardware Induced Delay** *Alberto Cerro-Sánchez, Luis Mérida-Calvo, Vicente Feliu-Batlle* **Hardware and Software Co-Design for Accelerating Model Predictive Control on Heterogeneous Compute Systems** *Marco Guerreiro, Marco Groß, Steven Liu* **A Neural Network-Based Model for Real-Time Prediction of Infectious Disease Dynamics** *samira asadi, Amirabbas Hadizade, MEHRDAD MOALLEM* **Automatic Recovery Planning and Execution Architecture for IEC 61131-3 Controlled Machinery** *Sebastiano Gaiardelli, Jan Wilch, Franco Fummi, Birgit Vogel-Heuser* **Predictive Model-Assisted Iterative Learning Control for Suppressing Unknown Periodic Disturbances** *AIJING WU, Xin Huo, Qingquan Liu, Linrui Wang* **Image Stabilization Incorporated Visual Simultaneous Localization and Mapping for Humanoid Robot Navigation** *Huei-Yung Lin, Kai-Chen Kang* **Disturbance-Learning-Based Attitude Maneuvering Control for Spacecraft Under Strong Composite Disturbances** *Hao Teng, Jiaao Wu, Yixuan Zhang, Qiang Xu, Dong Zhao* **Energy-Efficient Controller Design for Autonomous Aerial Systems Using Scalar Error Function** *Umair Javaid, Michael Basin, Zhihui He, Yuanjiang Liao* **Fault-Tolerant Approximated Inverse Control for Fractional-Order Nonlinear Hysteretic System** *Pukun Lu, Jinjun Shan* **Event-Based Photometric Gaussian Mixture Models for Visual Servoing** *Gu Gong, Qiang Wang, Zhen He, David Navarro-Alarcon*
	Hidalgo **S10-I-TT02-2 - Power Electronics and Energy**

Wednesday, 15 October 2025

Conversion III

Minimizing Circulating Current in Active Bridge Multilevel Converter Using HFL Analysis *Morteza Dezhbord, Martin Votava, Carlo Cecati, Marco Liserre*

Triple-Active Bridge Based Architecture for Power Unbalance Mitigation in MMC-PV Systems *Vivek P V, Anshuman Shukla, S. V. Kulkarni*

Symmetric and Asymmetric Switched-Capacitor Multilevel Inverter Topology with Reduced Components *Ahmed Awadelseed, Arkadiusz Lewicki, Haitham Abu-Rub, Ali Sharida*

Open-Loop Paralleling of Class E2 resonant DC-DC Converters *Ansley Jugoo, Florentin Salomez, Sébastien Carcouet, Bruno ALLARD, Yves Lembeye*

Magnetic Coupling Integration Method in Hybrid IPT Charger Featuring Constant Output Power and Soft Switching in Wide Misalignment Range *Armin Gheysari, Ali Yazdian Varjani, Amir Babaki, Thomas Ebel*

Leakage Inductance Model of Split-Bobbin Integrated Transformers for Resonant Converters *Joshua Rauber Neusser, Richard Schlesinger, Cristiano Facco, Maikel Fernando Menke, Marco Dalla Costa*

Artificial-Neural-Network Optimized Triple-Active-Bridge Converter Minimizing Total Semiconductor Losses *Tarek Younis, Fahad Al-Ismail, S.M. Suhail Hussain*

Optimal Triple-Phase Shift Modulation for Half Bridge Based Dual-Active-Bridge Converters *Marina Vitali, Andrea Cervone*

Magnetic Control of LLC Resonant Converter for Electric Mobility Applications *Sarah Saeed, Valter S. Costa, Pablo Quintana, Jorge García, Marina Perdigão*

Control of Three-Phase Nine-Leg STATCOM generating positive and zero-sequence component *František Iška, Tomáš Komrska*

Design Considerations for Single-Stage Current Source Inverters with Discharge Path with Surface-Mounted PMSMs *Dario Benatti, Giovanni Migliazza, Emilio Carfagna, Fabio Immovilli, Emilio Lorenzani*

Performance Evaluation of a Low-Loss PWM Method in Single-Stage Motor Drives *Syed Jahania Shah, Hafsa Qamar*

The Effect of Y-Capacitor Insertion at the Inverter Input on the Radiated EMI Analysis with a Load Open and Connected *Fumiya Ohashi, Sari Maekawa*

Cascaded H-Bridge Converter-Based PMSM Drive: PS-PWM and LS-PWM Modulation Comparison *Paul Adamu, Daniel Legrand Mon Nzongo, Chunyan Lai, Animesh Anik, K. Lakshmi Varaha Iyer*

Single-DC-Source Three-Phase Six-Level Topology Based on Flying Capacitor Converter *Javad Ebrahimi, Suzan Eren, Alireza Bakhshaei*

Toledo

IES Editorial Boards Meeting

El Jardin

IES TC Meetings

Galeria

IES Conference organizers education day

Auditorio

Wednesday, 15 October 2025

Industry Forum 1

Comendador

S14-I-SSGT-8 - Innovations in Power Conversion, Energy Management, and System Safety

Electric Vehicle Onboard Charger EMI Analysis *Qinghui Huang, YIRUI YANG, Yanwen Lai, Mohamed Elshaer, SHUO WANG*

Battery Health and Shifting-Aware Gear Ratio Optimization for Distributed Drive Electric Trucks *Shaokun Li, Zhiwu Huang, Yue Wu, Xiaoyong Zhang*

High Power Density Multiphase Coil Architecture with Integrated Filter Inductance for Wireless Power Transfer Systems *Pedro Alvarez Vega, Felix Rojas*

Building Fire Detection Based on Neural Network with Data Optimization and Algorithm Comparison *Yinghao Gan, Jiguang Chen, Ting Shao, zhangweiqi zhang*

Design of Building Fire Information Processing and Early-Warning System Based on Weighted Estimation and Multi-Model Fusion *Yinghao Gan, Jiguang Chen, Ting Shao*

Simulation of Intelligent Fire Protection System for Buildings and Spatial Visual Evacuation Design *Beibei Li, Yunyi Wu, Julan Lai*

Construction of Fault Lexicon for Electrical Test Systems Based on Knowledge Graphs *Yanmin Wang, Jiaming Wang, Zhihong Zhang, Dundun Liu*

Magnetic levitation vibration isolation platform based on sliding mode control *He Zhang, Haoran Cai, Yuexuan Lou, Baoquan Kou, Yuhang Liu*

Design of an Indoor Illuminance Analysis and Prediction System for Buildings Based on Neural Network Algorithms *Beibei Li, Yunyi Wu, Julan Lai*

Prediction-Enhanced Soft Actor-Critic for Optimal Energy Management of Electric Vehicles *Heng Li, Yulin Zhang, Yuxuan Cai, Yue Wu*

Switching Control of Off-Grid/Grid-Connected Modes in Grid-forming PV-Storage Systems Based on VSG *Yanmin Wang, Qiuying Zhou, Wenwen Xiong, Juan Yu, Miao Miao*

Analysis of Safety and Power Supply Capability for DC Low-Voltage Distribution Systems *Wei Li, Guangxi Li, Kele Ni, Dongxu Li, Wenwen Xiong, Juan Yu, Miao Miao*

A Constant Frequency Four-Switch Buck-Boost Converter with Current Programmable Control and Seamless Mode Transitions.. *Shaik Shafia Sulthana Taj, Naga Brahmendra Yadav Gorla, Ramesh Kankanala*

Castilla

S09-I-TT02-1 - Power Electronics and Energy Conversion

Dual-Bipolar Modular AC-AC Converter for Frequency Conversion in Low Frequency Transmission Applications *Haoran Yi, Fujin Deng, huailong li, Yaqian Zhang*

Continuous-Control-Set Model-Free Predictive Control for DC-DC Converters with Runge-Kutta-Based Ultra-Local Data-Model *Zheng Yin, Fujin Deng, Yeyuan Xie, Sayed Abulanwar, huailong li, Mingzhen Yang, Haoran Yi, Sergio Vazquez*

Rethinking Carrier-based Common-mode Voltage Mitigation and Capacitor Voltage Balancing in Three-level NPC Converters *Wei Xu, Jun Wang, Wenzhi Zhou, Xibo Yuan*

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Harmonic State Space Model Analysis of Thyristor-Controlled LC Voltage Source Converters *Haoyu Zhang, Manchung Wong*

A Clamped Resonant DC/DC Boost Converter and its Wide Adjustable Input Voltage Range Design for Photovoltaic Medium Voltage DC Collection *Yulong Wang, Binbin Li, Yingzong Jiao, Zhiyuan Wang, Dianguo XU*

Inter-Cluster Energy Balancing Using Instantaneous Power Theory in Delta-Connected Cascaded H-Bridge Converters *José Ignacio Gajardo, Javier Pereda, Pablo Poblete, Ricardo Aguilera, Felix Rojas, Diego Verdugo*

Flyback Converter EMI Modeling and Reduction Survey *Juntao Yao, SHUO WANG*

Experimental Evaluation of EMI and Efficiency in a Hybrid T-Type Wide-Bandgap Converter *David Lumbreras, Jordi Zaragoza, Néstor Berbel, Luis Romeral*

Comprehensive Optimization of ISOP-based Dual-Active-Bridge Converter Under Zero-Common-Mode Modulation *Zhenyu Wang, Dong Jiang, Xuan Zhao, Wei Sun*

Low THD and Harmonic-optimized Nine-level modulation strategy for ANPC/H-bridge Converter *Yiming Sun, chengming Zhang, Zihao Zhu, Qingwei Zheng, Mingyi Wang, Liyi Li*

Modeling of Asymmetric Charge-Controlled LLC Converters Considering Ramp Compensation *Qingyuan Xu, Tengran Ma, Xiangkai Shi, Daorong Lu, Haibing Hu*

A coordinate LVRT control for High-Frequency Link Matrix Converters with enhanced efficiency *yunqing hu, Fujin Deng, Sayed Abulanwar, Abdelhady Ghanem*

A Simplified Model Based Predictive Control Strategy for ANPC Converters using Sequential Optimization for Reactive Power Compensation *Matias Aguilar, Juan Arnaldo Insfran Ferreira, Alfredo Renault, Leonardo Comparatore, Julio Pacher, Osvaldo Gonzalez, Marco Rivera, Patrick Wheeler*

AC Voltage Optimization Method for Bipolar TBL-HMMC HVDC Systems under DC Fault Protection *Mingzhen Yang, fujing Deng, zijian Zhu, huailong li*

Doblon

S15-I-TT10 - CPS and IoT in Industry

A Convolutional Neural Network Model with Multi-head Attention for DDoS Detection in 5G Networks *Íris Viana dos Santos Santana, Álvaro Sobrinho, Leandro Dias da Silva, Danilo F. S. Santos, Angelo Perkusich*

Analysis of hybrid application of neural network algorithms and expert rules for detecting anomaly condition of turbine units *Fedor Mitin, Artem Popov*

Benchmarking Digital Twins for Tower Cranes: Isaac Sim vs. Gazebo *Juliana dos Santos, Murilo Bicho, Tony Froes, Gabriel Dorneles, Silvia Botelho, Eder Mateus Gonçalves, Marcelo Pias*

Multivariate Time Series Anomaly Detection in Cyber-Physical Systems Using Sparse Attention *Yuhao Li, Jiajun Gui, Duanjin Zhang*

Secure Medical IoT Networks Using Blockchain and Post-Quantum Cryptography *Jorge Señor, Jaime Señor, Jorge Portilla*

Adapting IEC 62443 for Steganographic Threat Detection in ICS Environments *Natasha Edeh, Esin Özturk, Karl Waedt*

EdgeFL-HW: A Hardware-Aware Federated Learning Framework for Resource-Constrained Heterogeneous Devices in Industrial Networks *xiying li, Changqing Xia, Chuanzhi Zang*

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Digital Twin for Network and Industrial Operation *Alessia Tarozzi, Mahin Ahmed, Hans-Peter Bernhard, Roberto Verdone*

Intelligent Slab Temperature Sensing for Hot Rolling: An Integrated Model Based Method *Yifan Zhang, Tiankai Jin, Shigeng Wang, Xiaojing Wen, Cailian Chen, Xinping Guan*

Towards Transformation of Formal Descriptions into SMT Models for Modular Plant Configurations *Michael Winter, Bowen Chen, Tobias Kleinert*

A Deterministic Event-Driven Software Bus for Virtualized Industrial Edge Applications *Bintao Yu, Shang Gao, xinkai zhang, Wenbin Dai*

Learning Beyond Labels: Self-Supervised Methods for Anomaly Detection in Cyber-Physical Systems *Swagat Das, Devin Drake, Harindra Sandun Mavikumbure, Victor Cobilean, Milos Manic*

Segovia

S11-R-SS49 - The Responsible Practice of Generative Artificial Intelligence for Industrial Applications and Systems

Multi-modal Hierarchical Diffusion Model for Robust and Realistic Trajectory Generation *Harindu Udage Kankanange, Dimuthu Kariyawasan, Nimeshika Hewa Dehigahawatta, Nilushika Hewa Dehigahawatta, Oshada Jayasinghe, Vidura Sumanasena*

GAN-Driven Signal Denoising and Enhancement for Robust Drone Motor Detection *Dilshara Herath, Chinthaka Abeyrathne, Supun Ganegoda, Chatura Seneviratne, Harindra Sandun Mavikumbure*

ReACT - Gen AI Agents for Reasoning, Planning, and Testing in IEC 61499-Based Control Systems *Midhun Xavier, Sandeep Patil, Chen-Wei Yang, Valeriy Vyatkin*

AI-Driven Smart Ultra-Fast EV Charging Stations Using Single-Inductor MIMO Converter: A Grid-Stable and Energy-Efficient Solution *Mojtaba Hajihosseini, Hossein Ghasemisahebi, Ali Reza Sattarzadeh, Saman Asghari Gorji*

Reasoning-Driven Anomaly Detection for Skin Disease Diagnosis via Chain of Vision *Duy Truong, Thien Huynh, Vidura Sumanasena*

Generative AI Assistant for Netlist Generation and Smart Component Suggestion Using Knowledge Graphs and Retrieval Augmented Generation *MUSHA AHAMED R Y, Nithish Kumar VC, Ashwin Singh S, Navajyothi KP, Yuvan B S, Chanuka Wijayakoon*

Generative AI Agents for Hyper Predictive Maintenance of Solar Energy Systems *Dilantha Haputhanthri, Chamod Samarajeewa, Daswin de Silva, Milos Manic, Nishan Mills, Harsha Moraliyage, Andrew Jennings*

AI-Driven Assistant for Optimal Design of Two-Level Three-Phase Voltage Source Inverters *Virginia Negri, Francesco Bazzani, Alessandro Mingotti, Riccardo Mandrioli*

Escudo

S16-I-SSGT-17 - Data-Driven Optimization and Control for Modern Power Systems and Energy Markets

Linking Behavioral Patterns to Energy Use: A Profile" Based Approach for Enhancing Consumption Flexibility *Carlos Cruz, Carlos Santos, Felipe Espinosa, Marcos Tostado-Véliz, Ignacio Bravo*

Multiobjective Optimization of Blackstart in Distribution Systems Using Genetic Algorithm Considering ENS and System Recovery Time *Lucas Freire Santos Azeredo, Imene YAHYAOUI, Jussara Farias Fardin, Helder Roberto de Oliveira Rocha*

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	Assessing the Impact of Ground-Based Cloud Observations on Photovoltaic Generation Forecast *Mario Albanese, Daniele Carta, Ulrich Löhnert, Andrea Benigni* **Harmonizing Energy Markets and Ancillary Services in Europe: A Comprehensive Review of the Unification Projects** *Javier Cardo Miota, Emilio Pérez, Hector Beltran* **The cost of privacy in local energy markets: Auction vs. central mechanisms** *Khaled Abedrabboh, Luluwah Al-Fagih* **Load Frequency Control Strategy for Power Systems Integrated with Electric Vehicles and PV Systems** *Abdelkader Halmous, Hossam Eddine Aymane ABBOU, Youcef Oubbati, Mohamed Lahdeb, Salem ARIF, Mohamed Trabelsi* **Multi-Objective EV Aggregator Profit and Voltage Deviation Optimization in Day-ahead Market** *Abu Zar, Syed Muhammad Nawazish Ali, Ali MORADIAMANI, Mahdi Jalili* **Optimal Operation of Multi-Energy Microgrids with Attention-Boosted Multi-Agent Reinforcement Learning** *Yinghao Wang, Wang Lei, Fanghong Guo, Hongye Su* **CPP-GNN: A Temporal Hypergraph Neural Network for Carbon Price Prediction in Electricity Market** *Renbo Zhang, Xilin Dai, Hua Wang* **Energy Management Strategies and Hybrid Fuel Cell-Powered Autonomous Underwater Vehicles: A Comparative Study** *Youcef Belkhier, Clemens Deutsch, Haroon Rashid, Emmanuel Delaleau, Gang Yao, Abdeslam Mamoune, Mohamed Benbouzid* **GAF-CNN-LSTM Hybrid Model for Power Load Forecasting in Non-Stationary Grids** *Qianyuan Dong, Jinglin Liu* **Machine Learning Forecasting and GAN-Based Scenario Control for EV Charging and PV Integration** *Fatemeh Nasr Esfahani, Neeraj Suri, Xiandong Ma* **Low-Model-Dependency Adaptive Droop Control for Islanded DCMGs Using EKF Estimation and Fuzzy Logic Damping** *Abd Alelah Derbas, Chiara Bordin, Sambeet Mishra, Frede Blaabjerg* **Hybrid Modelling and Limit Cycle Control of an Interleaved Synchronous Buck Converter** *Mohamed Benmiloud, Khaled Rayane, Atallah Benalia, Mohamed Trabelsi* **Enhanced Frequency Regulation in Low-Inertia Microgrids Using PID-Based Virtual Rotor Control with EV and DR Support** *Hossam Eddine Aymane ABBOU, Abdelkader Halmous, Mohammed Benzoubir, Abdelmoumene Delassi, Salem Arif, Luiza Santos, Mohamed Trabelsi*
16:30-18:30	*Escorial* **S22-I-TT14-2 - Control Systems and Applications** **Improved delay-set-partitioning-based stability analysis for delayed T-S fuzzy systems** *Zhou-Zhou Liu, Li Jin, Yong HE* **Divide-and-Conquer Multi Agent Path Finding for Fast Facility Layout Optimization** *Shunichiro Sugiyama, Hiroyuki Okuda, Tatsuya Suzuki* **Novel Adaptive Super-Twisting Observer-Controller Framework with Input Constraints** *VSS Sri Krishna TelikicherlaKandalai, Jishnu Keshavan* **A Robust Dynamic Output Feedback Control for a Class of Uncertain Switched Affine Systems** *Haruto Takahashi, Hayate Sawato, Kouki Shibuya, Takuma Kawakami, Yoshikatsu Hoshi, Hidetoshi Oya* **Fault Estimation for Polynomial Fuzzy Systems with Unmeasurable Premise Variables and Its Application to Bridge Crane System** *Jingyu Ding, Siyang Zhao, Jinyong Yu, Michael Basin, Mariusz Malinowski*

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Adaptive Robust Preview Formation Controllers for Uncertain Discrete-Time Multi-Agent Systems *Kouki Shibuya, Hayate Sawato, Hidetoshi Oya*

Adaptive Distributed Model Predictive Contouring Control for Path Following of Unmanned Surface Vessels *YANMING ZHOU, Huiping Li, Qifan Yang, junlong liao*

A Composite Nonlinear Fault Tolerant Control Scheme for Octorotor UAV System *Umair Javaid, Salman Ijaz, Zainab Akhtar, Michael Basin*

Sync-A: A Xilinx Aurora-Based Interface IP with Sub-nanosecond Synchronization Error Timing Distribution Capability for Large-Scale High-Frequency Modular Power Converters *Mingze Gao, Vladimir Mitrovic, Rolando Burgos, babak fahimi*

ADRC-Based Quadrotor Guidance for Three-Dimensional Target Interception *Zakaria MEHAL, Mohamed Guiatni, Yasser BOUZID, Sidali REKIA*

Unscented Kalman Filter for Leader-Follower Target Tracking Control of Multi-Agent Systems *Sanila P, Jeevamma Jacob, Rijil Ramchand*

Synthesis of Decentralized Variable Gain Robust Model-Following Controllers Giving Consideration to Transient Behavior for Uncertain Large-Scale Serially Connected Systems via Piecewise Lyapunov Functions *Hayate Sawato, Kouki Shibuya, Haruto Takahashi, Takuma Kawakami, Yoshikatsu Hoshi, Hidetoshi Oya*

Hidalgo

S18-I-TT03-1 - Power Systems and Smart Grid

A Switching Method for Seamless Transitions Between Grid-Following and Grid-Forming Control Without Inner Current Loop *zhiyu zhang, Jianan Yan, Xiaojie Shi, Zhiqiang Wang, Lei Lin*

Design and Implementation of Highly Reliable SSCB for EMP Power Distribution Systems *QingGuang Xia, Jin Wu, Nan Wu, Xueyan Zhang, Junxin Fan, Xiaoke Sun*

Model Predictive Control-based Grid Forming Control for AC Shipboards Microgrids *Pedro Catalán, IVAN MARTINEZ, IÑIGO REBOLLO, CARLOS RUIZ*

Modulation-Based Modeling of Arc Fault Electromagnetic Radiation for Robust Feature Extraction *Ratnakar Nutenki, Aurobinda Routray, Ashok Kumar Pradhan, Haraprasad Badajena, Bivash Chakraborty*

A practical implementation of an n-th Harmonic mitigation for SCIM drives *Fahimeh Shiravani, Ivan Martinez, Pedro Catalán*

Multi-Horizon Power Transmission Forecasting with Future-Known Inputs and Trends *Jaeseok Yoo, Young-jin Oh*

Coordinated Optimization of Geothermal-solar-wind Multi-energy Microgrid Considering Energy Quality *Hongjia Li, Ziyi Bai, Man Chung WONG, Da Xu, Ningrui Yang, Zhen Zhu*

Optimization of Power Processing in Two-Leg Interleaved Converters to Improve System Efficiency *Eduard Martínez, Fabrício Hoff Dupont, Jordi Zaragoza, Manuel Lamich, Néstor Berbel, Gabriel Capellà*

Intelligent Day-Ahead Scheduling of Bidirectional EV Charging for Economic and Grid Performance Enhancement *Youssra Lahrarti, Hamid Ouadi, Nada Mounir, ISMAEL JRHILIFA, Saida Elbakali*

A Comparative Study on Neural Network Architectures for DC Optimal Power Flow *Mamoun Lyes Hennache, Maad Alowaifeer*

A Decentralized Algorithm for Economic Dispatch *Mohammad Jahvani, Martin Guay*

Evaluating Microgrid Autonomy and Load Support under Islanded

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Conditions: CampusGrid Case Study *Luiza Higino S. Santos, Hercules Oliveira, Jéssica A. A. Silva, Marcos J. Rider, Luiz Carlos P. da Silva, Lucas de P. A. Pinheiro*

Investigating the Energy Storage Requirements for a Distributed STACOM for Voltage Regulation in Weak Low Voltage Distribution Grids with Significant Photovoltaic Generation *Christian Klumpner, Siti Husna Anuar*

Optimized Footstep-based Energy Harvesting Approach using Node Distribution and LTC3588 Nanopower Interface for Efficient Battery Charging *Fatma Abou Elhassan, Dania Abdelsamie, Remya Nair, Kareem Maree, Zainab Abou Elhassan, Mohamed Trabelsi, Nader Shehata*

Resilient Decentralized Frequency Regulation for Multi-Area Power Systems under DoS Attack *Yue Long, Liu Qi-Dong, Tieshan Li, Jian Li*

Toledo

S20-R-TT02-2 - Power Electronics and Energy Conversion

Decentralized Control of the Decoupled Modular Multi-Active-Bridge Converters for Modular Scalability *Chengwei Liu, Kai Sun, Di Mou, Adrià Junyent-Ferré*

Unified Control Scheme of the Interlink Converter for Multi-voltage Level DC Distribution Systems *Chengwei Liu, Vardan Saxena, Adrià Junyent Ferré, Yitong Li, Kai Sun*

Operation Principle of T-Type Transformerless Modular Multilevel DC-DC Converters Under Quasi-Square Wave Modulation for HVDC Grids *yipeng su, Hao Zhang, Ke Cheng, Heya Yang, Xin Xiang, Chushan Li, Wuhua Li, Xiangning He*

Multi-CV-Output Domino Wireless Power Transfer System With Reconfigurable Voltage Levels *Yilin Zhang, Haoyuan Xiao, Bowang ZHANG, Yangyang Chen, Junyu Fan, Wei Han*

Reference Current Saturation Methods for Modular Multilevel Converters in HVDC Systems *Leonardo Testa, Petros Karamanakos, Christoph Hackl*

A Hybrid Observer Approach for Cell Voltage Estimation in Modular Multilevel Converters *Oliver Kalmbach, Stephan Trenn, Christoph Hackl*

Global Zero-Vector Substitution Current Balancing Control for a 19kA Multilevel CSC in Hydrogen Electrolysis *Tianji Zhou, Biao Zhao, Bin Cui, Tianyu Qiu, Yantao Lou, Xiaoping Sun*

A Programmable Low-Voltage GaN Switching Cell with an Electronic Fuse to build Modular and Scalable Multilevel Power Converters *Marti Puigpey, Joan Nicolás-Apruzzese, Gabriel Garcia-Rojas, Sergio Busquets-Monge, Germán Fañanás-Puigjaner, Fabio Bernardi*

El Jardin

IES TC Meetings

Tapices

Welcome Newbies

Galeria

IES Conference organizers education day

Comendador

S23-I-SSGT-10 - Innovations in Electromechanical

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Drives, Motion Control, and Power Components

A Brushless Resonant Exciter Concept for Radial Flux Motors *Sam Dobbelaere, Peter Sergeant, Hendrik Vansompel*

Automated Drifting for 4WD Vehicles: Analysis, Controller and Experiment *Sheng Zhao, Zhouhang Yu, Liang Yan, Hangyu Lu, Xiaodong Wu*

Multi-Material Topology Optimization for IPM Machine with Efficient Rare-Earth PM Utilization *Mohamed Reda Mahmoud, Mohamed Ibrahim, Peter Sergeant*

Lifetime-aware nonlinear model predictive speed control for electric vehicle power converters *Umberto Montanaro, Francesco Accettura, Bo Wang, Carmine Caponio, Pietro Stano, Davide Tavernini, Patrick Gruber, Yinglong He, Vishwas Kulkarni, Gianluca Mastrorillo, Raffaele Carli, Mariagrazia Dotoli*

Global/Local Performance Analysis of Driving Force Based Hierarchical Decentralized Motion Control System for Multi-Motor Vehicles *Nguyen Binh Minh, Antonio Tota, Hiroshi Fujimoto, Aldo Sorniotti, Shinji Hara*

On the benefit of direct wheel torque control for longitudinal comfort enhancement on uneven roads *Davide Lazzarini, Antonio Tota, Aldo Sorniotti*

Driving Force Control with Average-Differential-Coordinate-Based Slip Ratio Control for Left-Right-Wheel-Independent-Drive Electrified Vehicles *Hiroyuki Fuse, Hiroshi Fujimoto, Naoki Takahashi, Ryota Takahashi, Takayuki Hayashi, Kaoru Sawase*

Active Thermal Control optimization and evaluation with detailed simulation and different lifetime models *Maciej Brzycki, Nimananda Sharma, Linhua Lai, Artem Rodionov, Yujing Liu*

Evaluating and comparison of mechanical and solid-state contactors for aviation battery systems *Eymen Ipek, Elena Blazhevska, Guenter Prochart*

Thermal Profiling of Next-Generation Solid-State Batteries for Advanced Automotive Battery Management Systems *Chandan Chetri, Alvin Huynh, Sheldon Williamson*

Equivalent Circuit Parameterization from Electrochemical Impedance Spectroscopy Data for Accurate Battery Degradation Prediction using Convolution Neural Network *Latha Anekal, Chandan Chetri, Meaghan Charest-Finn, Sheldon Williamson*

Techno-Economic Analysis of Grid Connected, Solar and Wind Power Generation based EV Charging Station *Fareed Ahmad, ATIF IQBAL*

Schottky diamond diodes in switching operation: a new step towards the future of power electronics *Alexandre Battiston, Juliette Letellier, Matthieu Landel, Eliott Cornes*

Design and Analysis of MIMO Coil Based Dynamic Wireless Charging System for Electric Vehicle *ZHISHEN LUO, Junyu Fan, Bowang ZHANG, Wei Han*

Physics-Based Hybrid Analytical Empirical Model for GaN-HEMT Incorporating Dynamic Drift Velocity, Nonlinear Parasitics, and Thermal Feedback *Kundan Kumar, VIKRAM KUMAR SAXENA, Benjmin A Shimray, Vima Mali, Sanjeet Kumar Dwivedi*

Castilla

S17-I-TT02-3 - Power Electronics and Energy Conversion

Research on Transient Synchronization of Wind Turbines Based on the Analysis of Phase - Locked Loop Damping Ratio and the Improved

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Voltage Normalization Control Strategy *yang yuheng, Zekang XIAO, Qihui Liu, Xipeng Cai, Yihua Zhu, Chao Luo, Xueshen Cui*

Novel Carrier Phase Shift Control of MMC for DC Transmission System *Dan Zhang, Suijun Xiao, Minglong Zhang, Yilian ZHANG*

Research on A Composite Hydrogen Production Power Supply Based on PV-Storage *Yan Li, Jing Deng, MingJun Ke, Yucheng Deng*

Design of Magnetic Coupling Mechanism for WPT System Based on Fractal Geometry *Zhiying Zheng, Zhihao Ye, Cheng Chen, Jiatong Li, Xiyu Gao, Changcheng Zhao*

Investigating the Impact of DC-Link Capacitance on VSC Impedance Characteristics and Its Reduction Strategies under Weak Grid Conditions *Lei Meng, Zilin Li, Yinbo Ge, Ka Wing Chan*

A Novel PHIL System with (almost) Ideal Delay Compensation for Grid Impedance Emulation *Zhao Song, Christoph Hackl*

Comparative Analysis of TSD and NTC-Based Temperature Measurement for Power Semiconductor Modules *Eneko Agirrezabala, Ane Portillo Cancho, Miguel Lajas, David Garrido, Iosu Aizpuru*

Efficiency Improvement of Inductive Power Transfer System with Two-Stage Partial Power Processing *Hang Lu, jiyao wang*

Unified State-Space Modeling of Switched Systems in SystemVerilog With Emulated HiZ Phases *Sebastien Cliquennois, Silvia Tedesco, Francois Ravatin, Davide Lena*

Fast Verification Flow for Switched Devices with Analog SystemVerilog Models *Silvia Tedesco, Sebastien Cliquennois, Francois Ravatin, Davide Lena*

A Simple dv/dt and di/dt Closed-loop Active Gate Driver for SiC MOSFETs *Xuhao Zhu, Wu Chen, Xiaokun He*

Negative Sequence Cancellation in DFIGs via Independently Controlled Dynamic Braking Resistors *Filip Baum, Jesus Lopez, Javier Samanes, Jan Bauer*

Switching Loss Reduction in Dual-Inverter Topologies Using a Modified Generalized Discontinuous PWM Strategy *Jakub Kucera, Filip Baum, Jan Bauer*

Graphical Analysis and Design Method for Class E Inverter Feeding Complex Load at Any Duty Ratio *Zifan Zhang, Wei Wu, Yati Chen, Shuxiao Wang, Jiongkang Lin, Min Sun*

A Novel Step-Wave AC Collection System for Efficient VSC-HVDC Transmission *Zewei Hao, Wu Chen, Xiaokun He, Yueyin Wang, Siyi Luo, Jianxi Lan*

Doblon

S24-I-SS25 - Data-driven fault diagnosis and fault-tolerant control for industrial systems

A Low-Complexity Data-Driven Approach for Accurate Real-Time State of Health Estimation in Lithium-Ion Batteries *Hadi MAWASSI, Gilles Hermann, Djaffar OULD ABDESLAM, Lhassane Idoumghar*

A Detection-Driven Two-Stage Approach for Knee Cartilage MRI Image Segmentation with Memory Enhancement *Hancheng Qin, Dingzhou Li, Hao Luo, Yong Qin, Songcen Lv, Yuchen Jiang*

Advancing MOSFET Fault Type Detection Through Data-Driven Unsupervised Learning *Abdallah Alfaham, Murat Kocak, Furkan Elmaz, Jerome Mitard, Joris Vanderschrick, Kevin Mets, Siegfried Mercelis*

Robust Fault Detection for Li-ion Battery of Electric Vehicles via Wasserstein GAN *Fu Jiang, Siqi Ruan, Ziling Tang, Heng Li, Rui Zhang*

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Rational-Safe Reinforcement Learning Energy Management for Hybrid Electric Vehicles *Fei Li, Mingjie Li, Shaokun Li, Yue Wu, Yundong Song, Heng Li*

A Mechanism LSTM-Based Digital Twin Model for DC-DC Converters with Parameter Estimation Using An Ant Lion Optimizer *Ziyu Zhang, Yinxiao Zhu, Yongheng Yang*

Machine Learning-Based Distributed MPC with Consensus Regularized for String Formation in Vehicle Platoons *zixuan li, wei zhang, zhe zhang, ruichi sun, Zeyuan Xu, Antonella Ferrara*

Optimizing Maintenance Processes with AI and Modern Techniques *Emma Grass Casalini, Joao Afonso Bastos, Pu Sun*

Transfer Learning Based Motor Fault Diagnosis Using Motor Current Signals Robust to Speed, Load, and Capacity Variations *Wonho Jung, Junho Kim, Chanseung Yang, Jaewan Kim, Yong-Hwa Park*

Advanced Multi-Fault Diagnosis of PMSMs using Deep Transfer Learning and CWT-Based 2D CNNs *Danya Al-Hindawi, Maher Al-greer, Imran Bashir, Abdul Aziz Ayub*

VMD-SO-LSTM Based Fault Prediction and Proactive Fault-Tolerant Control Strategy for IGBT in Hydrogen Production Converters *Xinke Zhu, Jiawei Chen*

Entropy Production Analysis in Pressure-Swirl Nozzle Flow Fields with Implications for Data-Driven Fault Diagnosis *Chuanwei Wu, Zhipeng Ren, Weixing Zhou, Leonid Yanovskiy*

Multisource Knowledge Retrieval Augmented LLM-based Fault Diagnosis Method for Traction Drive Systems *Zixuan Xu, Zhiwen Chen, Jiamin Xu, Lingli Tan, Yuri Shardt*

Segovia

S19-R-SS49 - The Responsible Practice of Generative Artificial Intelligence for Industrial Applications and Systems

A Generative Agentic AI Framework for Analysis and Debiasing of Datasets and Machine Learning Models *Jayana Gunaweera, Lakshitha Gunasekara, Dileesha Rajapakse*

Generative AI Multi-Agent System with Retrieval Augmented Generation for Real-Time Furnace Operation Support in Industrial Manufacturing *Irini Provatidis, Kristian Sandström, Moris Behnam, Victor Cobilean*

Synthesis of OCT-A images from fundus images for Diabetic Retinopathy diagnosis using BVAC GAN *Raja Chandrasekaran, Sambath Kumar K, Kaushik P.B, Isuru Senadheera*

cktFormer: Transformer-Based Approach for Automated Analog Circuit Design *Pasindu Dodampegama, Praveen Wijesinghe, Naveen Basnayake, Keshawa Jayasundara, Tharindu Bandaragoda*

Thermal Behavior Forecasting for Battery Management Systems Using iTransformer and Kolmogorov–Arnold Network *Akash Samanta, Dominic Karnehm, Mohit Sharma, Antje Neve, Sheldon Williamson*

Data Generation for State-of-Health Estimation of Retired Batteries: Exploration of Conditional Vector Quantized Variational Autoencoder *Xiaoyong Zhang, Haobing Wu, Lisen Yan, Shunli Wang, Heng Li, yingze yang*

Hysteresis Modeling of Thumb Tip Force Estimation from sEMG Using Element Description Method *Daiki Sodenaga, Seiichiro Katsura*

Synthesizing Inline Security Monitors for ICS Using Generative AI and FormalBench *George Raptis, Taimoor Khan, Christos Koulamas, Dimitrios*

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Serpanos

Escudo

S25-I-TT12 - Industrial Informatics, Cloud Computing, and Big Data

SocGate: Physics-Gated Neural Network for Multi-Cycle Battery State-of-Charge Estimation *Xilin Dai, Ruidi Zhou, Jinhao Zhang, Fanfan Lin, Weifeng Zhang, Hao Ma*

Recognizing and Integrating Legacy Assembly Diagrams into Industry 4.0 *Nico Braunisch, Daniyar Serikov, Marko Ristin, Björn Otto, Marcin Sadurski, Hans Wernher van de Venn, Martin Wollschlaeger*

Soft Sensing of Ocean Current Velocity Profiles Based on Stratified Hybrid Convolutional Network *Haoxian wen, Sheng Du, Chengda Lu, Yawu Wang, Min Wu*

Performance Evaluation of Privacy-Preserving Life Cycle Assessment Using Secure Multi-Party Computation Protocols *Hansani Perera, Udayanto Dwi Atmojo, Valeriy Vyatkin*

A High-Performance Fault-Tolerant Scheduling Mechanism for Virtualized Industrial Edge Applications *xinkai zhang, Shang Gao, Bintao Yu, Wenbin Dai*

Residual Aggregation and Multi-Head Attention Reweighting for Autoformer in Industrial Time Series Forecasting *Yanshu Wang, xichen xu, XiaoNing Lei, Chengbin Ma*

EASy-RM: Energy Automation Systems Requirements Management *Chen-Wei Yang, Matthew Kuo, Roopak Sinha*

A Data-Driven Framework for Anomaly Detection in Industrial Systems Using Log Data *Merle Hewing, Yuanchen Zhao, Manuel Vossel, Paul Nieschler, Tobias Kleinert*

A divide and conquer partitioning method for bigraph data in industrial grade intelligent unmanned distributed systems *Chaoze Lu, Chenxia Liu, Chenghao Li*

Multi-Runtime Actor Model Implementation and Benchmarks *David Bauer, Juho Mäkiö*

Adaptive and AI-Driven Vehicle Patrol Scheduling with Integrated Emergency Response *Majid Ghasemi, Dariush Ebrahimi*

Teaching-Learning-Based Optimization for Mobile Edge Caching Strategy *Lincan Li, Shengming Chang*

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08:30-10:30

Escorial

S31-I-TT14-3 - Control Systems and Applications

Research on Transient Power Control Strategy for Distribution System with Wind Turbines Incorporating System Contingencies *Runsheng Zheng, Lei Shang, Xuzhu Dong*

Accurate Model Predictive Tracking Control of Peltier Cells With Integral Action and an Unscented Kalman Filter *Felix van Rossum, Benedikt Haus, Paolo Mercorelli, Harald Aschemann*

Anti-Slip Control of Electric Locomotives Using Disturbance Observer-Based Adhesion Coefficient Estimation and Wheel Rotational Acceleration Detection *Seokmin Hong, Jong-Min Baek, Ju-Seok Kang, Chan-Bae Park, Hyung-Woo Lee, Jae-Bum Lee*

Decentralized Data-based Control for Nonlinear Interconnected DC Microgrids *Zhihao Song, Li Jin*

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Vision-Based Fast Terminal Sliding Mode Control of Quadrotor UAV for Uncooperative Ground Target Tracking *HAMZA BOUZERZOUR, Ahmed Allam, Mohamed Guiatni, Abdennour Dergal, Yasser BOUZID*

Fault-Tolerant Design Concept and Flatness-Based Control Approach for Electric Truck Pantograph Control Systems *Christoph Sachs, Martin Neuburger*

PID-Based Hierarchical Event-Triggered MPC for USV Trajectory Tracking *junlong liao, Huiping Li, Qifan Yang, YANMING ZHOU*

Online Feedback Controller Tuning using Sample-Efficient Bayesian Optimization with Problem-Specific Kernel Design *Mathias Schietecat, Laurens Jacobs, Taranjitsingh Singh, Jan Swevers*

Design of successive system switches along a desirable trajectory *Koichi Suyama, Noboru Sebe*

All-time Infrared Vision-based Pose Estimation for Autonomous Berthing of Unmanned Surface Vehicles *Tianheng Ma, Yundi Zhao, Liu Zhongtian, Zheng Chen, Ya-Jun Pan*

Unbalanced Vibration Suppression of Active Magnetic Bearing System based on Parameter Identification *Yuanhao Du, Qifan Xu, Wenfei Yu, Wei Hua*

Small-Signal Stability Analysis of Grid-Connected Systems with Integrated Grid-Following and Grid-Forming Controlled Inverters *Zijun Ren, Xiaohui Qu, Hanwen He, Yubin Pang*

Dynamic Programming-Based Multi-Spot Path Planning and LQR Control for Autonomous UAV Firefighting *Huajun Dong, Qiaomeng Qin, Erfan Dilfanian, Yufei Fu, Xiaobo Wu, Youmin Zhang*

Hidalgo

S27-I-TT03-2 - Power Systems and Smart Grid

Maximizing Photovoltaic Self-Consumption through Smart EV Charging without Stationary Storage: A Real-World Case Study *Bushra CANAAN, Djaffar OULD ABDESLAM*

Unsupervised Multi-Sequence Appliance Identification in Non-Intrusive Load Monitoring *Daniel Weißhaar, Pirmin Held, Djaffar OULD ABDESLAM, Dirk Benyoucef*

Data-Driven Sizing of PV-Battery Systems Across Different Load Profiles: A Focus on Field Measurements in Winter *Loïc DERGHOUM, Pirmin HELD, Dirk Benyoucef*

The IEEE 1451 Playground: A Web-Based Tool for Standard Education *Helbert da Rocha, Eugene Song, Antonio Espirito-Santo, Riccardo Brama*

Enhancing Black-Box Adversarial Attacks on Power System Event Classifiers via Transferability *Yuanbin Cheng, Nanpeng Yu, Jim Follum*

Data-Driven Unsupervised Current Anomaly Excavation for Emerging Grid Scenarios *Wenqiang Lu, Feng Gao, Tao Xu*

Switching Kalman Filter for Parameter Identification of Reconfigurable Supercapacitors *Heng Li, Yige Zhang, Ayijiang Nuretai, ZiJian Zhao, Hui Peng, Yun Zhou*

Adapting the Maximum Loadability Index for Dynamic Scenarios to anticipate the occurrence of Voltage Collapse *Enrique Chaparro, Jhonatan Andrade dos Santos*

A Multi-Stage Strategy for Harnessing Congestion Management Services from Industrial Hubs in Local and System-level Markets *Leila Bagherzadeh, Innocent Kamwa, Atieh Delavari, Seyed Amir Mansouri*

Oscillation Mode Identification in Converter-based Offshore System

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using Dynamic Mode Decomposition *Maria Camila Castrillon Franco, Jose Luis Rueda, Arturo Román-Messina, Nakul Narayanan*

OLTC dynamic adjustment method considering renewable energy consumption promotion and uncertain voltage security risk *Jiacheng Xu, Xuzhu Dong, Lei Shang, Runsheng Zheng*

Optimization of a Hybrid Microgrid Using the Multi-Objective Gray Wolf Optimizer *Mauro Amaro, Luis Romeral*

TGN-RiBC: A Betweenness-Aware Temporal Graph Neural Network for Power Grid Risk Prediction under Dynamic Unit Commitment *Renbo Zhang, Xilin Dai, Hua Wang*

Flexibility Deployment in the 2050 Dutch Power System: A Seasonal Operational Assessment *Francisco Reis, Jonathan Aviles Cedeno, Jose Luis Rueda, Peter Palensky*

Modified and Augmented Nodal Analysis-based Optimal Power Flow *Kouamé N'Zi, Nasim Rashidirad, Jean Mahseredjian, Antoine Lesage-Landry*

Physics-Aware Predictive Bidding Strategy for Battery Storage in Joint Regulation-Energy Markets *Omar Abu-Znad, Liang Du, Fengyu Wang*

Toledo

S29-R-TT02-3 - Power Electronics and Energy Conversion

Voltage-frequency Coordinated control Technology Based on Reverse Regulation of Thyristor Rectifier in a DFIG System Connected to MVDC Grid *Xueshen Cui, Runqi Guo, Shuo Li, Qihui Liu, Chengyong Zhao, Yifei Li*

Design of an Integrated Fault Limiting and Isolating DCPFC for HVDC Mesh Grids *Yu Gao, Xuan Wang, Can Wang*

Critical Parameter Characterization for Power Synchronization in Droop-Controlled Grid-Forming Converters under Transient Stability Constraints *Hao Zhang, yipeng su, ke Cheng, heya Yang, xin Xiang, Jing Sheng, Xiangning He, Wuhua Li*

Inductance Sharing Using Common-Mode Power Exchange in LCL Grid-Connected Inverters *Ibrahim Amezyane, Narayan Kar, Caniggia Viana*

Two-step predictive control of delta-connected CHB-based parallel active power filter *Zdenek Kehl, Tomáš Glasberger*

Delay-Compensated Modulated Predictive Power Control for Grid-Tied Three-Level NPC Converters *Gianyacomo Zucchini, Raul Gregor, Julio Pacher, Osvaldo Gonzalez, Alfredo Renault*

Performance Analysis of Zero-Sequence Voltage Balancing Methodologies in Grid-Tied NPC Converters for EV Charging Systems *Mauro Boi, zohaib ejaz, Giuseppe Bossi, Alfonso Damiano*

Modeling of an Off-Grid PV to Battery Systems for Street Lighting Applications *Ignacio Alvarez, Guirguis Abdelmessih, Marcos Alonso, Marco A. Dalla Costa, Jose María Cámara*

El Jardin

IES Fellow Search Comm.

Tapices

S30-I-SSGT-11 - Advanced Topologies and Intelligent Control for Next-Generation Power Converters

A Single-Switch Dual-Input High-Gain DC-DC Converter with Reduced

Thursday, 16 October 2025

Voltage Stress for Hybrid Energy Sources Integration *Seshagiri Vemparala, MS Bhaskar, Mahmoud F. Elmorshedy, Dhafer Almakhles*

Quasi–Resonant DC–DC Combination Converter CSC–Zeta Full–Wave for Bipolar Outputs *Cristian Díaz Martín, Eladio Duran Aranda, Salvador Pérez Litrán, Jorge Semiao*

An Improved Current Sensing Technique for Boost PFC Converter to Mitigate Ringing-Induced Measurement Errors *Chan-Gi Lee, Kwang-Woon Lee, Sang-Il Kim*

Model-free Predictive Control Strategy for DC-DC Converters Based on the Principle of Capacitive Energy Transfer *Chengxu Wang, Wei Zhang, Shuxin Zhang*

Improved Super-Twisting Nonsingular Terminal Sliding Mode Control for Capacitive Energy Transfer DC/DC Converter *Junjie Qi, Wei Zhang, Liyuan Wang, Shuxin Zhang*

Analysis and Design of the Multiport DC/DC Converter for DC Power Grid *Shuxin Zhang, Baolong Zhang, Tingzhen Qu, Naishi Liang, Hongpeng Liu*

A Novel Multi-Port Active Filtered DC/DC Converter for Power Grid *Shuxin Zhang, Minghao Gu, Qi Ma, Naishi Liang, Hongpeng Liu*

A Fourier-Series Modeling Approach and Loss Minimization for a Dual Active Bridge *Carolina Beckmann, Philipp Schmitz, Albrecht Gensior*

A Buck/Boost–Zeta Quasi–Resonant Full–Wave Converter Combination for Bipolar Outputs *Cristian Díaz Martín, Eladio Duran Aranda, Salvador Pérez Litrán, Elena Bago Sotillo*

Modulation of Step-Down Partial Power Converter *Francisco Gonzalez, Hugues Renaudineau, Marcelo Perez, Thierry MEYNARD, Samir Kouro, José Rodríguez*

Physics-Informed Neural Network for the DC Solid State Transformers in DC Microgrid *Yu Zeng, Josep Pou, Guibin Zou, Huamin Jie, Ziheng Xiao, Ezequiel Rodriguez, Qingxiang Liu, ZHIGE YUAN, Yuan Gao*

State-of-Charge Estimation of Lithium-ion Battery Switched Balancing System Based on Switched Gaussian Process Regression *Heng Li, Shunli Wang, Xiaoyang Chen, Xiang Zhao, Yifei Sun, Yue Wu*

Data-Driven Optimization for Neutral-Point-Clamped Dual-Active-Bridge Converter with Zero-Voltage-Zero-Current Switching *Jiaxin Dong, Xinze Li, Dhivya Sampath Kumar, Sivaneasan Bala Krishnan, Josep Pou, Anurag Sharma*

Recent Advances in Transfer Learning Techniques for Power Converter-based Systems *Zhen Huang, Jiawei Gong, Yuan Gao, Chao Wang, Yu Zeng, Bing Ji*

Noise-Resilient State Estimation of Lithium-Ion Batteries Based on the Decoupled Iterative Modelling *Shuo ZHANG, Xijian Lin, Zifeng Chen, Dianxun Xiao*

Deep Reinforcement Learning-Aided State-of-Health and State-of-Charge Management of Battery Energy Storage Systems *Gaowen Liang, Enrique Nunes, Ezequiel Rodriguez, Yu Zeng, Wai Yan Hein, Josep Pou*

Optimal Coordination of Battery Energy Storage Systems in Power Electronics Dominated Grid *Aasritha Kareti, Harsha Vardhan Reddy Modugu, Uzair Asif, Reza Behnam, Mohammad Shadmand, Sudip Mazumder*

A novel methodology to estimate the efficiency of supercapacitor-based active balancing architectures *Roberto Di Rienzo, Luca Boccacci, Roberto Roncella, ROBERTO SALETTI, Federico Baronti*

Galeria

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S32-R-TT13 - AI Applications in Control, Mechatronics and Robotics

Deep Reinforcement Learning-Based Cost-Optimized Control for Energy Management in Facilities with Geothermal Storage *Vahid Ehteshami Bojnurdi, Hamed Amini, Udayanto Dwi Atmojo, Valeriy Vyatkin, kari Alanne, Risto Kosonen*

Semi-Autonomous Teleoperation for Mobile Manipulator via Action Chunking with Transformers *Shuntaro Itakura, Masatoshi Nagano, Tomoaki Nakamura*

Deep Reinforcement Learning-Based Collision-Free Path Planning for Robotic Manipulators With Dynamic State Vector Sorting *Sven Adrian Weishaupt, Ricus Husmann, Kaneewar Ibrahim, Harald Aschemann*

Improving Generalization and Training Speed of Deep Reinforcement Learning-Based Robotic Path Planning With Vectorized Environments *Sven Adrian Weishaupt, Ricus Husmann, Harald Aschemann*

Deep Reinforcement Learning for Tuning of Adaptive Model Predictive Control for Autonomous Driving *Feras Hamadeh, Anas Abdelkarim, Amar Hamadeh, Daniel Görges, Holger Voos*

A Modular Code Generation Method for Industrial Automation Systems based on Large-Language Models *Zhangjun Chu, Junchi Zhou, Yingyue Zhang, Wenbin Dai*

Dimensionality Reduction of Hand Gestures and Virtual Force Feedback for Intuitive Robot Gripper Control: A Machine Learning Approach *Sattra Piyapunsutti, Soya Shimizu, Takahiro Nozaki*

Synthetic image data generation for the training of a segmentation algorithm for machine tool recognition *Manuel Belke, Oliver Petrovic, Tim Peters, Christian Brecher*

Comendador

Chapters meeting

Castilla

S26-I-TT01-3 - Electric Machines and Industrial Drives

Evaluation of Efficiency Maps Based on a Preliminary Sizing of Permanent Magnet Synchronous Machines for Naval Propulsion Application *Fabian Amoros, Jean-Frederic CHARPENTIER, Walter Lhomme, Benoît Nottellet*

Analysis and Fault-Tolerant Control of Permanent-Magnet Synchronous Machines under Multiple Open-Switch Converter Faults *Urs Pecha, Nejila Parspour*

Considerations on Iron Nitride Enabled Rare Earth Free Hybrid Variable Flux Machines *Julius Kesten, Matthias Brodatzki, Martin Doppelbauer*

A Variable Magnetomotive Force Memory Motor Drive System Capable of Reducing Magnetization Current to One-Third *Manari Mizuno, Sari Maekawa, Tomoyuki Seya*

Performance Comparison of State Observers in Speed-Sensorless Predictive Direct Speed Control for PMSM Drives *Emmanuel de Moura, Rodrigo Padilha Vieira, Marco Rivera*

Quantification of End Turn Leakage Effects for a Double Stator Single Rotor Axial Flux Machine *Vineetha Puttaraj, Sonja Karin Tidblad Lundmark, Torbjörn Thiringer*

Modeling and Control of a New Four-level Converter-fed Synchronous Motor for Pumped Hydro Storage Plants *BHUMA NAGA SATYASAI*

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VEMPALI, DEEPAK RONANKI, Apparao Dekka, Srirama Srinivas

Bus-clamping PWM with Common-Mode Voltage Elimination for Dual Six-Phase Inverters with Shared DC-link *Prasoon Chandran Mavila, Sobhan Mohamadian, Concettina Buccella, Carlo Cecati*

Constant Common Mode Voltage based Space Vector PWM Variants for a Six-Phase Interior Permanent Magnet Synchronous Motor Drive *Aritra Pal, Srirama Srinivas, DEEPAK RONANKI*

Electromagnetic Transient Modeling of Switched Reluctance Motor Drive System by a Circuit-based Method *Seyedarmin Mirnikjoo, Nicolas BRACIKOWSKI, Mohammed Naidjate, Jean Mahseredjian, Paul Akiki*

Near-Zero Common-Mode Voltage Implementation in CSI-Based Motor Drives via Active EMI Filter *YINZHEN SHEN, Zheng Wang*

Comparison of Optimized Electrically Excited Wound-Field and Permanent Magnet Synchronous Motors for Light EV Applications *Melisa Recabarren, Carlos Madariaga, César Gallardo, Federica Graffeo, Matias Jimenez, Gustavo Perez, Juan Tapia*

Hairpin Windings in Double-Cage EV Motors: Impact on Torque and Efficiency under Variable Frequency Operation *Felipe Santacruz, Carlos Gálvez-Araya, Carlos Madariaga, Juan Tapia*

Comparison of Various Practical and Non-Practical Segmented Rotor Alternatives for Spoke Type IPM Motors *Ozlem Simsek, Murat Onsal, Metin Aydin*

Doblon

SYP Forum

Segovia

S28-R-TT01-1 - Electric Machines and Industrial Drives

Impact of Discontinuous PWM Techniques on NVH Performance in IPMSMs *Mahmoud Khamis, Arnau Doria-Cerezo, Victor Repecho del Corral*

Multi-Frequency Cascade Disturbance Observer For Harmonic Mitigation in PMSM Drives *Mingjin Hu, Wei LIU, Zekai Lyu, Shuangxia Niu, K.T. Chau*

Adaptation of a multi-fault tolerant control for PMSMs to phase short circuits *Martin Ackermann, José-Luis Marqués, Claus Hillermeier*

Position-sensorless control of Dual Three-Phase Synchronous Motors in all speed ranges with a single linear observer of Extended EMF excited by Signal Injection and Speed *RONGJIAO HAO, Shinji Doki*

Oversampling-Based Inductance Identification Without Test signal Injection for PMSM Drives *Ryosuke Morita, Sari Maekawa, Takeshi Shibayama, Toshimitsu Aizawa*

Analytical Electromagnetic Calculation for PMSM Operating with Inter-Turn Short-Circuit Fault. *Leonardo Duarte Milfon, Gabriela Torllone de Carvalho Ferreira, Mateus Giesbrecht*

Development of a Segmented Stator with Integrated Oil Cooling of a PMSM Using Additive Manufacturing *Tomas Paveza, Martin Skalicky, Zdenek Frank, Roman Pechanek*

Sensorless Control of Non-Sinusoidal PMSM via Sliding Mode Observer and PSD+PLL Structure *Luis Felipe Pessoa Teixeira, Lucas Rossato Rocha, Dianxun Xiao, Rodrigo Padilha Vieira*

Escudo

TC Forum

10:50-11:50

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	Auditorio **Keynote 3**
10:50-12:50	*Escorial* **S91-I-TT09 - Communications for Industrial and Factory Automation** **Enabling Continuous Low Latency Streaming in Industrial Roaming Scenarios** *Daniel Tappe, Alex Bendrick, Rolf Ernst* **5G and UWB Integration for Robot Collaboration** *Damir Hamidovic, Armin Hadžiaganovi rÂulian Karoliny, Andreas Gaich, Daniel Klepatsch, Mahin Ahmed, Raheeb Muzaffar, Andreas Springer, Hans-Peter Bernhard* **Enhanced Multi-Agent Reinforcement Learning for Power Quality Enhancement and False Data Injection Defense in Multi-Microgrid Systems** *Pengcheng Hu, Abhisek Ukil* **Approximate Representation of Gaze Rate using GMM** *Sota Shimizu, Miwa Takase, Takumi Morimoto* **Obstacle Avoidance Control Design Using Imitation and Reinforcement Learning for Two-Wheeled Robot with A Stereo Camera** *Koichi Hidaka* **Short-Term Prediction for Waste Heat Recovery Power Generation Based on Crossformer Network in Coke Dry Quenching Process** *Xiaochong Chen, Fan Yin, Yiheng Chen, Wen Zhang, Jie Hu, Jundong Wu, Min Wu* **mp-PINN: A Multiphase Flow Physics-Informed Neural Network for Pressure and Saturation Prediction** *xiaodi zhang, Cheng Haibo, Jiahao Qiao, Minglu Hu, Liting Zhang, Dong Li* **Automatic Construction of a 3D Spinal Point Cloud Model with Hounsfield Unit Integration for Scoliosis Progression Prediction** *Soma Ito, Yasue Mitsukura* **Impacts of Cyber-Physical Attacks in SST-GFMI-Based Microgrid** *DEBOTRINYA SUR, Uzair Asif, Harsha Vardhan Reddy Modugu, Luiz Fernando M. Arruda, Sudip Mazumder, Mohammad Shadmand*
	Hidalgo **S84-I-SSGT-4 - Optimal Management and Control of Integrated Multi-Energy Systems** **Coordinated Optimal Control of Dispatchable Energy Storage Systems in Integrated Energy Hubs** *Muhammad Abdelghany, Mainak Dan, Ahmed Al-Durra, mohamed. Elmoursi, Fei Gao* **Cooperative Reinforcement Learning for Car-Following and Energy Management Optimization of Dual-Motor Electric Vehicles** *Yao Peng, Zhiwu Huang, Yue Wu, Shaokun Li, Xiaoyong Zhang* **Safe Deep Reinforcement Learning Based Energy Management for Educational Buildings With Guaranteed Constraints** *Xuan Jiang, Qianwen Xu* **Hierarchical Ensemble Based Clustering For Networked Microgrids** *Aditya Joshi, Tianfu Wu, Mo-Yuen Chow* **Energy Management for Swedish Railway Traction Systems with Energy Storage Systems integration** *Fei Liu, Qianwen Xu* **An Energy Management Strategy for Aviation Fuel Cell Hybrid Power System based on Optimized Parasitism-Predation Algorithm** *feier meng, Rui Ma, Yang Zhou, Hao Bai, Zhirui Guo, zi wang* **A Statistical Approach for Charging Power Demand Estimation of An Electric Harbour Craft Fleet** *Chenhao Ying, Elsa Feng, Yan Xu, Tay Chuan*

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Beng, Kenneth Low Choon Ann

Onshore Microgrid Optimal Operation with Incentive-based Harbor Craft Fleet Management *Sufan Jiang, Chenhao Ying, Heling Yuan, Yan Xu, Elsa Feng*

Toward Standardized Demand-Side Management Frameworks: A Policy-Driven Approach for Smart Grid Integration in Qatar *Muneera Al-Qahtani, Ameni Boumaiza, Furkan Ahmad, Sa'd Shannak, Antonio Sanfilippo*

Interoperability of Electrolyzer Systems with Hydrogen Storage for Frequency Regulation *Manuel Agredano Torres, Lars Nordström, Qianwen Xu*

Integrating next-generation lithium-ion batteries into hybrid energy storage systems: A physics-based analysis *Andrés Bernabeu Santisteban, Alejandro Clemente, Sergi Obrador Rey, Francisco Díaz-González, Killian Stokes-Rodríguez, Lukas Neidhart, Lluís Trilla, Simon Clark*

A Real-Time Optimization Framework For Trading Boiler Flexibility on Secondary Reserve Markets *Manisha Talukdar, Alessandro Quattrociocchi, Laurena Eliard, Tomislav Dragicevic*

Impact of Communication Link Failures on Distributed Energy Management in Disaster Relief Microgrids *Hengrui Tian, Aditya Joshi, Mo-Yuen Chow*

Weight Matrix Construction for Distributed Consensus Algorithm in Water-Energy Nexus: Convergence and Robustness *Ahmad Alhaji, Alexandra Duel-Hallen, Mo-Yuen Chow*

Robust Real-Time SOH Estimation via Online Identification of Temperature and SOC Dependent Battery Resistance Model *Skieler Capezza, Mo-Yuen Chow*

Toledo

S86-R-TT07-2 - Transportation Electrification and Automotive Technologies

Dual-Perspective 1D Fully Convolutional Network for State of Health Prediction in Maritime Battery Systems Using Charge and Discharge Curves *Qin Liang, Peihua Han, Erik Vanem, Knut Erik Knutsen, Houxiang Zhang*

Real-time Train Trajectory Optimization under Emergency Scenarios based on Diffusion-PSO Framework *Zhang Yao, Zixuan Zhang, Liu Shaoqing, Liu Ling, Hairong Dong*

Research on the dynamic balance energy management strategy for fuel cell UAV hybrid power systems *Shuhao Deng, Tao Lei, Xiangnan Deng, Yacong Li, Guanlin Fan, Xiaobin Zhang*

Energy Management in HEVs Using Deep Reinforcement Learning: A Review *Mohamed Nadir Boukoberine, Muhammad Fahad Zia, Mohamed Benbouzid*

Multi-Dimensional Safety Assessments of LLM-Assisted Driving Systems *Chenfei Hou, Henglai Wei, Xuefeng Han, Hui Zhang*

Distributed Control-Based Fault-tolerant Control Method for AAV's DEP System *Ruiheng Zhang, Tao Qu, Zihao Liang, Tianjian Sun, Yuhua Du, Aili Fan, Yigeng Huangfu*

Data-driven Path-following Control Using a Fictitious Exogenous Signal Based on the Velocity Variation of Path Deviation *Shusaku Fujita, Kenji Sawada, Osamu Kaneko, Taichi Ikezaki*

Robust Cybersecurity for Autonomous Vehicles Using Particle Filter Based Anomaly Detection *Rajeem Thomas, Mien Van, Mehrdad Dianati,*

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Wei Ding, Kabirat Olayemi

Galeria

ARM Workshop

Comendador

Chapters meeting

Castilla

S83-I-TT06-1 - Smart Building Technologies

Comparative Study of Kalman Filters for Electrical Identification in Domestic Induction Systems *Óscar Lahuerta, Claudio Carretero, Luis Angel Barragan, Jesus Acero*

Study on Battery Energy Storage for Reduction in CO2 Emissions of All-electrified Houses with Photovoltaic Resource *Mincheol Cho, Tomonori Honda*

Enhancing Day-Ahead Energy Consumption Forecasting with Inception-Autoformer for Demand Side Management *SENFENG CEN, Chang Gyoon Lim*

Efficient Data-Driven Model Predictive Control for Demand Response of Commercial Buildings *Marie-Christine Paré, Vasken Dermardiros, Antoine Lesage-Landry*

Worker Positioning Method Based on Motion-Aware Inertial Regression for Smart Construction Sites *Yujin Kuang, Mujiao Ouyang, Yuan Yang, Xiaoguo Zhang*

System Design for Distributed Energy Management Using Multiple LPWAN Technologies *Christof Roehrig, Daniel Hess, Buu Hai Dang Trinh*

Demand-Side Management in Residential Buildings: Load Shifting and Cost Savings via a Cloud-Based IoT-BEMS *Fayzul Islam, Ibrahim Ahmed, Lucian Mihet-Popa*

Attention Makes HVAC Control More Efficient *khalil al sayed, Abhinandana BOODI, Roozbeh Sadeghian Broujeny, Karim Beddiar*

Current Calculation Method for PV System using Capacitor Voltage Characteristics *Jae-Sub Ko, Cheol-Woong Choi, Dae-Kyong Kim*

Doblon

SYP Forum

Segovia

S85-R-TT04-2 - Renewable Energy and Energy Storage Systems

Control of Power Reserves of a Wind Turbine by Constant Thrust Force Method considering Requirements of the Real Wind Field *Benedikt Spichartz, Constantinos Sourkounis*

Optimized Management for the Distribution of Power Reserve in a Wind Farm with Reduction of Aerodynamical Interactions caused by Wind Wakes *Benedikt Spichartz, Constantinos Sourkounis*

Implementation of the Three-Dimensional SWiPLab-WFM Wind Farm Simulation Model on a Real-Time Simulator Cluster for HIL-Applications *Vile Kipke, Kolja Wehber, Constantinos Sourkounis*

Performance Evaluation of an AI-based Wind Farm Operation Control Under Dynamic Wind Conditions *Philip Krajinski, Constantinos Sourkounis*

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	Energy based Sub-Synchronous Oscillation Assessment Tool For Type-4 Wind Farms *Muhammad F. Umar, Omar Abu-Rub, Tassneem Zamzam, Yazan Qiblawey, Abdulrahman Alassi, Hussein Alnuweiri* **A Modified PV to Virtual Bus Parallel Differential Power Processing Architecture for Photovoltaic Systems** *Dimitris Karousos, Afshin Nazer, Shamsodin Taheri, Hani Vahedi* **The effect of blade optimization on wind turbine performance** *Hercules Oliveira, Lucas de Paula A. Pinheiro, Orlando da Silva Santos, Fábio Silva Alves, Joel Alves da Costa*
	Escudo **TC Forum**
11:50-12:50	*Auditorio* **Keynote ICELIE**
14:10-16:10	*Escorial* **S38-I-TT13-1 - AI Applications in Control, Mechatronics and Robotics** **Enhancing Physical Human-Robot Interaction: Recognizing Digits via Intrinsic Robot Tactile Sensing** *Teresa Sinico, Giovanni Boschetti, Pedro Neto* **Normal Distribution Priority Path Planning Method for Unmanned System** *Weiming Li, JiaXin Zhuang, Liqun Chen, XiaoLin Mou* **Model-Agnostic Meta-Learning Inspired Adaptive Control Framework for Unknown Payload Picking** *Nuo Chen, Ya-Jun Pan* **Development of a Variable Stiffness Musculoskeletal Percussion Robot and Realization of Single Stroke Motion through Sim to Real Transfer** *Tsukasa Biyajima, Rei Yamazaki, Manabu Okui* **Event-Based Adaptive Koopman Framework for Optic Flow-Guided Landing on Moving Platforms** *Bazeela Banday, Chandan Kumar Sah, Jishnu Keshavan* **Progressive Domain Transfer Learning for Contact-rich Hand-Tool-Environment Interaction** *Jinke Yao, Wenxin Zhu, Yilin Lang, Qinyuan Ren* **Industrial Control Software Migration Based on Large Language Models** *Maodong Lin, Kirill Zhukovskii, Carl Akira King, Wenbin Dai, Valeriy Vyatkin* **Online Actor Critic Learning for Optimal Tracking in Servo Positioning Systems** *Hyochan Lee, Kyunghwan Choi* **An Enhanced Composite Predictive Framework for UUV Autonomous Docking via Motion Pattern Decoupling** *Zhe Zhang, wei zhang, Ruichi Sun, Zhijian HU, Ziqi Xia, Zhicheng Liang, zixuan li* **GearCloud: Digitalized Maintenance Solution for Aircraft Landing Gear Brake Wear Inspection Automation Using YOLO11** *Mohamed Marei, Bilal Ahmad, Tianmei Jin, Wajid Azam* **TLS-based TV-CAR speech analysis and evaluation of F0 estimation** *KEIICHI FUNAKI* **Design and Experimental Validation of Unmanned Cultural Heritage Exploration Vessel with Hybrid DC Power System** *Dong-Wook Kim, Duck Shick Shin* **Autonomous Leader-Follower UAV System for Real-Time Wildfire Detection and Suppression** *Amin Taherzadeh, Youmin Zhang, Linhan Qiao, Erfan Dilfanian, Xiaobo Wu*

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Depth-Homography Registration Framework and YOLOv8n-Coordinate Attention Forest Fire Detection for Visible-Infrared UAV Imagery *Erfan Dilfanian, Huajun Dong, Youmin Zhang, Hamza Benzerrouk Benzerrouk, Hakim Guiddir*

Hidalgo

S34-I-TT07-1 - Transportation Electrification and Automotive Technologies

Hybrid Optimal Power-Flow Control for Multi-port Railway Power Conditioner with Renewable Energy Access *Zhen Zhu, Manchung Wong, Ziyi Bai*

A Devlopment of Cascade Cooling System for Thermal Energy Management of Electric Vehicle *Jaehyun Song, Taehan Kim, HwanYeui Hong, SungHyun Moon, Chulmin Kim*

Effects of Aging on the EMI Filter Performance in a Traction Inverter *Quirc Perez-Farre, Luis F Gomez-Rivera, Carlos López Torres, Antoni García Espinosa, Alejandro Paredes Camacho*

A Study on Hot Gas Recycle System to Reduce PTC Heater Capacity in Electric Vehicle *SungHyun Moon, Taehan Kim, HwanYeui Hong, Jaehyun Song, JongMoon Won, Chul-Min Kim, Tae-Min Park*

Stability Analysis of Grid-Forming Converters in Shore-to-Ship Power Applications *Diego Rios-Castro, Borja Abal-Calvar, Pablo Marino Fernández-Abraldes, Diego Pérez-Estévez, Jesús Doval-Gandoy*

Integrated Converter for Power Transfer and Battery Temperature Modulation in EVs *Mohd Usman, Ramana Manohar, Moumita Das*

Design of an Induction Motor for Electric Motorcycles in sub-Saharan Africa utilizing readily availabe materials *Stefan Botha, Alford Sibanda, Nkosinathi Gule*

Comparison of Control Strategies for Optimized Cooling of Electrical Machines in Automotive Applications *Davide Paolucci, Kristian K. Ronnberg, DAVIDE BARATER, Gabriele Puccio*

Adaptive Linear Predictive Control for Enhancing Sustainability in Battery Electric Vehicles Through Optimal Battery Discharging *Moustafa Magdi, Mujahed Aldhaifallah, Wei Xu, Hegazy Rezk*

Comprehensive Assessment of the Impact of Energy Management Strategies on the Sizing of Energy Storage Systems in Hybrid Vessels *Rene A. Barrera-Cardenas, Luigi Piegari, Pietro Tricoli, salvatore d'arco*

Data-Based Review of Battery Electric Vehicle and Traction Inverter Trends *Christoph Sachs, Martin Neuburger*

Active and Reactive Power Control of Traction Substation 25 kV / 50 Hz *Milos Straka, Vojtech Blahnik, Martin Pittermann*

AC-Voltage Controller for Grid-Forming Converters in Shore-to-Ship Applications *Borja Abal-Calvar, Diego Rios-Castro, Diego Pérez-Estévez, Jesús Doval-Gandoy*

Comparison Framework for Power Control Methods Under Identical Droop Conditions *Borja Abal-Calvar, Diego Rios-Castro, Diego Pérez-Estévez, Jesús Doval-Gandoy*

Hybrid Offshore Wind–Hydrogen Microgrid for Marine Docking Stations: Design and Energy Management for Economic Operation *Youcef Belkhier, Salah Tamalouzt, Emmanuel Delaleau, Gang YAO, Abdeslam Mamoune, Mohamed Benbouzid*

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S36-R-TT02-4 - Power Electronics and Energy Conversion

Model-Based Control Strategy Design for a High-Gain DC-DC Converter with Power Factor Correction and LCL Coupling Filter *PANFILO RAYMUNDO MARTINEZ RODRIGUEZ, Karen Monserrat Compean-Rodriguez, Diego Langarica Córdoba, Gerardo Vazquez-Guzman, Samuel Iturriaga Medina, Christopher Jesus Rodríguez Cortes*

New Hybrid High-Gain Bidirectional DC-DC Converters for Energy Storage Applications *VEERA VENKATA SUBRAHMANYA KUMAR BHAJANA, Pravat Biswal*

Analysis and modeling of voltage unbalance in three level dc/dc converters *Saad Ahmad, Alejandro Fernández, Mariam Saeed, Igor Larrazabal, Fernando Briz*

Comparative Analysis of Gradient-Based, Metaheuristic and Hybrid Methods for Parameter Identification in Digital Twin for DC/DC Converters *Parsa Behzad Nazif, Mariam Saeed Hazkial Gerges, Saad Ahmad, Iker Muniategui, Guillermo Ozaita, Igor Larrazabal, Fernando Briz*

A Steady-state Balanced Current Control of a Two-arm Series Capacitor Step-down DC-DC Converter Employing Voltage Feedback Control *Chin Hsia, Hung-En Liao, Jung-yi Li*

A Bidirectional Isolated Multi-Phase DC-DC Converter with the Capability to Suppress Specific Harmonic Orders *Shuhei Tsuji, Takehiko Sumida, Koki Nagae, Kenichi Nagayoshi, Yoshitaka Kawabata*

Natural Voltage Balance Across Capacitors in High Step-down DC-DC Converter with Voltage Divider *Robert Stala*

Stability Evaluation of Model Predictive Control for DC-DC Converter under Load Variation *Takaharu Ishida, Hidenori Maruta*

El Jardin

IES TC Meetings

Tapices

S37-I-SSGT-12 - Advanced Control and Design for Electric Drives and Power Electronic Systems

Avoiding Average Deception in Multi-vector Direct Schemes for Nine-phase PMSM Drives *Juan Carrillo Rios, Juan José Aciego, Rafael Lara López, Mario Duran, Ignacio González Prieto*

Determination of Inductances of Five-Phase Synchronous Machines with Interior Magnets *Luís Pereira, Gustavo Eckhardt, Gabriel Castelo Branco, Matheus Perin*

Single and Multi-vector Model Predictive Control for Open-end-Winding Five-phase Electric Drives *Raúl Sánchez-González, Mario Duran, Ngac Ky NGUYEN, Ignacio González-Prieto, Manuel Madueño, Xavier Kestelyn*

Multi-vector Model Predictive Control with Variable Sampling Time for a Six-Phase IM Drive *Rafael Lara-Lopez, Ignacio González Prieto, Mario Duran, Pablo Mora-Moreno, Angel Gonzalez-Prieto, Cristina Martin, Manuel R. Arahal, Federico Barrero*

Look-Up Table Model-Free Predictive Control Using Stationary Frame Updating Mechanism *Pablo Mora-Moreno, Juan Carrillo-Rios, Juan Jose Aciego, Angel Gonzalez-Prieto, Mario Duran, Ignacio González Prieto*

Comparison of Industrial Three-phase Medium-Voltage Converters and a Nine-phase Converter *Rodrigo Bastos, Braz J Cardoso Filho*

Adaptive Neural Current Controllers for Decentralized and Non-

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Sinusoidal Multiphase Drives in Healthy and Faulty Modes *Cyril Michel, eric semail, Ngac Ky NGUYEN, Jean-Christophe Riou*

Voltage Zero-Sequence Components in Optimal Control of Five-Phase PMSM Drives *Jan Laksar, Tomáš Komrska, Ondrej Suchy, Vaclav Šmídl*

Fault-Tolerant Performance in Multi-Unit PMSMs Through Slot Geometry and Magnetic Decoupling *Yingnan Wang*

Numerical Thermal Analysis of Six-Phase PMSMs With Single- and Double-Layer Fractional-Slot Concentrated Windings in Healthy and Faulty Cases *Wessam Abdel-Azim, Alejandro Yepes, Ahmed Hemeida, Ayman Abdel-Khalik, Shehab Ahmed, Jesús Doval-Gandoy*

Current References for Optimized Loss and Torque Ripple Per Operating Point in the Full Torque-Speed Range for Symmetrical Six-Phase PMSMs With Arbitrary Back-EMF *Alejandro Yepes, Mohamed Abdel-Moneim, Wessam Abdel-Azim, Óscar López, Petros Karamanakos, Ayman Abdel-Khalik, Shehab Ahmed, Jesús Doval-Gandoy*

Dynamic Modelling of Brushless Multiphase Synchronous Generator (BMSG) *Sagar Dash, Suman Maiti, Chandan Chakraborty*

An Active Redundancy Module and Overlapped Switching Scheme for incorporating Fault Tolerance and ZVS in Isolated DC-DC Converters *Aditya Shirodkar, SATISH NAIK BANAVATH, Riccardo Mandrioli, Giovanni De Carne, MOSHE SITBON*

Trade-Offs in Current PI Controllers Design for Switching Power Converters *Yoav Aminov, MOSHE SITBON, Alon Kuperman*

A Comparative Analysis of Integrated Heat Sink and Heat Pipe Cooling in a Heat Pump SiC Frequency Inverter *Martin Novak, Suliman Badour*

Online Learning-based Coordination Control of the Interlinking Converter in Hybrid ac/dc Microgrid *Javier Gutiérrez-Escalona, Carlos Roncero-Clemente, Oleksandr Matiushkin, Enrique Romero-Cadaval, Eva González-Romera, Joao Martins*

Galeria

S39-R-TT14-1 - Control Systems and Applications

Lightweight Empirical Reinforcement Learning Driven Adaptive Super-Twisting Control with Fused Linear-Nonlinear Sliding Surfaces for Embedded Vehicle Control *Hyunjung Lee, Daejin Park*

Disturbance Rejection beyond the Nyquist Frequency under Sensing Delay: Application to An Image-based Stabilization System *Kaoru Yamamoto, Li Wen, Tao Tang*

Unsupervised Time Series Anomaly Detection Based on Conditional Variational Auto-Encoder *Jiajun Gui, Yuhao Li, Duanjin Zhang*

Bidirectional Grid-Forming Converter with Modified Voltage Control for Enhanced Power Dynamics *Amiron Serra, Khristian Nascimento, José Gomes de Matos, Luiz Antonio Ribeiro, Mehdi Savaghebi, Hércules Oliveira*

Nonlinear Control for Underactuated Overhead Crane Using Composite Outputs under Constraints *Shengzeng Zhang, Xinggao Liu, Michael Basin, Zhu Haiyue, Chentao Han, Xiongxiong He*

Polynomial Fuzzy Approach to State/Fault Estimation: Application to Robotic Arm *Jingyu Ding, Jinyong Yu, Michael Basin*

Comparison of Effective Linear Blade Pitch Controllers for a Nonlinear Floating Offshore Wind Turbine System *Masayoshi Toda*

Cycle Time Reduction in Production Systems via Digital Twin-Based Compensation of Pneumatic Reaction Times *Jonas Heller, Bernd Luedemann-Ravit, Lars Penter, Steffen Ihlenfeldt*

Auditorio

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Industry Forum 2

Comendador

S40-I-ICELIE-1

14:10-14:14
ICELIE2025-000011. Best practice for mechatronics curriculum development: A project-based learning approach. Guoyuan Li, Robert Skulstad
14:14-14:18
ICELIE2025-000002. Interactive and Complementary Simulations for Distance Learning of Inductive Power Transfer Systems. Jesus Acero, Ignacio Lope, Claudio Carretero
14:18-14:22
ICELIE2025-000007. Experimentation with Remote Laboratories within the In4Labs Open-Source Platform. Carlos Rejón, Antonio Robles Gómez, Sergio Martin
14:22-14:26
ICELIE2025-000017. Embedding Green and Digital Competences in Engineering Curricula Through IoT-Driven Demonstrative Activities. Alberto Cruz-Ruiz, Carlos Gilarranz-Casado, Alejandro Leo-Ramirez, Vicente Garcia-Alcantara, José Álvarez, Bernardo Tabuenca
14:26-14:30
ICELIE2025-000022. Multi-Perspective Design of Undergraduate Student Experiment on Analog Modulation and Demodulation Technology. Kazuhiro Umetani, Eiji Hiraki, Masataka Ishihara
14:30-14:34
ICELIE2025-000027. Interactive Whiteboards in Education: A Systematic Review with Emphasis on Technical and Higher Education Contexts. Katarzyna Grobler-Dębska, Rafał Mularczyk, Jerzy Baranowski
14:34-14:38
ICELIE2025-000038. Trust in Online Education: A Comparative Analysis of Student and Teacher Perspectives. Giancarlo Iannizzotto, Anna Rusina
14:38-14:42
ICELIE2025-000020. Integrating Optoelectronic Sensor into Education: A Framework for Student-Driven Environmental Monitoring. Souhail Fatimi, Nikolaos Papanikolaou, Mohammed Rhiat, Kamal HIRECH, Abdellah Touhafi
14:42-14:46
ICELIE2025-000021. Mr. Nikolaos Papanikolaou. Nikolaos Papanikolaou, Souhail Fatimi, Mohammed Rhiat, Kamal HIRECH, Abdellah Touhafi
14:46-14:50
ICELIE2025-000039. Empowering Engineering Education with the Robot Operating System (ROS): An Open Source Platform for Robotics Learning. MUTAZ RYALAT
14:50-14:54
ICELIE2025-000029. Teaching reproducible research in Industrial Electronics with Project TIER. Jerzy Baranowski, Waldemar Bauer, Kacper Jarzyna
14:54-14:58
ICELIE2025-000019. Back to Reality – Competence Mapping and Improvement in the Frame of the Engineering Mathematics Education. Imre Kocsis, Peter Korondi, Boglárka Burján-Mosoni

Castilla

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S33-I-TT01-4 - Electric Machines and Industrial Drives

A Sustainable Approach to Magnet Thermal Class Selection Considering Irreversible Demagnetization *Hossein Shirzad, Farshid Mahmouditabar, Libing Cao, Nick Baker*

Thermal Analysis of an Induction Machine with Stator Inter-turn Fault for Real-time Emulation *Koteswara Rao Alla, Amir Kermanizadeh, Pragasen Pillay*

Design and Analysis of an N-S-Iron Interleaved Consequent-Pole Permanent Magnet Machine with Flux Barriers *Qiyun Zhang, jiyao wang, Yongkang Zhang, Youkang Hu, Wei Xu*

Algebraic Design of a Discrete-Time Angle Tracking Observer *Lukáš Zezula, Petr Blaha*

Improved Sliding Mode Based Demagnetization Fault Tolerant Control for IPMSM Drives *Runze Guo, Aida Ye, Suneel Kommuri*

Experimental Validation of Torque Ripple Suppression Mechanism in Magnetic-Geared SR Motor and Simulation of Novel Control Method without Current Sensors *Keigo Iwaki, Kenji Nakamura*

An Open-End Winding Nine-Phase Induction Motor Drive with Reduced Inverter Legs *Tukaram Alias Saurabh Dhavjekar, Siva Kumar Keerthipati*

Decentralized Current Control for an Open-Winding Synchronous Machine with Local Estimation of the Electromotive Force *Simon Houzet, Antoine CIZERON, Alaa Hijazi, Ali Makki, Christian Martin*

Initial Rotor Position Estimation Method for Synchronous Reluctance Motor under Various Rotational Speed Conditions *Sota Takizawa, Sari Maekawa, Takahiro Minari, Hiroki Tohuku, Taizo Yamamoto*

Integrated Field-Weakening and MTPA Control with Adaptive Overmodulation for IM Drives *Ondrej Lipcak, Jan Bauer*

Loss Segregation Method For Converter-Fed Induction Machines Based On Experimental Testing *Matias Tiihonen, Shoaib Ahmed, Lassi Aarniovuori, Hannu Kärkkäinen, Markku Niemelä, Janne Nerg*

Load Angle Control of Magnetic Gears for Preventing Pole-slipping Phenomenon *Yuto Tsukiji, Kohei Aiso, Kan Akatsu, Aoyama Yasuaki*

Development of an Intensive Air Cooling Method for Electrical Machines Using Direct Cooling Technology *Lukas Veg, Martin Skalicky, Michal Freisleben*

Doblon

SYP Forum

Segovia

S35-R-TT01-2 - Electric Machines and Industrial Drives

Vibration Cause Diagram Applied to Induction Machines: A Graphical Tool for Root Cause Analysis of Magnetically Induced Vibrations *Allan de Barros, Constantin Schepe, Bernd Ponick*

MTPA Control Strategies During Pole Change in Multiphase Induction Motor *Taito Matsumoto, Momoka Kobayashi, Shinji Doki, Masashi Kobayashi*

Intermodulation-based Sensorless Control of Induction Machines Using Rotating Hf-Signal Injection Considering Inverter Nonlinearities *Peter Gangel, Eduardo Rodriguez Montero, Markus Vogelsberger, Thomas Wolbank*

Fault Diagnosis of Rotor in Three-Phase Induction Motors Using Current Physical Components *Mariana Pelisson, Murillo Garcia Gentil,*

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José Pedro Barbosa Neto, Alessandro Goedtel, Marcelo Castoldi, Wesley Souza

A Current Stabilization Control Method for High-Speed Linear Induction Motor Based on Offline Historical Data Self-Learning *Jiafu Zhang, Fei Xu, Zixin Li, Fanqiang Gao, Liming Shi, Yaohua Li*

Torque-Sharing Strategy for Reduced Copper-Loss in a Vector-Controlled Dual-Induction Motor Drive *Shayak Chaudhuri, Keerthi R Gopan, Amit Jain*

Dual FOC of Slip-Ring Induction Motor using Fuzzy Logic Control *Lalitendu Sekhar Barik, Himanshu Misra*

Robust dq-Frame Alignment in Indirect RFOC of Induction Motors under Parameter Variations by means of a Super-Twisting Sliding Mode Observer *Rokhaya sow, KADER Zohra, Stéphane Caux, Maurice FADEL, Wenceslas Bourse, Frederic Bach*

Escudo

S41-I-SSGT-18 - Advanced Management and Integration Techniques for Storage and Renewable Energy Systems

Resistance Estimation of Current-Limiting Fuse for Active Control of Pyrofuse in DC Circuit Interruption Device *Taichi Nakano, Reon Sasaki, Yasuhiro Takada, Wataru Ohnishi, Yasushi Yamano, Yuki Inada*

A Balanced Self-heating Approach for Battery Modules Based on Multi-winding Transformer *f•ëXiaofang Liu, Jiye Han*

A virtual sensor fusion approach for state of charge estimation of lithium-ion cells *Davide Previtali, Daniele Masti, Mirko Mazzoleni, Fabio Previdi*

Retrieved Braking Energy in the Tram Way Via Electric Vehicle Chargers *Adnan Khan, Paolo Guglielmi, Enrico Pons, Roberto Re, Alfredo Felix Cota*

Online Parameter Identification for Supercapacitors Balancing System under Constant Current Conditions *Zhan Yi, Kelong Su, Heng Li, Hui Peng, Yihan Li, Yun Zhou*

A Comparative Study of Battery Degradation Cost Modeling in Residential PV-Battery Systems for Day-Ahead Optimization *Cheikh Elkebir Sidi Lekhel, Rita Mbayed, Hossein Nourollahi Hokmabad, Oleksandr Husev, Oleksandr Velihorskyi, Eric Monmasson*

Experimental analysis of the performance impact of zero-volt operation on commercial sodium-ion cells *Matthew Smith, Dan Gladwin*

Influence of Cell Position on the Capacity of Retired Batteries: Experimental and Statistical Studies *Marwan Hassini, Colette Mintsa-Eya, Eduardo Redondo-Iglesias, Pascal Venet*

Quantile-Based Short-Term Probabilistic Forecasting of Solar PV Power Under Data Loss *Saloni Dhingra, giambattista gruosso, Giancarlo Storti Gajani*

Experimental Analysis of Cell Voltage Imbalance and Balancing Efficiency in Stationary Battery Systems *Daniel Breuer, Constantinos Sourkounis*

Dynamic Heterogeneous Flow applied to the Three-Dimensional Wind Farm Simulation Model SWiPLab-WFM *Vile Kipke, Constantinos Sourkounis*

Non-Invasive Identification of Half-Cell Open-Circuit Potentials for Advanced Battery Electrochemical Models *Sergi Obrador Rey, Eibar Flores, Simon Clark, Andrés Bernabeu Santisteban, Lluc Canals Casals, Lluís Trilla*

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Current control of grid-forming doubly-fed induction machines under grid phase jumps *Andre Thommessen, Christoph Hackl*
Investigation of the Effectiveness of AI-based Wake Steering in a Small Wind Power Plant *Philip Krajinski, Constantinos Sourkounis*
Anlysis and Design of Hand-in-Hand Fractional-Stage Conversion Non-Isolated Bidirectional Converter for Battery Storage Application *Fengfu Yang, Yubin Duan, Yue Liu, Hongfei Wu, Yan XING*
Inter-State Smooth Synchronization Control With Reduced Transformer Neutral Burden for a 3P4W Grid-Tied DFIG-SPVA-BES Distributed System *Subhadip Chakraborty, BHIM SINGH, Bijaya Ketan Panigrahi, Ambrish Chandra, Kamal Al-Haddad*

16:30-18:30

Escorial

S47-I-TT13-2 - AI Applications in Control, Mechatronics and Robotics

Accurate Inertia Control of Grid-forming Converters based on DDPG *[illegible]*
Automating Motor Predictive Maintenance (PdM) by real-time Explainable AI (XAI) and Deep Learning *Omer Ali, Mohamad Khairi Ishak, Anum Hussain, Lizy Abraham, Ashraf Bani Ahmad*
Constrained Optimization-Based Neuro-Adaptive Control (CONAC) for Synchronous Machine Drives Under Voltage Constraints *Myeongseok Ryu, Niklas Monzen, Pascal Seitter, Kyunghwan Choi, Christoph Hackl*
Pseudo-labels guided fault diagnosis method of rotating machinery at extremely low labeled rate *Yinghao Zhao, Xu Yang, Jian Huang, Jiarui Cui, Xian Zhou, Jingjing Gao*
LMI-based Neural Network Observer for State and Nonlinearity Estimation *Yeongho Jeong, Kyunghwan Choi*
Exponentially Convergent Nash Equilibrium Seeking: A Two-Layer Adaptive and Fully Distributed Event-Triggered Approach *Kaijie Zhang, Wangli He*
Uncertainty-Aware Self-Localization for Bulldozers Using Machine Learning with Internal Sensor Data *Hikaru Sawafuji, Ryota Ozaki, Takuto Motomura, Toyohisa Matsuda, Masanori Tojima, Kento Uchida, Shinichi Shirakawa*
LSTM-AE-Based Control Signal Protection and Cyber Attack Detection *Xixing Xue, Dong Zhao*
ZapSortBot: Autonomous robotic sorting of used batteries utilizing deep learning *Youssouf Barkay Molimi, Daphiny Pottmaier, Jarede Mayers, Syed Khalid, William Navaraj*
A New Approach for Consensus Control with Multi-Agent Reinforcement Learning *Yue Yang, Qiang Lu, Fengmin Yu, Fan Yang*
Economic Model Predictive Control of Time-Varying Nonlinear Systems Using Transformer-based Koopman Operator *Minghao Han, Minh Thu Hoang, Ryan Rui En Tan, Xiaojie Li, Xunyuan Yin*
Deep Reinforcement Learning Adaptive Droop Control of Grid-Connected Solar Farm in Grid Forming Mode with Grid Support Capability *Osarodion E. Egbomwan, Shichao Liu*
Self-Attention Transformer Based Short-Term Load Prediction for Electrical Distribution Feeders *Xingjian Jiang, Shichao Liu, Chunsheng Yang*

Hidalgo

S43-I-SSGT-1 - Advanced Predictive Control and

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Optimization for Power Electronics and Electric Vehicle Systems

CCS-MPC with Nestorov Accelerated Gradient for CHB Converters with Faults in the Power Cells *Fernanda Carnielutti, João Victor Lopes Rosa, Margarita Norambuena, Mokhtar Aly, José Rodríguez, Humberto Pinheiro*

Surrounding Vehicle-Aware Predictive Torque Distribution for Dual Motor Electric Vehicles *Yuxuan Cai, Jun Peng, Shaokun Li, Zhaosheng Qiu, Yue Wu*

Real-Time Predictive Control for Energy Self-Sufficiency in PV-Battery Microgrids with Bidirectional Electric Vehicle Integration *William David Chicaiza Salazar, Javier Gómez, Miguel Ruiz-López, Danilo Herrera, Abraham M. Alcaide, Sergio Vazquez, Juan Manuel Escaño, Carlos Bordons*

Indirect Model Predictive Control for Capacitor Energy Control in Modular Multilevel Converters *Leonardo Testa, Petros Karamanakos, Christoph Hackl*

Optimized Power Management in Hybrid Lithium-Ion Storage Systems via Nonlinear Predictive Strategies *Paula Arias, Marc Farrés, Alejandro Clemente, Lluís Trilla*

Analysis and Application of the Generalized Predictive Control in a Photovoltaic DC-DC Boost Converter *Luz Mariana Viramontes-Espinoza, Mario González, Víctor Cárdenas, Ricardo Alvarez-Salas*

An Efficient Model Predictive Control Design Method for Grid-Connected Distributed Generation Inverters with LCL Filter *Mokhtar Aly, Fernanda Carnielutti, mustafa abuzaher, alaaeldien hassan, Margarita Norambuena, Ahmed Shawky, José Rodríguez*

Adaptive Positive-Negative Inertia-Emulation Control for Grid-Connected and Interlinking Converters *Julen Paniagua, Itsaso Iraeta, Eneko Unamuno, Jon Andoni Barrena, Salvador Ceballos*

Harmonic Modelling of a Grid-Forming Inverter in Stationary Frame *Diego Cifelli, Andres TARRASO, Maximilian Prasser*

Study of the dynamics of a grid-connected photovoltaic inverter based on the B4 topology *Enric Torán, Marian Liberos, Ivan Patrao, Raul Gonzalez-Medina, Gabriel Garcerá, Emilio Figueres*

Integrated Charger with Smooth Switching between Buck and Buck-Boost mode Using Universal Propulsion System Structure *Jiadong Lu, Xuewen Zhao, Xingxing Sun, Wei Zhang*

Optimal Modulation for Meeting Grid Harmonic Limits Under Bounded Voltage Disturbances *Shirin Rahmanpour, Petros Karamanakos, Tobias Geyer, George Papafotiou*

SVM²PC With Extended Kalman Filter For Parameter Estimation For Grid-Tied Inverters *Frederico Bo, Fernanda Carnielutti, Freddy Flores-Bahamonde, Humberto Pinheiro*

Impact from Black-Box Small-Signal State-Space Representation on Participation Factors Analysis *Louis Arbogast, salvatore d'arco, Jon Are Suul, Mario Paolone*

Harmonic analysis technique for CSB (Cluster Stream Buffer) in Modular Multilevel Converter and correlation analysis between harmonic voltage and insulation strength *Chan-Ki Kim*

Toledo

S45-R-TT07-1 - Transportation Electrification and Automotive Technologies

Carbon-Aware Charging Strategies for Electric Vehicle Battery

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Swapping Stations *Lingdong Zhou, Zuzhao Ye, Nanpeng Yu*

Modelling and Integration Analysis of High-Power Charging Stations Equipped with a MWh Scale Battery Bank *Abuzar Akhtar, Ahmed Saleem, Dong Liu, Lassi Aarniovuori*

Cost-Efficient EV Routing and Charging Using Real-Time Traffic and Dynamic Pricing *Md Shahed Hossen, Thiago E. Alves de Oliveira, Dariush Ebrahimi*

Joint optimization of high-power charging and battery swapping technology *Rasmus Suojansalo, Lassi Aarniovuori, Pia Lindh, Pasi Peltoniemi*

A Multifunctional Current-Fed Quad-Active Bridge Converter for On-Board Charging and Auxiliary Power in HESS-Based EVs *Rajat Kumar Shukla, Dipankar Saha, Baylon Fernandes*

Methodology for Estimating On-Board Circuit Parameters for Communication-Free Primary Side Control in Wireless Chargers *Kukkala Satya Prakash, Chandrasekhar Perumalla, MUDIMINCHI AKHIL YADAV*

A Novel Unified Converter for Onboard Charging and Traction Application for EVs *Sayan Mukherjee, Moumita Das*

Time-Varying Current Charging Strategies for Lithium-Ion Batteries in Electric Vehicles: Trends, Challenges, and Opportunities *Ali Rezaei Aghoy, Javad Ebrahimi, Majid Pahlevani, Alireza Bakhshai*

El Jardin

IES TC Meetings

Tapices

S46-I-SSGT-13 - Intelligent Management and Advanced Conversion for Storage Systems and Microgrids

Online Reinforcement Learning Approach for Real-Time Energy Management of Battery Storage Microgrid System *XIANGRU SHI, Flavie Didier, Abderrezak Badji, Sheikh Izzal Azid, Maurizio Cirrincione, Salah Laghrouche*

Decentralized Energy Trading Management in Microgrid: A Blockchain Framework with Price Negotiation Protocols and WattCoin *hexiao LI, Jaafar Gaber, Salah LAGHROUCHE*

A Hybrid Battery Sorting Framework Integrating Improved K-means Clustering and ConvNeXt Classification *Jian Wu, Mingqiang Lin, Alexandre Ravey, Fei Gao, Daniela Chrenko*

A Hybrid PSO-UKF Framework for Accurate State-of-Charge Estimation in Metal Hydride Hydrogen Tanks *AMINA YAHIA, djafar chabane, Salah LAGHROUCHE, Abdoul N'DIAYE, Abdesslem DJERDIR*

Multi-time-scale Ensemble Learning for Remaining Mileage/Day Prediction of Electric Buses *Shilong Zhuo, Heng Li, Yongcai Ma, Yue Wu, Yu Jiang, Weirong Liu*

Two-Dimensional Degradation Model of PEM Fuel Cells Considering Pt Catalyst Evolution for Health-Aware Energy Management *ZHUANG TIAN, Zhongliang LI, Rachid OUTBIB, Daming Zhou*

Practical EIS-Based Diagnostics for Lithium-Ion Battery Packs: Insights and Challenges *Usama Tariq Khan, Muhammad Ahmad Iqbal, Ijaz Haider Naqvi, Nauman Ahmad Zaffar*

Stability-aware Adaptive Trajectory Planning for Intelligent Heavy Trucks in Complex Scenarios *ZHIGEN NIE, Xiongjun Luo, Antonella Ferrara*

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Multiscale convolution model for long-term aging prediction of PEMFC *Bingxin Guo, Yang Yang, Wenlong Yang*

Reliability Study of Grid-Forming Energy Storage Systems with Coupled Thermal Runaway and Long-Term Capacity Degradation *Wenlong Yang, WENCHAO ZHU, Changjun Xie*

Comparison of Voltage Balancers for DAB Converters in Bipolar Residential DC Microgrids *Edivan Laercio Carvalho, Riccardo Mandrioli, Rosa Anna Mastromauro, Dmitri Vinnikov*

Non-Isolated Buck-Boost Converter with Wider Voltage Gain, Reduced Switch Voltage Stress, and Positive Output Voltage *Vitor Pires, Daniel Foito, Armando Cordeiro, Joaquim Monteiro, Pedro Pereira, Joao Martins*

Operation of an Interlinking Hybrid Distribution Transformer *Alvaro Carreno, MARIUSZ Malinowski, Marcelo Perez, Jun Cheng, Zhihong Zhao*

FCB-MPC-Based Cycle Skipping Control For Soft-Switched Isolated AC-DC Converter With Reduced Inductors In PFC Stage *Parham Mohseni, Oleksandr Husev, Dmitri Vinnikov, Matthias Kasper, Gerald Deboy, Naser Vosoughi Kurdkandi*

Switched-Capacitor Resonant DC–DC Converter with Differential Power Processing for Stacked Servers in Data Center Applications *Niwton Gabriel Feliciani dos Santos, Edivan Laercio Carvalho, Andrii Chub*

A Dual-Input Partial-Power Boost Half-Bridge DC-DC Converter with Integrated Transformer for Efficient Battery Integration in DC Microgrids *Neelesh Yadav, Andrii Chub*

Robust LMI Control Design of a Quadratic Buck Converter *Freddy Flores-Bahamonde, Carlos Torres-Pinzon, Oscar Danilo Montoya, Alireza Davari*

Galeria

S48-R-TT14-2 - Control Systems and Applications

Adaptive event-triggered control for resource-based auto-scaling of an uncertain distributed fog computing platform *Dinsha vinod, Jing Zhou*

A generic observer-based control system for three-phase parallel active power filters *Christoph Göttsberger, Christoph Hackl, Dietmar Fehrenbach, Marek Galek*

Multi-Rate Sampled-Data Control for Quarter-Vehicle Active Suspension Systems Based on Input Delay Approach *Du Xiong, Chuan-Ke Zhang, Ji Tian, Jing-Yi Jiao, Yong HE*

Tightly-coupled INS/CNS/PNS integrated navigation based on adaptive multi-model fusion *Taihang Chen, Qian Zhao, Xu Lidan, Teng Zhang, Pengwei Hu, Xiao Zhang*

Discrete-time Sliding Mode Control of PMSMs for a Household Appliance *Eleonora Brasili, Gianluca Ippoliti, Giuseppe Orlando, Luigi Fagnano*

Quick Response Valve for 3DOF Active Control of Pneumatic Vibration Isolation Tables *Kazuki Goto, Koki Hattori, Kohei Hashimoto, Ichiro Kishimoto, Takafumi Koseki, Wataru Ohnishi*

Resilient control of a small drone to man-in-the-middle cyberattacks *Alexandru Codrean, Octavian Stefan, Ramona Roxana Pascalau, Zsofia Lendek*

Different Methods for Multi-HESS Voltage Recovery in Microgrids: A Comparative Investigation *Tuohan Xiao, Chathura Wanigasekara, Don Gamage, Dongze Li, Akshya Swain*

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S49-I-ICELIE-2

16:30-16:34
ICELIE2025-000012. EngiBot: An AI-Based Tutoring System for Personalized Learning in Engineering Education. Bárbara Rodrigues, Rui Pinto, Gil Gonçalves
16:34-16:38
ICELIE2025-000013. An AI-Powered Learning Analytics Dashboard for Real-Time Student Performance and Motivation Monitoring. Luís Cabral, Rui Pinto, Gil Gonçalves
16:38-16:42
ICELIE2025-000024. AI in Education: A Comparative Study of Intelligent Systems and Their Impacts on Modern Learning Environments. Saloni Dhingra, giambattista gruosso, Giancarlo Storti Gajani
16:42-16:46
ICELIE2025-000025. Using RAG with Multi-Modal LLMs for Precise and Accurate Assessments for Engineering Education. Usman Zafar, Sertac Bayhan
16:46-16:50
ICELIE2025-000018. Advanced Laboratory Setups for Education on Electric Motors Commissioning. Jose Antonino Daviu, Jose E. Ruiz-Sarrio, Dunai Larisa, Israel Zamudio, Jose Ochoa-Medina
16:50-16:54
ICELIE2025-000041. Online-Enabled Two-Site Competition-Based Learning for Power Electronics Circuit Design: A Case Study of Undergraduate Education Conducted Jointly by Two Universities. Masataka Ishihara, Kazuhiro Umetani, Eiji Hiraki
16:54-16:58
ICELIE2025-000015. System Control Engineering Laboratory Exercise for Clinical Engineer Education. Shinichi Kawaguchi
16:58-17:02
ICELIE2025-000045. Exploring the Role of Semantic Web Technologies and Ontologies in the Digital Education Ecosystems for Education 4.0. Claudia-Melania Chituc
17:02-17:06
ICELIE2025-000036. Adoption of Gen-AI in Engineering Education: Evidence from a U.S.-Mexico Border Region. Dennis Molina-Quiroz, Itzel Núñez-López, Julio A. Calderón-Ramírez, José A. Núñez-López, Fernando Lopez-Medina, Cesar Sepulveda Valdez, Ruben Alaniz-Plata
17:06-17:10
ICELIE2025-000037. Developing an AI Assistant Platform for Electrical and Electronic Engineering Courses in Universities. Riku Takahashi, Yukihisa Suzuki, Keiji Wada
17:10-17:14
ICELIE2025-000042. Current Status of Power Electronics Education in Industry–Academia Collaborative Programs for Human Resource Development in Advanced Semiconductor Technologies. Eiji Hiraki, Nobuyuki Kasa, Hiroya Sato, Masataka Ishihara
17:14-17:18
ICELIE2025-000028. Diamond: the DC motor drive module in the GEMS Erasmus+ project. Yongpeng Li, Sachin Yadav, Jianning Dong
17:18-17:22
ICELIE2025-000043. Iterative Improvement of a Virtual Laboratory for

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Biomedical Training. Russell Primeau, Peihua Han, Yanran Cao, Guoyuan Li

Castilla

S42-I-TT02-4 - Power Electronics and Energy Conversion

Loss Analysis of the Clamping Circuit in an IGCT-Based High Step-Up Resonant DC transformer *Yiqing Ma, Jialiang Hu, Bin Cui, Xueteng Tang, Hongjie Gong, Jiaqing Yan, Biao Zhao*

Expansion of 3-Shunt Current Measurement through Voltage Vector Distortion *hyunwoo Lee, Jaehyoung Gu, Seunghun Choi, Sanghoon NAM, Jongwon Choi*

Modeling and Suppression of Transient Voltage Interference in Magnetic Field-Based Current Sensors *Changbao Xu, Zhaohui Jiang, Mingyong Xin, Houyi Zhang, Aozu Luan, Shuai Shao*

Neural Network Based Current Harmonic Predictions Using PCC Voltage Measurements in Distribution Networks *Ranasinghe Hewage Nilani Sandya Jayathissa, Firuz Zare, Simon Denman, Amir Taghvaia, Dinesh Kumar, Maryam Haghighat*

A Bipolar Hybrid Symmetrical Cockcroft-Walton Voltage Multiplier for High-Voltage DC Power Supplies *Sara Baldisserri, Riccardo Mandrioli, Gabriele Neretti, Mattia Ricco, Andrea Cristofolini*

State Space Reconstruction-based Stability Control Design Method of Single-phase Inverters *Mingbo Wei, Hong Li, Jiangwei Hu, Kuang Zhang, Mengfan Zhang*

Advancing Brushless Motor Drives with GaN Devices: High Efficiency and Cost-Effective Solutions for Household Refrigeration *Andrea Spampinato, Gianluigi Forte, Luigi Danilo Tornello*

Multi-fidelity kriging for dimensioning multi-winding magnetic coupler *Floran Cassin, Eric Labouré, Adrien Mercier, Jeanne-Marie Dalbavie, Patrice Gomez*

Attaining Arbitrary Load Independent Voltage Gain and Minimizing Inverter VA Rating in S(C)-S(C) Compensated Wireless Power Transfer Links *Andrey Vulfovich, Georgios Orfanoudakis, Martin Mellincovsky, SATISH NAIK BANAVATH, Riccardo Mandrioli, Alon Kuperman*

Efficiency Advantage of Supercapacitor-Assisted Multi-Inverter Systems: Experimental Results of a Four-SCA-Inverter System *Chamila Anuradha Naligama, Nihal Kularatna, Alistair Steyn-Ross, Kosala Gunawaradane*

Evaluation of Silicon Carbide Power MOSFET on Third-quadrant Surge Current Performance *Ning Wang, jianzhong Zhang, Yaqian Zhang, Shuai Xu, fujin Deng*

Resonance Investigation for Single-Stage Current Source Inverters in Electric Drives Applications *Giovanni Luca Fidone, Emilio Carfagna, Giovanni Migliazza, Fabio Immovilli, Emilio Lorenzani*

AI-Based Approach for Exploring Power Electronics Employing Reinforcement Learning *Patrick Mederitsch, Johann Kolar, Uwe Drofenik*

A Complementary Dual-Coil Receiver Design for Misalignment-Robust Wireless Power Transfer in Electric Vehicles *Zongrui Yang, Io-Wa Iam, Yuanchao Wu, Chi Fong Ieong, Chi-Seng Lam*

Analysis of PT-Symmetric-Based IPT systems with Relay Coil *Zhihao Guo, Xiaohui Qu, Jinghang Liu*

Doblon

SYP Forum

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S44-R-TT01-3 - Electric Machines and Industrial Drives

Offline Parameter Identification for LCL-Equipped High-Speed PMSM Drives *Dingkuan Xu, Yunkai Huang, Yu Yao, Fei Peng*

Robust Control of DC-Link Voltage for PMSG Based on High-Order Extended State Observer *Luwei Shao, Rui Zhong, Wei Hua, Yinfeng Hu*

A General Single-Current-Feedback Model Predictive Control for High-Speed PMSM with High Dynamic Behavior *Chenyu Song, Yunkai Huang, Dingkuan Xu, Yu Yao*

Performance Analysis of High-Frequency Model of Electric Drive System under Different PWM Strategies *Fawzy Abdo, Daan Deruyter, Mehmet Gulec, Kotb B. Tawfiq, Peter Sergeant*

Design of Rotor Banding Sleeve Considering Loss and Thermal Behavior for High-speed Flywheel Generator *Li Shan, Xun-Tao Ren, Jia-Yu Zhang, Zhi Yang, Jia-Nan Sun, Yuhan Ye*

Implementation Analysis and Evaluation of Phase-Error-Free Discrete-Time Model for Induction Motor High-Speed Drive under Various Operating Conditions *FANG ZHIFA, Shinji DOKI*

Seamless Transition Strategy for Multi-Mode PWM in Two-Level Inverter-Fed High-Speed Drives *Adithya Harithas Venkatesh, Andreas Schnell, Amin Hashemi-Zadeh, Stefan Goetz*

Modified Forward-Euler Discrete-Time Model for High-Speed Permanent Magnet Synchronous Machine Control *Andreas Schnell, Aiswarya Balamurali, Joachim Boecker, Oliver Wallscheid*

Escudo

S50-I-SSGT-19 - Optimization and Advanced Characterization for Renewable Integration and Battery Systems

Adaptive C-rate method for accurate cell-to-cell characterization in rechargeable batteries *David Ansean, Eduardo Redondo-Iglesias, Enrique Ernesto Valdés, Omar Balfas, Juan Carlos Viera, Victor Manuel García*

A Two Stage GA-MILP-based Sizing Optimization Method for Off-grid Integrated Energy System *Peng Li, Yigeng Huangfu, Shengrong Zhuo, Shengzhao Pang, Chongyang Tian, Sheng Quan*

Battery Pack Data Imputation Technique For Dynamic Profiles *Joaquin de la Vega Hernandez, Jordi-Roger Riba, Juan Antonio Ortega Redondo*

Optimal Day-Ahead Scheduling of Large-Scale Renewable Energy Bases in Desert for Cross-Regional Power Delivery *Jiajun Qin, Fang Fang, Xin Tian*

Market-oriented Two-stage Joint Optimization Strategy for Virtual Power Plants Considering Renewable Forecasting Errors *Yigeng Huangfu, Xiao Hong, Shu Gao, Zelong Zhang, Yuhua Du, Xiangyu Kong*

Energy Management of a Hybrid Energy System for Dynamic Load Compensation *Faheem Ijaz, Priya Singh Bhakar, Shamsodin Taheri, Edris Pouresmaeil*

Reduced-Order Dynamic Model of PMSG Wind Turbines for Numeral Simulation Based on Singular Perturbation *Xi Luo, Jiani Luo, Huayu Ji, Lei Yang, Dianxun Xiao*

A Comprehensive Review and Analysis of OCV Hysteresis Effects in LFP Batteries *Christiaan Fourie, Rahul Sarker, Takumi Mori*

On the Non-Minimum Phase Behavior of Pitch Controlled Wind Turbines Providing Primary Power Reserve *Tim Tölle, Benedikt Spichartz, Constantinos Sourkounis*

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Control Parameters Tuning for Stability Enhancement of Grid-Following Converters in Weak Grids *Shuai Yuan, Zhixiang Zou, Quan Xiangjun*

A Hierarchical Optimization Method Based On Centralized Topology For Battery Equalization System *Guodong Zhao, Ben Zhao, XIyuan Liu*

Age Estimation of Li-ion Batteries Based on Internal Resistance for Electric Vehicle Applications *Ehsan Asadi Khoshouie, Nima Tashakor, Amin Hashemi-Zadeh, Mohamed Mohamed, Stefan Goetz*

A 5 kW Gallium Nitride String Photovoltaic Inverter with an Efficiency of 98.57% and Power Density of 1.254 kW/L *JIANG FENG, Po Xu, Yiming Wang, Kefang Zheng, Xibo Yuan, Wenzhi Zhou, Yonglei Zhang, Kai Wang*

Fish-eye camera image processing for PV production forecasting *Juan Alvarez Ordinas, Thiago Arndt, Antonella Tannous, Ferreol Binot, Bruno Francois*

Comparative Analysis of Extended and Unscented Kalman Filters for SoC Estimation in Lithium-Ion Batteries: A Model-Based Approach *ZAFER ORTATEPE*

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08:30-10:30

Escorial

S56-I-TT16 - Mechatronics and Robotics

Adaptive Trajectory Optimization for Humanoid Robots Using Model Predictive Control in Dynamic Environments *Emre Ulu ö âZafer Bingül*

Singularity-Free and Collision-Free Optimal Trajectory Planning for Multi Industrial and Collaborative Robots in Common Workspace *Nezih Bora Yava òZafer Bingul*

Decoupled MPC for ZMP-Based Lateral Stability in Two-Wheeled Inverted Pendulum with Roll Joint *Jaewoo An, Jechan Jeon, Taehyun Kim, Myo Taeg Lim, Yonghwan Oh*

Dual-Antenna Platform for UAV GPS Spoofing Attack Detection *Junhong Wang, Xingzhe Wang, Dong Zhao, Xiang Yu, Lei Guo*

Generation of Mixing and Transporting Motion for Peristaltic Mixing Pumps by Autonomous Decentralized Control Using Local Feedback with a Discrepancy Function *Koya Tsurumi, Ryosuke Adachi, Takaaki Tanno, Fumio Ito, Tomoki Hanamura, Takuya Umedachi, Taro Nakamura*

Lubricant Temperature Observer for Gearboxes in Industrial Robots *Christian Bauer, Markus Neher, Valentin Kamm, Lukas Steinle, Armin Lechler, Alexander Verl*

Cooperative and Independent Control of Reconfigurable Multi-wheeled Omnidirectional Mobile Robot in Coupled and Decoupled States *Kento Nakajima, Kenta Nagano, Masayoshi Wada*

Performance Evaluation and Characterization of an Industrial Tactile Sensor Solution *Thomas Kammerhofer, Johannes Handler, Thomas Thurner*

Correlating Control Inputs and Web Roll Quality in a Roll-to-Roll System for Digital Twins *Juan Chowdhury, Jasper De Viaene, Jeroen De Kooning, Kurt Stockman*

Slip-aware adaptive path planning for whole-body mobile manipulators using reinforcement learning *Christian Camacho, Alvaro Prado*

Efficient UGV Tracking Using Topological Search and Spatial-Temporal Optimization *Qian Bin, Jianfeng He, Jinqi Jiang, Zhan Li*

Optimal Distance Does Not Mean Optimal Time in PCB Assembly Optimization *Zhengkai Li, Hao Sun, Yu Xinghu, Tong Wang, Zhihong Zhao, Qin Zhao, Juan J. Rodriguez-Andina, Jianbin Qiu, Huijun Gao*

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Hidalgo

S52-I-SS06 - Advanced Control Techniques for Power Electronics Converters

Voltage Support Control Strategy Based on Virtual Oscillator Control under Grid Sag Fault *Min Huang, Yecheng Lin, Kangan Wang, Haoning Cheng, Zhilei Yao, Weimin Wu*

Enhancing Power Converter Efficiency with Reinforcement Learning-Based PWM Control *Gopal Mondal, Steffen Limmer, Daniel Hein*

Stator-flux-oriented induction generator control for applications with slim DC-link capacitor *Christian Vorobev, Sebastian Bock, Matthias Gorski, Volker Staudt*

Optimized Control Strategy for LCL-Filtered Three-Phase Voltage-Source Converters in Adverse Grid Conditions *Ahmad Ali Nazeri, Jens Friebe, Peter Zacharias*

A New Three-Level Reduced Switch-Count Three-Phase F-type Rectifier and Its Control Without Current Sensing *Hasan Komurcugil, Naki Guler, farzaneh bagheri, Sertac Bayhan*

A Novel Independent AC and DC Predictive Control Strategy for an LC-filtered Multilevel Inverter *Josue Andino, Diego Arcos-Aviles, Francesc Guinjoan*

Multiobjective impedance-based control for a TNPC-based rectifier for dc-link supplying *Juan Jose Perez, Francisco Huerta, Gonzalo de los Rios, Santiago Cobreces, Daniel Santamargarita, Emilio J. Bueno*

Lightweight Neural Network Architectures for Robust Data-Driven Current Control of Three-Phase Voltage Source Inverters *Oswaldo Menendez, Carlos Pizarro, Alvaro Prado, Gabriel Tabilo, Alex Navas Fonseca, Felipe Ruiz, José Rodríguez*

Systematic Polynomial-Based Modulation Method to Enhance Operation of DAB converter *Alba Rodriguez, Abraham M. Alcaide, Jose I. Leon, ANDRES BARRADO, Joaquin Vaquero, Yann Bouvier, Carlos Pavon, Alejandro Stowhas*

DC Plasma Power Supply with Multi-port Solid State Transformer and Inverse Model Predictive Control *Ali Sharida, Anas Karaki, Sertac Bayhan, Haitham Abu-Rub*

Design and Thermal Analysis of a High-Voltage High-Frequency Transformer *ALI SHAN, Mehmet Akif Ozdemir, Bunyamin Tamyurek, emrullah aydin, Timur Aydemir*

Design and Evaluation of Different Order Sliding Mode Control Strategies for Current Control in T-Type Grid-Tied Inverters *José Ángel Chacón, Abraham M. Alcaide, Wensheng Luo, Jose I. Leon, Ramon Portillo, Leopoldo G. Franquelo*

Inductor-Less Direct AC-DC Conversion for Electromagnetic Vibrational Energy Harvester *Md Mahmudul Hasan, Sandipan Patra, Shafi Khadem*

Four-Port SST-Based Multi-Objective Control for Hybrid PV-Battery Powered Data Centers *Anas Karaki, Ali Sharida, Sertac Bayhan, U ÷W" FESL ÂÀaitham Abu-Rub*

Layered Self-Protection Architecture for Grid-Forming Inverters *Markel Zubiaga Lazcano, Alain Sanchez-Ruiz, Ander Ordono, Javier Rodriguez-Gongora, Ekhi Zugasti*

Finite-Set Simplified Model Predictive Control for Thyristor-Controlled LC-Coupling Hybrid Active Power Filter *Wai-Kit Sou, Rui Martins, Chi-Seng Lam*

Toledo

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S54-R-TT02-5 - Power Electronics and Energy Conversion

Matching Network Design for a Class D PA Driving Multiple Coils in MHz Wireless Power Transfer *Shuang Li, Ruihan Ma, Yu Xiao, Zhan Liu, Ming Liu, Chengbin Ma*

Ground-to-Chassis Distance Adaptive Photovoltaic Inductive Wireless Power Transfer System for Electric Vehicles *Io-Wa Iam, Zongrui Yang, Chi Fong Ieong, Pui-In Mak, Rui Martins, Chi-Seng Lam*

Frequency Control of S–LCL Wireless Power Transfer Using Parity–Time Symmetry Theory *Ryota Aratani, Yuki Shimizu, Yoshitaka Kawabat*

The Behaviour of a Capacitive Wireless Power Transfer System with an Arbitrary Number of Repeaters *Hamed Farbakhsh, Arthur Cloet, Michael Kleemann, Ben Minnaert*

Unified and Systematic Design for High-Efficiency Class-EF^2 Wireless Power Transfer Systems *Yuga Ihara, Xiuqin Wei, Weisen Luo*

A State-Space Eddy Current Model for Hybrid Inductive-Capacitive Wireless Power Transfer Systems *Baptist Elst, Ben Minnaert*

A 6.78 MHz Class :cWireless Power Transfer System for Enhanced Drone Charging Flexibility *Antti Jormanainen, Nam Ha-Van, Jorma Kyyrä*

El Jardin

S57-I-SS41 - Novel Developments for Special Robots and Vehicles in Complex Scenarios

A Lightweight Collision-Inclusive Trajectory Planner for UAV *Ning Chen, Sichen Yang, Yipeng Yang, Zhan Li*

Energy-Efficient Trajectory Tracking for Novel Hybrid UAV via Deep Reinforcement Learning *Wenhao Wang, Jixiao Liu, Yipeng Yang, Zhan Li, Huanpu Liu*

Autonomous Drifting of Single-track Two-wheeled Robot with Deep Reinforcement Learning *Yifan Sun, Feilong Jing, Yang Deng, Jin Gu, Zhang Chen*

Vehicle Trajectory Prediction with Driving Style-Aware Spatial-Temporal Fusion Network *Zhiwu Huang, Yicong He, guoyu gu, Heng Li, Yutao Chen, Yongjie Liu*

Joint Identification Method of Extended Kalman Filter and Cascaded Flatness-Based Observer for Lateral Tire-Road Friction of Motorcycle *chen yang, Bao Ke, Yang Deng, Yiyong Sun, Lu Weining, Liang Bin*

Uncertainty-Aware GNN for Collaborative Robot Mapping Towards 6G-Enabled Smart Warehouses *Irfan Fachrudin Priyanta, Julia Freytag, Tobias Körner, Muhammad Asfandyar Khan, Jérôme Rutinowski, Moritz Roidl, Ilona Rolfes, Alice Kirchheim*

Sequential Intention-driven Vehicle Trajectory Prediction Integrated with Spatial-Temporal Features *Zhiwu Huang, Zhuozhuo Zhang, Zini Wang, Heng Li, Yingqi Wang, Yongjie Liu*

GMVC: Grip-Force-Modulated Adaptive Velocity Mapping for Intuitive Robot Teleoperation *Haolin Fei, Ziwei Wang, Liucheng Guo, Darren Williams*

An Unmanned Tiltable Narrow Reverse Tricycle Vehicle for Uneven Terrain Travel *Xingan Liu, Zhang Chen, Guang Zhai, Hailong Liu, Yiyong Sun, Bin Liang*

TEWD-DFO: A Soft-Soil-Aware Driving Force Observer Using Terramechanics-Enhanced Wheel Dynamics for Planetary Rover *Changmin Yeo, Martin Görner, younghoon seo, Jinsong Hong,*

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Sehoon Oh

Tapices

S55-I-SSGT-14 - Advanced Modulation and Control Strategies for Power Electronics Converters

Three-State Modulation Strategy for Capacitor Charging in Modular High-Voltage Pulse Generator *Sofia Velasquez, Johan Guzman, Marcelo Perez, Javier Samanes*

Investigation of Optimal Arm Configurations for a Transformerless MMC DC/DC Converter with a High Step-Down Ratio *Anna Shubnaya, Hans-Peter Nee*

Transient Stability Analysis of Enhanced Virtual Synchronization Generator Grid-forming Control *Muhammad Abdelghany, Muntathir Al Talaq, Saikrishna Kanukollu, Ahmed Al-Durra, Fei Gao, Mohamed El Moursi*

Model Order Reduction for Capacitive Energy Transfer DC/DC Converter Based on Harmonic State Space Theory *Geni Lin, Wei Zhang, Shuxin Zhang*

A control design for a modular boost converter featuring inductor and capacitor switching cells *Christopher J. Rodriguez-Cortes, PANFILO RAYMUNDO MARTINEZ RODRIGUEZ, Samuel Iturriaga Medina, Diego Langarica Córdoba, Juan Antonio Villanueva-Loredo, Jose M. Sosa-Zuñiga*

Design of a Nearly Harmonic-Free Adjustable AC Power Source With Large Range of Output Voltage *Sobhan Mohamadian, hossein azizi, Amir Ghasemian, Concettina Buccella, Carlo Cecati*

Self error Compensated Predictive Current Control for a Induction Machine in Multi-modular VSI Converters *Carlos Romero, Sergio Toledo, Edgar Maqueda, David Caballero Morilla, Rodrigo Romero Vega, Julio Pacher, Magno Ayala, Raul Gregor, Marco Rivera*

Multilevel Converter for Versatile Waveform Generation in Electroporation Applications *Borja Lopez, Hector Sarnago, Ignacio Alvarez, Jose Miguel Burdio, Oscar Lucia*

Iterative algorithm for voltage sizing of a Single Delta Bridge Cell based STATCOM *Juan José Costa-Iriarte, Mario Lopez, Pedro Izurza, Gonzalo Abad, Jon Andoni Barrena*

Self-Error Compensated Sequential Predictive Control in Multi-Modular Matrix Converters *Rodrigo Romero Vega, Sergio Toledo, Edgar Maqueda, Carlos Romero, Raul Gregor, Marco Rivera, Alejandro Duarte, David Caballero Morilla, Hugo Hernán Lezcano Delvalle*

Fixed-point Recurrent Neural Network based Observer for Cell Voltage Estimation in Modular Multilevel Cascade Converters on FPGA Platforms *Jhonattan Berger, Jonathan Lillo, Felix Rojas, Christoph Hackl*

Comparison of the Reactive Power Range in the AC Terminals of LCC and MCC based HVDCs *Pablo Epul, Jose Espinoza, Samuel Rebolledo, Luis Vaccaro*

Introducing an Elastic Force Modulation Mechanism in the Flexible Elastic Crawler: Design and Preliminary Evaluation *Junya Nagase, Tamie Hiraga, Shuichi Wakimoto*

Galeria

S58-R-Jorn1 - Advanced Power Converters and Motor Drive Systems

Safe and Efficient Hundred-Watt-Level Wireless Power Transfer in Room-Scale Spaces Through Electromagnetic Field Optimization *Tong Li, zhe liu, Chenxi Yang, Linqing Xu*

Interleaved Switching for Loss Minimization in Adjacent Cell-to-Cell

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Balancing Architectures *Jyotirmaya Sahoo, Ramesh Parnapalli, Amit Patra, Siddhartha Mukhopadhyay*

A Novel Multilevel Converter as Active Magnetic Bearing Drive Based on Hybrid NPC With Flying-Capacitor Leg *Jianfu Ding, Yuanhao Xie, Dong Jiang, Zicheng Liu, Yixvan Shuai, Mingqv Zhou*

Dual Side Field Oriented Control of Slip Ring Induction Motor *Lalitendu Sekhar Barik, Himanshu Misra*

Improved SVM Pattern for Single-Stage CSI With Discharge Path in Electric Drives Applications *Dario Benatti, Giovanni Migliazza, Emilio Carfagna, Fabio Immovilli, Emilio Lorenzani*

Hierarchical Disturbance-Based Displacement Observer for Piezoelectric Self-Sensing Actuation *Shaoze Zhang, Jian Chen, Dapeng Tian*

Analysis of Volt-Second Error for Medium Voltage SiC MOSFET Power Modules *Morten Rahr Nielsen, Hongbo Zhao, Michael Møller Bech, Stig Munk-Nielsen*

Consensus-Based Distributed Control of Offshore Wind Farms Connected via DR-HVDC *YUANXIANG Sun, Zhenbin Zhang*

Comendador

S59-I-TT08-1 - AI and Signal & Image Processing Methodologies

MAC-Net: A Multi-Scale Atrous Convolutional Network for Precise and Real-Time QRS Detection in Ultra-Short ECGs *Nannan Liu*

Ai-assisted framework for performance and quality supervision of manual assembly processes. *Luis Vilas Boas, Joaquin Dillen, João Faria, Nuno Simões, Rafael Fernandes, Bruno Silva, João Borges, António Moreira*

Real-Time Multispectral Human Pose Estimation *Askat Kuzdeuov, Huseyin Atakan Varol*

Multi-Dilation Convolution and Efficient Local Attention Enhanced YOLOv11 for Insulator Defect Detection *Weixing Wu, Hongxing Yuan, Chunya Tong, Tianyu Xu, Yuliang Cai*

Multilingual Speech Command Recognition with Language Identification *Artur Muratov, Askat Kuzdeuov, Huseyin Atakan Varol*

MEDNet: Memory-Enhanced Discriminative Feature Learning for Few-Shot Metal Defect Classification *Shi Zhen, Ruiyun Yu, Haoyuan Li*

Generative AI for Cybersecurity Awareness Training *Ahmed Mohamed Ahmed Mohamed*

Exploring Automotive Quality Correlations through Explainable Machine Learning What-If Simulation *Alexandre Oliveira Júnior, José Luis Calvo Rolle, Rui Pires, Paulo Leitao*

Improved YOLOv11 for Low-illumination Object Detection in Autonomous Driving Scenarios *zhang Kaihong, Yimin Zhou, Jun Cheng*

STSSRI-GNN: A Spatio-Temporal Graph Neural Network for Structured Signal Modeling in Industrial Systems *Renbo Zhang, Xilin Dai, Hua Wang*

Castilla

S51-I-TT02-5 - Power Electronics and Energy Conversion

Stability Analysis and Enhancement of DC Microgrids via Observer-Based Control *Ruifang Zhang, Wensheng Luo, Sergio Vazquez, Francisco Gordillo, Ligang Wu, Leopoldo Franquelo, Guoqiang Zhang, Alvaro Castillo*

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A Novel Gate-Driving Strategy for Enhancing High-Speed Switching Performance in GaN Power Transistors *Luis F Gomez-Rivera, Quirc Perez-Farre, Alejandro Paredes Camacho, Jose Luis Romeral Martinez*

Fast and Accurate Finite Element-Based and Magnetic Equivalent Circuit Models for Magnetically Controlled Transformers *Amr Abbas, Ahmed Hemeida, Camilo Suarez, Wilmar Martinez, Anouar Belahcen, Paavo Rasilo*

Improved LCC Topology for Multi-Frequency Wireless Power Transfer System with Constant-Voltage Under Coupling and Load Variations *Hongliang Pang, Wei LIU, Xiaotian Xie, Chang Liu, Tianyi Liu, K.T. Chau*

Comprehensive Modeling and Analytical Evaluation of Non-Ideal Switching Effects in Three-Phase Two-Level Inverters *Hossein Sadegh Lafmejani, Alessandro Soldati*

Transient Current Peak Investigation in an Inverter Leg with Paralleled GaN FETs *Salvatore Musumeci, Vincenzo Barba, Marco Palma*

A Tri-Port Thyristor Rectifier with Three Distinct Output Voltages *Shoaib Shaikh, Faheem Shafeeque Channar, Mohamed Diab*

Design, Implementation, and Cost Comparison of Buck-Boost with Semiconductor-Based Isolation *Mobasshir Al Rafi, Ibrahim Amezyane, Narayan Kar, Caniggia Viana*

A Three-Coil Self-Resonant WPT System for Biomedical Applications *Neda Zahedi Saadabad, Javad Nekoui, Reza Dehbozorgi, Qingsong Wang, Ambrish Chandra*

Experimental and Analytical Analysis of Turn-on Parasitic Oscillation and Dynamic Current Sharing of the Si/SiC Hybrid Switch *Mohan Zhang, Ian laird, Saeed Jahdi, Wenzhi Zhou, Zhaobo Zhang, kun Wang*

Characterization of Mutual Coupling for dc-biased Controllable Magnetic Devices *Lennart Hoffmann, Torbjörn Thiringer, Jens Friebe*

Modeling of the Inverter Current Distortion in the Double-sided LCC Compensation for Inductive Power Transfer Systems *Francesca Grazian, Guangyao Yu, Calvin Riekerk, Wenli Shi, Jianning Dong, Gangwei Zhu, Thiago Soeiro, Pavol Bauer*

Assisted Current Balancing of Parallel Si IGBTs by Co-Switching with SiC MOSFET for High-Current Inverter Application *Patrick Palmer, Danielle Jaye Agron, Edward Shelton*

Simultaneous Wireless Power and Information Transfer with Minimal Hardware and Multi-Carrier Modulation Using Phase Shift Control *Wanying Weng, Guoao Li, Zhecheng Zhang, Jiande Wu, Yan Deng, Xiangning He*

Doblon

S60-I-SS42 - Physics-Informed Learning for Modeling, Monitoring, and Control in Industrial Systems

Physics-Informed Residual-Based Anomaly Detection and Open-Set Recognition System: A Case Study on Ring Bearings *Enzo Nicolás Spotorno Bieger, Antônio Augusto Fröhlich, Josafat Leal Filho*

Power Electronics Parameter Estimation by Physics-Informed Gaussian Processes *Marcel Zimmer, Edoardo De Din, Daniele Carta, Andrea Benigni*

Adaptive Electronic Fence Technology for Live Operations in Digital Twin Substations *Liu Mengyue, Shang Jingwei*

Research on Optimization Algorithms for Alarm Data Fusion of Multiple Network Security Situational Awareness Devices *Xiaomeng Li, Mengqi Liu, Shuozai Zheng, Tongshuai Zhang*

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Dynamic Obstacle Avoidance for UAV in Logistics Warehouses Based on Unified Obstacle State Representation *Zihao Che, Changsheng Luo, Geng Lu*

Physics-Informed Online Learning of Flux Linkage Model for Synchronous Machines *Seunghun Jang, Myeongseok Ryu, Kyunghwan Choi*

Robust Junction Temperature Estimation Using Hybrid RC Network and Sensor-Informed MISO ARX Models *MOHAMMED RIADH BERRAMDANE, Alexandre Battiston, Nicolas Blet, Benjamin Remy*

Multi-agent Heterogeneous Hybrid Safe Logistics Sorting System Based on Transformers *chen cai, Geng Lu*

Control theory-informed machine learning aided stable kernel representation for nonlinear system monitoring *Wei Cheng, Ketian Liang, Danijel Cuturic, Linlin Li, Chris Louen, Steven X. Ding*

Efficiently Modeling of Superconducting Electrodynamic Suspension Train based on Physics-informed Neural Network *Linfeng Liu, Wei Dong, Hao Ye, Shaowei Li, Min Gu, Tongshuai Zhang*

Segovia

S53-R-TT03-1 - Power Systems and Smart Grid

Robust Nonlinear Control of an Inverter Connected to a Weak Grid *Sebastian Gomez Jorge, Jorge Solsona, Claudio Busada, Leire C. Aguirre-Larrayoz, Ana Susperregui, Gerardo Tapia-Otaegui*

Scalable Multi-Agent Model-Free Demand Response for Voltage Regulation in Grid-Interactive Efficient buildings *Aya Amer, Sertac Bayhan, Haitham Abu-Rub, Mehrdad ehssani*

Qualitative Review and Analysis of Present and Future Grid Connection Challenges in Great Britain *Andrew Hutchinson, Dan Gladwin, Matthew Smith, James Scott, Abdussalam Aburziza, David Fletcher*

A Networked Oscillators-Based Large Signal Stability Analysis for Grid-Forming Inverter Dominated MGs *Shu Gao, Xiao Hong, Yuhua Du, Yigeng Huangfu, Aili Fan, Xiangyu Kong*

Analog-Digital System for Model Predictive Control of Grid-Connected Voltage Source Converter *Henil Shah, Anupama Kowli, Mukul Chandorkar*

Coordinated Fast Frequency Regulation in Dynamic Virtual Power Plants via Disturbance Estimation *SAIF AHMAD, Seifeddine BENELGHALI, Hafiz Ahmed*

A Method for Mitigating Harmonic Current Distortion under Light-Load Conditions Using an AC/DC Converter *Jihun So, Yeong-Jun Choi*

Escudo

S61-I-SSGT-20 - Advanced Control Strategies for Resilient and Integrated Energy Systems

Enhancing Hydrogen Energy Management with a TSN-Driven Scalable Smart Grid Architecture *Veit Wiese, Rashed Al Amin, Roman Obermaisser*

Distributed Event-Triggered Fixed-Time Multi-Agent Control for Time-Varying Resource Management in Microgrids *TINGTING ZHOU, Salah Laghrouche, Youcef AIT-AMIRAT*

Weighted EURO and CEC Efficiencies for Off-Grid Photovoltaic Green Hydrogen Production System *Hugues Renaudineau, Ana M. Llor, Catalina González Castaño, Nicolas Muller, Daniel Pesántez, Samir Kouro, José Rodríguez*

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	Design and implementation of an intelligent charge-discharge control system for supercapacitors *Kai Tang, Xiaoxiao Mi, Michael Basin* **A Novel Non-singular Fast Terminal Synergetic Integral Backstepping Control for Operational Enhancement of Battery Electric Vehicle** *Hafiz Mian Muhammad Adil, Hassan Khan, Issam Salhi* **Design of Finite Control Set Model Predictive Controller for Modular Multilevel Converters with Common Mode Voltage Elimination** *Eugene Ndoh, Marc René Lotz, Vaidehi Gosala, Saravanakumar Arumugam, Dheeraj Gosala, Chathura Wanigasekara, Soeren Ehlers* **Multidisciplinary Design of Parallel Hybrid Distributed Electric Propulsion Regional Airliners** *Guanlin Fan, Haoliang Yu, Tao Lei, Shuhao Deng, Xingyu Zhang, Xiaobin Zhang* **Enhancing PINN-Based Flow Reconstruction with Sparse and Decoupled Gradient-Weighted Sensor Placement** *David Emanuel Gomes, Antonio Espirito-Santo, José Páscoa* **Smart Fault Diagnosis in Grid Connected PV Systems: AI Methods Under Experimental Evaluation** *Hsen Abidi, Heni Belgacem, Lilia Sidhom, Inès Chihi* **End-of-Life Prediction Models for Lithium-ion Batteries in Electric Vehicles: Approaches, Challenges and Future Directions** *Ahmet Kutay Aydogan, Anas Karaki, Sertac Bayhan, Haitham Abu-Rub, Mehrdad Ehsani*
10:50-12:50	*Escorial* **S66-I-SS13 - Advanced Technologies of Motion Control for Robotic Applications** **Neural Network-based Fractional-Order Terminal Sliding Mode Control for UAV** *Yimin Zhou, Huaxing Lin* **Predefined-Time Control for Industrial Manipulator Trajectory Tracking with Parametric Uncertainties and Disturbances** *Umair Javaid, Michael Basin, Wei Xu, Waqas Mehmood Baig* **Remote Operation utilizing MPC Predicted Values under Time-varying Delay** *Yutaka Uchimura* **Haptic Rendering of Bone Drilling Based on Feed Rate, Rotational Speed, Depth of Cut, and Workpiece Mass Density** *Daisuke Yashiro, Kohei Shimonaga, Hirohito Hirata, Tadatsugu Morimoto* **Finite-Time Control Barrier Function-Based Model Predictive Control for Safe Navigation of Wheeled Mobile Robots** *Baby Diana, Amitesh Vatsa, Jaynil Nirav Sheth, Shyam Kamal* **Workspace Force Feedback Control of Parallel-Link Robots with Forward Kinematics based on an Extended Kalman Filter** *Ryosuke Ito, Yuki Kiriyama, Yoshiyuki Hatta, Kazuaki Ito* **Optimization of Wave Control Design for Damping of Resonant System** *Mio Kanzawa, Seiichiro Katsura* **Adaptive anti-sway control for 3D overhead crane with constraints on trolley motion and payload sway** *Shengzeng Zhang, Xinggao Liu, Michael Basin, Zhu Haiyue, Jun hao zhang, Xiongxiong He* **Novel Dynamic Force Shaping Method for Agoraphilic Navigation Algorithm** *Dinusha Gunathilaka, Kahandawa Appuhamillage, Yousef Ibrahim, Hasitha Hewawasam, Linh Nguyen* **Temperature Rise and Loss Study for Wet Rotor Cooling Method of High-speed Permanent Magnet Synchronous Motors for Robot Joints** *Feiyang Liu, Jinglin Liu, Zehua Yang* **Parameter Measurements of Permanent Magnet Synchronous Machines without Mechanical Locking** *Kenneth Chinonso Odo, Pragasen*

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Pillay

Neural network based sliding mode event-triggered control for nonholonomic mobile robots *Jianmin Wang, Fengqiu Liu, Hongxu Zhang*

Motion Trajectory Correction Using Deep Learning for a Robot Arm in Glue-Application Tasks *Yuina Takahashi, Yoshiyuki Hatta, Junya Sato, Kazuaki Ito*

Hidalgo

S63-I-SSGT-2 - Advances in Wireless Power Transfer and Enabling Technologies for Electric Vehicles

Minimum Stress Factor Tracking Algorithm for Reconfigurable T-Type DAB DC-DC Converter *Alejandro Stowhas, Christian Rojas Monrroy, Samir Kouro, Marcelo Perez, H. Alan Mantooth*

Simulator for Dynamic Wireless Power Transfer Reproducing Urban Traffic Patterns from Sharing Data *Tokikazu Mizuguchi, Yutaka Shikauchi, Osamu Shimizu, Hiroshi Fujimoto, Masashi Tomari, Hajime Seya*

Method for Reducing Standby Losses by SP-PS Circuits and Capacitor Switching in Dynamic Wireless Power Transfer *Takeru Miyairi, Weisen Luo, Takehiro Imura, Yoichi Hori*

Vehicle-to-Vehicle Wireless Power Transfer in Electric Vehicles for Input Supply Outage Scenarios *ASHUTOSH RAI, Abhishek Singhal, Narsa Reddy Tummuru, Venkata Ratnam Vakacharla*

Dynamic Wireless Power Transfer Using Common Mode Choke Coil and Y Capacitor Filter Design and Noise Reduction Techniques *Takato Anahara, Takehiro Imura, Yoichi Hori*

Wide-Input-Range Constant Voltage Control Strategy for WPT System Using APWM-Modulated Full-Bridge/Half-Bridge Operation *Jiajun Wu, Muxing Wu, Io-Wa Iam, Chi Fong Ieong, Chi-Seng Lam*

A Novel Orbirect Inductive Coil Structure for Wireless Inductive Power Transfer in Electric Vehicle Battery Charging Applications *Dharavath Kishan, Shubhang Chauhan, Shubhankar Ghosh, Andrii Chub*

Performance Evaluation and Experimental Validation of an Advanced PWM Method in SiC Based EV Charger *Syed Jahania Shah, Hafsa Qamar*

Adaptive EV Charging Management Using Urgency Index and Multi-objective Optimization *Xusheng Wang, Dongze Li, Abhisek Ukil, Akshya Swain*

Deep Deterministic Policy Gradient Control and Optimal for Grid-forming Converter *xuemei zheng, Yanyu ZHAO*

Research on Clamped Push-Pull Class E Amplifier for Wireless Power Transfer *Chao Qi, Yang Wang, Xiyu Mo, Qisheng Qiu, Wei Wang, Yijia Ren*

Smooth Transition Method for Microgrid Grid-Island Switching Based on Hybrid Control Strategy *Chao Qi, Qisheng Qiu, Yang Wang, Yifan Huang*

Adaptive Multi-sensor Information Fusion for Monitoring Systems with Disturbances *Zhihong Zhang, Dundun Liu, Tianyuan Ma, Jiaming Wang*

Adaptive Integral-Type Non-Singular TSMC for Buck Converters with Zero-Crossing control Gain under Matched and Mismatched Disturbances *Weiqi Zhang, Chuanyu Sun, Kai Song, Jiatong Zhang*

Electrical Design of Large-Scale Public Buildings with Energy Management *Wei Li, Che Chen, Wei Li, Yuzhuo Liang*

Toledo

Panel Grid Stability

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El Jardin

S67-I-SS47 - Smart Sensors, Sensor Networks, and Standards for IoT Applications

Universal Discovery of Connected Things *Riccardo Brama, Peter Waher*

Quality-aware Sensors Positioning in Smart Cities: Enhancing Coverage in IoT-driven Urban Scenarios *Gabriel S. Barreto, Thiago Jesus, Daniel G. Costa, João Catalão*

An Artificial Intelligence Tool for Generating IEEE 1451 Transducer Electronic Data Sheet *Reza Abrishambaf, Helbert da Rocha, Daniele Buonocore, Vincenzo Paciello, Antonio Espirito-Santo*

Harmonization Model & Implementation of Interactions among IoT Devices *Eugene Song, Peter Waher, Helbert da Rocha, Riccardo Brama, Hiroaki Nishi, Thomas Roth, Antonio Espirito-Santo*

IEEE 1451-based Digital Twin Framework for Real-Time Monitoring and Control of Smart Homes *Eugene Song, Shanaka Abeysiriwardhana, Hiroaki Nishi, Thomas Roth*

Embedded AI for Intelligent Wildfire Monitoring: A Multi-Sensor and Vision-Driven Approach *João Bittencourt, Thommas Kevin Sales Flores, Thiago C. Jesus, Daniel G. Costa, Ivanovitch Silva*

Dependability-Driven Planning of Wireless Sensor Networks for Smart Cities Using Machine Learning *Thiago Jesus, Thommas Kevin Sales Flores, João Bittencourt, Ivanovitch Silva, Daniel G. Costa, João Catalão*

Experimental test from an IoT sensor in a bidirectional wireless power transfer for electric vehicles *Francisco Javier de Larriva Serrano, Aurora Gil-de-Castro, Joaquin Garrido-Zafra, Antonio Moreno-Munoz, Javier Vázquez, Emilio José Molina-Martínez, Pedro Roncero-Sánchez*

Tapices

S65-I-SSGT-15 - Learning-Based Energy Management for Sustainable Energy Systems

A Collaborative Framework Based on MLLM for Generalization Photovoltaic Fault Diagnosis *mengqi han, Bo Yang, qi liu, Mingxuan Cai, Yuxiang Liu*

Digital simulation of lithium-ion batteries under Overcharging conditions *Joelton Deonei Gotz, José Rodolfo Galvão, Fernanda Cristina Corrêa, Milton Borsato, Alceu de Souza Brito Junior, Alceu André Badin*

Enhanced Sequence-to-Sequence NILM Learning using Convolution Variational Auto-Encoders *Yacine Belguermi, Gilles Hermann, Patrice Wira*

Estimating SOC for Second-life batteries using embedded neural network *Joelton Deonei Gotz, André Gustavo Hochuli, Alceu de Souza Brito Junior, Alceu André Badin*

Time-aware VAE offline reinforcement learning energy management for electric vehicles *Fei Li, Yu Jiang, Yongcai Ma, Yue Wu, Heng Li, Shilong Zhuo*

;Å WKVA Memory-Efficient Model for Time-Series Prediction of Greenhouse Temperature and Energy Loads *Masaki Sakayori, Hiroaki Nishi*

Coordinated Fourth-Order Multi-ESO Intelligent Control with Adaptive Virtual Impedance in Microgrids: Disturbance Recognition and Suppression *Jingyuan Lu, Abhisek Ukil, Akshya Swain*

Bio-inspired Hierarchical Equalization Strategy for Multi-microgrid Energy Storage Battery Packs *Qianhui Ma, Abhisek Ukil, Akshya Swain*

Adaptive Selective Harmonic Elimination Based on Neural Networks

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with Indirect Model-based Online Training *Cristóbal Cortés, Felix Rojas, Christoph Hackl, Javier Pereda Torres*

Galeria

S68-R-Jorn2 - Converter Systems, Stability, and Advanced Control

Generalized Envelope-Based Modeling of Single-Phase Grid-Connected Power Converters *Francisco Azcondo, Alberto Pigazo, Christian Brañas, Paula Lamo, F. Javier Díaz, Rosario Casanueva*

Delay-dependent Stability Evaluation for Temperature Control Load Participating in Load Frequency Control of Microgrid *Chenguang Wei, Xing-Chen Shangguan, Yong HE, Chuan-Ke Zhang, Da Xu*

Three-Phase Phase-Locked Loop Based on Terminal Sliding Mode for Grid-Connected Inverters *Pooyan Alinaghi Hosseinabadi, Hemanshu Pota, Saad Mekhilef, Georgios Konstantinou, Michael Negnevitsky, Sobhan Mohamadian*

Model-free Multi-phase AC Signals Downscaling Method Using Orthogonal Phase-lock Autoencoder and Circular Harmonic Decomposition *Xing Qi, Tingting Qiu, Lassi Aarniovuori, Qian Zhang, Jiazi Xu, Wenping Cao*

Adaptive Coordinated Control for Nonlinear PEM Fuel Cell Air Supply Systems *Nana Fan, Xiaoyu Guo, Chenliang Wang, Zhen Dong, Lu Liu, Jun Yang*

Online Robot Navigation Using Discrete Waypoints via Time-Varying Guidance Vector Fields *Longze Zhao, Jianan Wang, Fuxiang Liu, Kewei Xia, Qingbo Yu, Hongwei Guo*

Characteristic Identification of Flow Control Valves Based on Data-Model-Fusion in Actual Industrial Scenarios *Mingliang Cui, Xin Ma, Youqing Wang, Jianyong Tuo, Tongze Hou, Jingfeng Zhao*

Distributed Optimal Control Strategy for DC Microgrid with MPPT-Controlled Distributed Generations *Ziqing Xia, Mei Su, Zhangjie Liu, Yue Wu, Xiaochao Hou*

Comendador

S69-I-TT08-2 - AI and Signal & Image Processing Methodologies

KPU-Net: Kernal Point Unet for 3D LiDAR Ground Segmentation *Harindra Sandun Mavikumbure, Victor Cobilean, Swagat Das, Chathurika Wickramasinghe, David Barton, Lynn McDaniel, Devin Drake, Chuck Kirby, Milos Manic*

A Two-Stage Electrode Refinement Method with Denoising Diffusion for Automated Segmentation and Overhang Analysis on Battery X-ray Images *Shiyu Lu, Tianyu Wang, Chun Cao, Mian Li, Yunlong Huang, Songhua Zhang*

Instrumentation and Methods for the Computation of Borehole Trajectories and their Uncertainties *Dimitar Ninevski, Paul O'Leary, Anika Terbuch, Negin Khalili, Daniel Mevec, Robert Fruhmann, Michael Habacher*

A High-Performance FPGA Implementation of MI-BMINet *Daniel Enériz, Diego Antolín, Nicolás Medrano, Belén Calvo*

Optimization Method for Ultrasonic Shock Wave Signal Gain Based on Time - Reversal Mirror *Yupeng Liu, Jiahui Wen, dong xu, Marco Rivera, Patrick Wheeler*

Feature Adaptive Selection and Fusion Network for Small Object Detection in Traffic Perception *ABDULHAMID IBRAHIM, QIANCHENG ZHAO, Haoyuan Li, RUIYUN YU*

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A method for the grading and recognition of osteoarthritis X-ray images based on the MED-HED detection *Shengwu Yang, Zhilong Yu, Kai Huang, Jinbao He*

Evaluating Robustness of 3D Gaussian Splatting–Based 6D Camera Pose Refinement Under Degraded Conditions for Lightly Textured Industrial Synthetic Objects *Sunil Choudhary, Nicolas Ragot, Vincent Havard, Yohan DUPUIS*

Varying Roll Radius Measurements in a Web Processing Machine using Low-Cost Vision and Sub-Pixel Processing Techniques *Yentl Thielemans, Jeroen De Kooning, Guillaume Crevecoeur, Jos Bruggeman*

Scalable Unsupervised Segmentation via Random Fourier Feature-based Gaussian Process *Issei Saito, Masatoshi Nagano, Tomoaki Nakamura, Daichi Mochihashi, Koki Mimura*

Design and Training of a Sound Classification Model on a Resource-Constrained Edge Device for Fruit Theft Prevention *Haruki Endo, Hideaki Yajima, Leow Chee Siang, Tsutomu Tanzawa, Koji Makino, Kazuyoshi Ishida, Hiromitsu Nishizaki*

Castilla

S62-I-TT02-6 - Power Electronics and Energy Conversion

Semi-scalable Three-Phase Inverter Equipped with a Current Unfolding Topology Using a Discontinuous Conduction Mode *Tomoyuki MANNEN*

Variable Switching Frequency PWM for Hybrid 4-leg Three-level FC-NPC Inverter with Flying Capacitor Voltage Ripple *Chujun Li, Dong Jiang, Chengjun Li, Donghao Liu*

A Two-Sample-based Delayed Signal Cancellation Operator for Three-Phase Phase-Locked Loops *Alberto Pigazo, Paula Lamo, Francisco J. Azcondo, Christian Brañas, Rosario Casanueva, F. Javier Díaz*

Simultaneous Wireless Data and Power Transfer Testing onboard the Nanokhod Microrover Tether Mechanism for Lunar Surface Exploration *Robin Sauerzapf, Moritz Gewehr, Weizhou Ye, Andreas Schneider, Sabine Klinkner, Nejila Parspour*

DC Capacitor Sizing Methodology for Three- and Four-Wire Static VAR Generators *Josue Andino, Milan Prodanovic, Javier Roldan-Perez*

Design and Analysis of a Low-Inductance DC-Link Busbar for 3.3 /kV SiC MOSFETs Using Partial Inductance Method and 3D FEM Validation *Shahedul Alam Talukder, Ramkrishan Maheshwari, Thomas Ebel, Ruman Kalyan Mahapatra, Nicklas Christensen*

A Capacitor-coupled SEPIC and gVb based Successive Folding Inverter for PV Systems *Abhrodip Chaudhury, Anandarup Das*

Efficiency Improvement by Double-Sided Halbach Array Coils in Magnetic Resonant Coupling Wireless Power Transfer *Takayuki Oba, Ryo Haneda, Takahiro Nozaki*

Practical considerations for inductance measurement in high power three-phase inductors *Pablo Moreno-Torres Concha, Jaime Poblaciones, Ivan Ruiz, Antonio Lazaro*

Integral Control for Low-Power EV Wireless Charging: Modeling and Experimental Results *Fernando Quiroz-Vazquez, Víctor Cárdenas, Mario González, Gerardo Espinosa-Perez*

EMI prediction based on datasheet parameters for hard-switched Si, SiC, and GaN MOSFETs *Jon Aranguren, David Garrido Diez, Iosu Aizpurua, Iban Barrutia*

A Parameter Estimation Methodology for a Three-Winding High-

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Frequency Transformer *Ali Arshad, Giuseppe Bossi, Alfonso Damiano*
Model Predictive Control for PMSM Fed by Three-Phase Single-Stage Differential Boost Inverter *Yushan Liu, Xiangkai Feng, Yupeng Liu, Baoming Ge, Marco Rivera, Patrick Wheeler*

Doblon

S70-I-SS46 - Security Communication and Control of Distributed Networked Systems under Malicious Cyber-attacks

SHIELD: Security against Harmful Prompt Injection Evaluation and Language Detection Leveraging Ensemble Approach *Martin Esugo, Oluwatobi alao, Haitham Mahmoud*
Distributed Optimal Power Generation for an Open Price-based Energy Management System *Peize Du, Yuxuan Liu, Zhisheng Li, MAOJIAO YE, Lei Ding*
Privacy-Preserving Algorithm for Multi-Party Secure Localization Integrating CRT and Zero-Sum Noise *Sunkang Lin, Shengming Chang, Antong Wang*
An Image Encryption Algorithm Based on the Encoding of Four Symbols and Hexagram for Networked Visual Control Systems *Xia Li, Dajun Du, Yi Zhang, Yang Xiao, Minrui Fei*
Distributed Set-Membership Estimation for Networked Systems based on Topology Adaptation *Mingyang Luo, Yilian ZHANG, Xianwen Zhou, Dan Zhang*
P4-IDet: A Programmable Switch-Based Framework for Real-Time and High-Accuracy Traffic Anomaly Detection in ICPSs *Jiayu Luo, Zhengyan Zhou, Qiaoxiong Tang, Ruohan Chen, Xiang Chen, Di Wang, XUN ZHOU, Chao Pei, Yinan Zhang, Wenwen Zhang, Qiang Yang, Wenhai Wang, Haifeng Zhou*
Multi-Threshold False Data Injection Attack Detection Method based on Interval Estimation *Jieli CHEN, Yilian ZHANG, Xianwen Zhou, Qinqin FAN*
Fully Distributed Adaptive Dynamic Event-Triggered Estimators Incorporating Internal Variables in Multi-Agent Systems *Huimin Wei, CHEN PENG, Min Zhao*
A bidirectional trust management framework in fog computing based on improved subjective logic and probabilistic linguistic term set *yan wang, Zhigang Wang*

Segovia

S64-R-TT03-2 - Power Systems and Smart Grid

Review of Machine Learning for Power System Transient Stability: From Assessment to Constrained Optimal Power Flow *Tassneem Zamzam, Haitham Abu-Rub, Sertac Bayhan, Miroslav Begovic, Ali Ghrayeb*
Stability Region Assessment of Power Systems with Mixed IBRs and Generators via Energy Function *Xuheng Lin, Ziang Zhang*
Distributed Finite-Time Secondary Frequency control and active power sharing for Islanded AC microgrids with time delays *Ahmed Lotfy, yong chen, Chengwei Pan, Esam H.Abdelhameed*
A Bidirectional Power Router for Traceable Multi-energy Management *Shiu Mochiyama, Ryo Takahashi, Yoshihiko Susuki*
Extending the Generalized Bode Criterion to Black-Box Power Systems: A Practical Approach for Stability Evaluation *Asier Aristondo De Miguel, Salvador Ceballos, Alain Sanchez-Ruiz, Robert Grino*

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A Data Driven Inertia Estimation Method for Inverter Based Resources *Xue Hu, Qin Wang, Yan Tong, Yafeng Zhao*

Considering Resource Availability in Control of Dynamic Virtual Power Plant Used for Provision of Frequency Restoration Reserve *Marco Vinicio Avendaño Caiza, Juan Diego Ríos Peñaloza, Javier Roldan-Perez, José Luis Rodríguez Amenedo, Milan Prodanovic*

Escudo

S71-I-SSGT-21 - Advanced Power Converter Topologies and Control for Electrified Transportation and Grid Integration

Optimized Interleaved Synchronous Buck Converter Design for a Two-Stage 3.6 kW Auxiliary Power Module in Electric Vehicles *Kyle Kozielski, Sreejith Chakkalakkal, Kamal Vaghasiya, Wesam Taha, Alex Wang, Aniket Anand, Mehdi Narimani, Ali Emadi*

A Two-Stage Isolated DC-DC Architecture for EV Auxiliary Power Module *Pedro Lobler, Wellington Volz, Ademir Toebe, Cassiano Rech, Luciano Schuch*

Modular DC/DC Converters for Fuel Cell Multi-Stack Systems in Heavy-Duty Applications *Ines SIAD, Alexandre Battiston, Thomas LEROY, Serge PIERFEDERICI*

Wide Output Voltage Range Three-Phase Bidirectional Non-Isolated Hybrid AC/DC Converter *mengchen duan, Shuo Wang, Junjun Deng, changhong shao, David Dorrell*

Comparative Study of Buck Control Techniques for Current-Fed Series Resonant Converters in Wide Voltage Gain Range Applications *Salman Khan, Andrii Chub, Dmitri Vinnikov, Matthias Kasper, Gerald Deboy*

Design and Analysis of a Type-II Compensator Controlled Dual Active Bridge Converter for DC Fast Charging *V.S.R. Varaprasad Oruganti, Kushan Lulbadda, Ruvini De Seram, Tarlochan Sidhu, Sheldon Williamson*

Analytical Dual-Phase-Shift Optimization for Reactive Power Minimization in Dual Active Bridge Converters under Light-Load Conditions *Seyed Hamidreza Mousavi Tabar, Javad Ebrahimi, Alireza Bakhshai*

Consensus-Based SoC Balancing Strategy for Reconfigurable Lithium-Ion Battery Packs *Heng Li, Lina Yuan, Cui Li, Ziqi Zhang, Fu Jiang*

Physical-Layer Data Carrier Encrypted based Talkative Power Converters *Keming Liu, Guoao Li, Wanying Weng, Jiande Wu, Xiangning He*

Event-Triggered Distributed Secondary Control for VSG-Controlled Grid-forming Converters *Guangdi Li, Yaodong Zhang, Bowen Zhou, Zhaoxia Xiao, Jiande Wu, Rai M. Naidoo*

A Hybrid Feedforward Harmonic Mitigation Strategy for Inverters under Islanded Operation *Yao Li, Wenbo Zhu, Abhishek Kumar, R. C. Bansal, R. M. Naidoo, Yan Deng*

Pulse Train Control Strategy for Single-Phase Differential Boost Inverter Based on Discontinuous Modulation Strategy *Hao Qin, Wenbo Zhu, Yi Wang, Yan Deng, Abhishek Kumar, Ramesh Bansal*

A Modular Equalizer with AC-Coupled Series Connection for Distributed Cell-to-Cell Balancing *Guoao Li, Wanying Weng, Keming Liu, Zhecheng Zhang, Jiande Wu, Xiangning He*

Analytical Voltage Optimization Method for DC Railway Networks with Wayside Energy Storage System *Julian Rojas, Pavol Bauer, Sebastian Rivera*

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Onboard Energy Storage Systems for Resilient Operations During Electrified Railway Power Supply Failures *James Scott, David Fletcher, Dan Gladwin*

Discrete-Time Control Design of a Battery Charger for Electric Vehicle Applications *El Nouha Mammeri, Oswaldo López-Santos, Abdelali El Aroudi, Luis Martinez-Salamero*

14:10-16:10

Escorial

S77-I-TT15 - Instrumentation, Sensors, Actuators and Micro-Nano Technology

A Bipolar Current Excited 3-Wire Measurement System For Remote Resistive Sensors *Mohamad Idris Wani, Meraj Ahmad, Tarikul Islam, Shahid Malik*

Vehicle Sensor Configuration Optimization for Tire Force Estimation based on Min-Max SDP *Xu Ge, Mingming Zhang, Zhou Jianhua, Weilun Chen, Xin Li, Mian Li*

Optimization of Stage Surface Roughness for Residual Water Drainage and Machine Vision-Based Crack Detection Without Deep Learning *KyungHoon Kim*

Optimized Design of High Uniform Bi-Planar Coil for Miniaturized NMRG Sensor *Jinguo Mu, Zihao Lyu, Bowen Liu, Weiqian Wang, Xiaoxuan Xie, Xiangyang ZHOU*

Double Helix-Based Actuator for 2-Degree-of-Freedom Motion *Sigrid Aadnesgaard, Sampath Jayalath*

Workspace-Independent Chatter Stability in Clip-Type Hybrid Milling Machines: Experimental and Theoretical Insights for High-Speed Applications *Jinming Qi, dan Zhao, xia Li, Yuhang Yang, ping Gong*

Representation of Jacobian Matrix Using Computational Graphs And Its Applications *Hironori Gunji, Takashi Kusaka, Takayuki Tanaka*

Spectral Characterization of Nonlinear Load Torque Effects in Linear Tooth Belt-Driven Systems *Kwinten Mortier, Jeroen De Kooning, Niko Nevaranta, Tuomo Lindh, Kurt Stockman*

Nonlinear Model for Torque Estimation Based on Frequency Characteristics of Geared Actuator *Kazuto Wakatsuki, Kenta Nagano, Masayoshi Wada*

Low-frequency Vibration Shaker with High Output Force Based on Giant Magnetostrictive Actuator *Yikun Yang, Dongjian Xie, Yue Feng, Tian Xia, bintang Yang, Haomin Wu*

Hidalgo

S73-I-SSGT-3 - Advanced Energy Management and Stability Control for Electrified Transportation and Microgrids

Predictive energy management for fuel cell trucks with an adaptive frequency-decoupling solver *sha sun, Fan Yang, BO CHEN, YanSiQi GUO, Jiacheng Zheng, Yang Zhou*

A Bi-Level Energy Management Strategy for Multi-Stack Fuel Cell Systems in Hybrid Electric Vehicles *YanSiQi GUO, Ruiqing Ma, Yang Zhou*

A virtual DC machine control strategy for enhancing the stability of four-switch Buck-Boost converters under constant power loads *Xuehao Liu, Wentao Jiang, Rui Ma, Hao Bai, Yang Zhou, Jiawei Chen, Ruoxuan Quan, Peiyao Xiong*

Optimal Sizing Algorithm of Multi Source Hybrid Power System for

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Unmanned Aerial Vehicle *Fei Cao, Wentao Jiang, Rui Ma, Yang Zhou, Hao Bai, Jiawei Chen*

A Novel Adaptive Distributed Coordination Control Strategy with Virtual Inertia Enhancement for Hybrid AC/DC Power Systems of MEA *Xiangke Li, Jinxu Yang, Zhang Hang, Wentao Jiang, Xin Zhao, Xiaohua Wu*

Fast Electrochemical Impedance Spectroscopy Detection and Fault Diagnosis of PEMFC Based on Discrete Interval Binary Sequences *Yuxuan Lin, Haoran Ma, Zhirui Guo, Yang Zhou, Hao Bai, Rui Ma*

Physics-Informed Neural Network Based Large-Signal Stabilization Control Algorithm for a DC-DC Converter *Shengzhao Pang, Heng Liu, Siyu Zhao, Haoyu Wang, Yingxue Chen, Bo Cheng*

An Advanced Voltage Control Strategy for Three-Phase Rectifier with Unbalanced AC Voltages in More Electric Aircraft Power System *Qingxuan Zhang, Peiyao Xiong, Jiaxin Bai, Ruoxuan Quan, Xuehao Liu, Fei Cao, Wentao Jiang*

Large-Signal Stability Analysis of Hybrid Energy Storage System Based on Estimation of Domain of Attraction *Jiaxin Bai, Peiyao Xiong, Xuehao Liu, Wenjie Ao, Jiawei Chen, Wentao Jiang*

Mass-based voltage optimization method for MV distribution networks in electric propulsion aircraft *Zhihao Min, Jose Matas, chen liu, Tao Lei, Weilin Li, Josep Guerrero*

Thermo-Electrical Digital Twin-Assisted Aging Assessment of SiC Mosfet in Switching-Cell-Array Power Converters *chen liu, Alber Filba-Martinez, Jana Soler-Lazaro, Sergio Busquets-Monge, DAVIDE BARATER*

Consensus Algorithm Based Control Strategy for Stable Operation of Multi-microgrid System with Battery Equalization *Qianhui Ma, Abhisek Ukil, Akshya Swain*

Zero Harmonic Distortion Technology for Next-Generation Lite MVDC Distribution Systems *Dener Brandao, Arthur Fialho, Gabriel Ramos, Thiago Parreiras, Igor Amariz Pires, Braz Cardoso Filho*

Optimal Pulse Pattern with Reduced DC Current Ripple for Modular Multilevel Converter *diego verdugo naranjo, Felix Rojas, José Ignacio Gajardo*

Dual-Adaptive Control Strategy for Grid-Connected Inverters Under Wide Range Grid Impedance Variations *Jingyuan Lu, Abhisek Ukil, Akshya Swain*

Toledo

S75-R-TT02-6 - Power Electronics and Energy Conversion

A Novel Single-Phase Interleaved-Based Three-Level PFC Rectifier *Vitor Monteiro, Frede Blaabjerg, Joao Afonso*

Impact of Digital PWM Carrier-Related Baseband Distortion on Parallel Converters *Sibulele Mtakati, João de Oliveira, Elisabetta Tedeschi*

Component Parameter Estimation of Interleaved Boost Converter with Linear Approximation Model *Hidenori Maruta, Shota Watanabe, Hiroyuki Yoshino*

A interleaved Buck Boost converter for the battery energy managment in marine vehicle *Guillaume Pellecuer, Thierry Martiré, Loïc Daridon*

Sensorless Feedforward Current Sharing Control for Interleaved Totem-Pole PFC Converter *LiPan He, ZheYuan Li, Han Wei, Hao Ma*

Modeling and Control Strategies of Interleaved Converters with Coupled Inductors Based on Pseudo-decoupling Method *Wei Li,*

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Zhouzhen Hu, Ruikun Yang, Jose I. Leon, Abraham M. Alcaide, Xiaojun Shen

Enhanced Dynamic Response of DC-AC Converters in Shipboard Microgrids Using Non-linear PI Controller *Reza Naghash, Mustafa Alrayah Hassan, Kimmo Kauhaniemi, Hannu Laaksonen*

High-Efficient Switched-Capacitor Step-Up DC–DC Converter with Partial Power Processing *Ademir Toebe, Pedro Lobler, Niwton Gabriel Feliciani dos Santos, Rafael Beltrame, Luciano Schuch, Cassiano Rech*

Tapices

S76-I-SS03 - Advanced control and image processing technology for robots

Time-series Compensation based ADRC for Water Surface Attitude Control of Hybrid Aquatic-Aerial Robot *Hui Peng, Yiming Lin, Yue Cao, Xinting Yang, Peng Yang, Heng Li*

QCell-HM: Quantum Cellular Neural Network with Henon Map for Secure Robotic Image Encryption Processing *Wenxuan Wang, Jiaming Shi, Peng Du, Jinjing Shi*

Vehicle Following control using Transformer-based Soft Actor-Critic with Behavior Cloning *Weirong Liu, Yutao Chen, Guoyu Gu, Heng Li, Zhaoyang Li, He Yicong*

Hydrofoil Design and Control of a Hybrid Aquatic-Aerial Robot Based on CFD Techniques *Hui Peng, Peng Yang, Yiming Lin, Haoyu Li, Junhao Xiao*

Two-Stage Temporal ConvTransformer for Continuous Sign Language Recognition *Xiaoyong Zhang, yingze yang, Zhaoyang Li, Yongcai Ma, Weirong Liu, Heng Li*

RangeBlock: A multi-head attention Network for --Semantic Segmentation in Urban scenes *[illegible]uan He*

Hierarchical Cross-Attention Mechanism for Multi-Agent Trajectory Prediction *Weirong Liu, Yingqi Wang, Hongjiang He, Zhuozhuo Zhang, Qing Xiao, Fu Jiang*

Auxiliary Loss Reweighting for Image Inpainting *Wenli Huang, Siqi Hui, Ye Deng, Xiaomeng Xin, Yang Wu, Jinjun Wang*

FUSE74 : Unified Fault Code of Heterogeneous Equipment for LLM-Based Health Management *[illegible]u*

Synthetic Data-Driven Augmentation for Precise 6-DoF Pose Estimation of Building Components in Automated Facility Inspections *Aristide Laignel, Nicolas Ragot, Fabrice Duval*

Improving Accuracy of Camera-based Distance Measurement by Active Movements of An Omnidirectional Mobile Robot *Yuto Kato, Masayoshi Wada*

Galeria

S79-R-TT14-3 - Control Systems and Applications

Event-based H_{∞} Control for Nonlinear Hybrid Stochastic Delayed Systems Subject to Aperiodic DoS Attack *Fengqiu Liu, Mingxin Kang, Hongxu Zhang*

Frequency-adaptive pole placement for parallelized proportional, integral and resonant control systems *Christoph Göttsberger, Christoph Hackl*

Control Barrier Function Construction for Systems with High Relative Degree via Level Surface Design *Takuma Harada, Yuh Yamashita, Koichi Kobayashi*

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Correcting for Coupling Delays in Real-Time Co-Simulation using Iterative Learning Control *Laurane Thielemans, Jan Swevers, Roland Pastorino*

Enhanced Active Magnetic Shielding Based on High-order Extended State Observer *Shi Ziyang, Shiqiang Zheng, Haifeng Zhang, Yuxuan Li, Yunyang Lian, Zheng Tang*

Robust Finite-time Gain Convergence for Formation Maintenance under a Generalized Consensus Law *Jerome Moses Monsingh, Kiran Kumari*

Reinforcement Learning Based Adaptive LADRC for Active Magnetic Field Compensation in Magnetocardiography Systems *Zhongxiang Jing, Haifeng Zhang, Fengwen Zhao*

Auditorio

Industry Forum 3

Comendador

S80-I-TT08-3 - AI and Signal & Image Processing Methodologies

IC-GP-HSMM: Unsupervised Segmentation of Behaviors with Individual Differences *Toshiyuki Hatta, Issei Saito, Masatoshi Nagano, Tomoaki Nakamura*

A Novel Decision-Level Knowledge-Data Fusion Method for Rock Mass Integrity Prediction *Wu Lian, Weihua Cao, Chao Gan, Yan Yuan*

Geometric Interpretation of Savitzky-Golay Filter for Defect Detection *Mario Roos Hoefgeest Toribio, Sara Roos Hoefgeest Toribio, Ignacio Álvarez García*

Contrastive Learning-Based Standard-Free Calibration Transfer for Near-Infrared Spectroscopy *Chaoting Li, DI WANG, Zheng Chaoqun, Xinyao Lu, Guohao Zong, Rui Wang, Weihua Feng, Sanying Feng*

Improving Image-Based Tool Detection in Industrial Workstations using Data Augmentation *Sarah Ouarab, David Garcia, Nicolas Ragot, Yohan DUPUIS*

Enhanced Drift-Aware Computer Vision Architecture for Autonomous Driving *Abu Ahammed, Md Shahi Amran Hossain, Sayeri Mukherjee, Roman Obermaisser*

Robustifying 3D Perception via Least-Squares Graphs for Multi-Agent Object *MARIA DAMANAKI, Ioulia Kapsali, NIKOS PIPERIGKOS, Alexandros Gkillas, Aris Lalos*

Crop Detection and Tracking Oriented for Embedded Weeding Based on YOLO-DeepSORT *Yushuo Hu, Qiang Wang, Zhanqiang Xing*

Fine-Grained Region Perception Network for Few-Shot Defect Classification of IC Package Substrates: Benchmark Methodology and Dataset *Haoyuan Li, Ruiyun Yu, Bingyang Guo*

Powerful Goodness of Fit Test for Spectrum Sensing under Noise Uncertainty *DJAMAL TEGUIG, younes bouzegag*

Castilla

S72-I-TT02-7 - Power Electronics and Energy Conversion

Power Optimization Allocation Control for Hybrid DC/DC Converters *Chenjie Fan, Kangan Wang, Keke Yang, Lixun Zhu, Zhilei Yao, Weimin Wu*

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Photovoltaic power interval prediction method based on spatio-temporal fusion diffusion model *Yishi Chen, Jinxiang Liu, Jingxin He, Qinghua Liu, Taozhan Zhang, Senlin Zhang*

Medium Frequency Transformer Optimization and Insulation Testing for Solid State Transformer Applications *Leonardo Bolzonella, Reza Mirzadarani, Mohamad Ghaffarian Niasar*

Performance Evaluation of Overvoltage Protection Devices for Cryogenic Solid-State Circuit Breaker in AEA Applications *Reza Khoshniat, Nick Wright, Peter Malkin, Mohammed Elgendy, Mark Husband, Daniel Malkin*

Physics-based Modeling of Degradation in Alkaline Water Electrolysis Cells due to Reverse Currents *Vicente Olguín Godoy, Pooya Davari, Henrik Frandsen, Frede Blaabjerg*

Adaptive Neural Network-Based PI (ANN-PI) Control for DC Microgrids in Renewable Hydrogen Production Systems *shadi khodakaramzadeh, Pavol Bauer, Hani Vahedi*

Enhanced Energy Utilization in Wind-to-Hydrogen Plant using Power Balancing Network *Aritra Basu, Liangcai Shu, Dongsheng Yang, Songda Wang, Yin Sun*

MPC and SVM Design for NPC Rectifier in Hydrogen Production Application *Tayebeh Faghihisenejani, Pavol Bauer, Hani Vahedi*

A Data-Driven Simulation-Based Case Study of The Green Village's Hybrid Energy Hub *Daan Schat, Azadeh Kermansaravi, Lidewij van Trigt, Arnoud van der Zee, Shamsodin Taheri, Hani Vahedi*

A New Common Ground Multilevel Boost Inverter for Power Quality Improvement *MOHAMMAD ZAID, ATIF IQBAL, Mohammad Tayyab, Adil Sarwar*

Model Predictive Control for EMS Integrating EV and Shared Storage Based on Simultaneous Optimization of EV Transport, Charging/ Discharging and Trading Price *Yuito Ohno, Shinkichi Inagaki, Tatsuya Suzuki*

Reactive Power Control in Low-Voltage Grids by Unidirectional EV Chargers: A Multifunctional Vienna Rectifier Case *Augusto Matheus dos Santos Alonso, Bruno Paiva Sant'Anna, Bruno Fernandes de Oliveira*

A Three Level Interleaved DC-DC Converter for EV Battery Charging from a Residential PV System *shangkun li, Perdana Putera, Christian Klumpner, Mark Sumner, Mohamed Hajj*

A Harmonic Rotation Transformation for Three-Phase Three-Wire Applications *Daniel Memije Garduño, Jaime José Rodriguez Rivas, Oscar Carranza Castillo, Luis Avila Reyes*

Assessment of PWM Techniques for Two-Level Inverters Analyzing their Influence on DC-Link Capacitor Remaining Useful Life *Eduardo Bascur, Abraham Alcaide, Jose I. Leon, Juan Fredesvindo Ramos Delgado, Alfonso Manchado, Ramon Portillo, Leopoldo Franquelo*

Doblon

S81-I-SS50 - Theory and Technologies on Human Factors in Advanced Human-System Environment

Features Based Dynamic Time Warping of Multidimensional Series for Aligning Sensor Data *Jiang Li, Juan Zhao, Feng Wang, Seiichi Kawata, Daisuke Chugo, Jinhua She*

Data-Driven Koopman-MPC for Single-Joint Flexible Manipulators: Modeling and Trajectory Tracking *Zihao Ning, Jinhua She, Seiichi Kawata*

Development of Occluded Area Visualization System for Pedestrian Avoidance Using XR *Tomohiro Matsuhara, satoshi muramatsu, Katsuhiko*

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Inagaki

Fingertip Position Control Using Finger Kinematics by Functional Electrical Stimulation *Miharu Watanabe, Seiichiro Katsura*

A Proposal for Skin Impedance Measurement considering Electrode Force Variations in Acupoint Localization *Yuito Oodaira, Sho Yokota, Akihiro Matsumoto*

A Basic Study and Impression Evaluation on Nodding Motion Parameters of Avatar Robot *Misa Suzuki, Sho Yokota*

A Study on a Navigation Method Based on Linguistic Information for Service Robots *Shunsuke Sasaki, satoshi muramatsu, Katsuhiko Inagaki*

LSTM-Based Motion Estimation for Highly Back-drivable High Torque Exoskeleton *Kengo Shimizu, Yasutaka Fujimoto*

Stable Haptic Shared Autonomy for Wall Landing of Two-Wheeled Drones via Control Barrier Functions *Seri Tanaka, Satoshi Nakano, Gennaro Notomista, Manabu Yamada*

Standing assistance robot based on the spatial distribution of standing motion patterns achievable by the remaining muscle strength of individual elderly persons *asai haruki, Daisuke Chugo, Misaki Kanno, satoshi muramatsu, Ken-ichi Tabei, Jinhua She, Hiroshi Hashimoto*

Segovia

S74-R-TT04-1 - Renewable Energy and Energy Storage Systems

Lifecycle Co-Optimization of Microgrid Sizing and Operation Considering Battery Degradation and Flexible Supplementation *Qi Chen, Yingying Cheng, Fan Zhang, Jiyuan Zhang, Miao Jiang, Yanbai Shen*

Module-Level Electrochemical Impedance Spectroscopy analysis for SOH monitoring of Lithium-ion Batteries *Nováková Kate —æÂberto Berrueta, Václav Knap, Alfredo Ursúa*

Physics-Informed Neural Networks for Real-Vehicle Li-ion Battery SOH Estimation *yingze yang, Yifei Sun, Xiaoyang Chen, Shilong Zhuo, Shunli Wang, Fu Jiang*

The impact of constant current-pulse strategy on fast charging of lithium-ion batteries *Wenhao Huang, Furong Liu, Wenxuan Yin, Xiang Cheng, Changjun Xie*

Hybrid Energy Storage Power Allocation Strategy Based on Improved Kalman Filtering and Variational Mode Decomposition *Jichen Gu, Wei Zhang, Binyang Lv, Liyuan Wang*

Collaborative Bidding Strategy for Wind and Storage Power Plants in Dual Markets Based on Electricity Price Forecasting and Dynamic Risk Management *Yuzhen Wang, Aotian Ding, Shuxin Zhang, Liyuan Wang, Hongpeng Liu*

Optimal Scheduling of Hybrid Energy Storage for Smoothing Wind Power Fluctuations Based on Frequency Decomposition *Bingnan Wang, Mingyang Cai, Zian Zhao, Shuxin Zhang, Hongpeng Liu*

Comprehensive Capital Cost Model for Flywheel Energy Storage Systems *Christopher Bocker, Robin Weiß, Susanne Gnilke, Steffen Bernet*

Escudo

S82-I-SSGT-22 - Electric Machines and Industrial Drives

Performance comparison of rotor position estimation based on HF voltage injection for IPMSM with increased signal frequencies *Qian Li, Günter Schröder*

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Nonlinear current control with optimal reference voltage saturation for electrically excited synchronous machines *Niklas Monzen, Pascal Seitter, Christoph Hackl*

Armature Reaction Compensation Method for Embedded Magnetic Encoder in Permanent Magnet Synchronous Motors *Chao Zhang, Wei Hua, Yuchen Wang*

Multi-Objective Design and Optimization of a Hybrid-Dual Rotor PMSM Using Magnetic Circuit Decoupling and WTSM Strategy *Farnam Farshbafroomi, Aran Shoaei, Qingsong Wang, Kamal Al-Haddad*

Model Predictive Control with Optimized Duty Cycle Error for Dual Three-Phase Synchronous Motors *Qianwen Duan, Jiuqiang Deng, Yao Mao, Qiliang Bao*

Free-wheeling offline and online identification of machine back-EMF harmonics by analytically integrated angle-dependent permanent magnet flux linkage prototype functions *Bernd Pfeifer, Christoph Hackl*

Efficient Nonlinear Torque-Slip Curve Calculation in Arbitrary (d,q)-Reference Frames based on Dense Apparent Inductance Matrices *Johannes Roßmann, Christoph Hackl*

Experimental Evaluation of Active LC Filter Resonance Mitigation for Inverter-Fed Drive Systems *Emelie Berglund, Johan Borg, Jonny Johansson*

Multi-Physics Neural Network Based Design Optimization of a Rotary Transformer for EESM Applications *Farshid Mahmouditabar, Volker Pickert, Guilherme Fernandes, Saleh Ali*

A Differential Geometry-Based Sensorless MTPA Scheme for Solar-Fed Water Pumps *Abirami Kalathy, Arpan Laha, Praveen Jain, Majid Pahlevani*

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Escorial

S87-I-SS08 - Advanced Motor Drive and Control for High-Performance Robotic Joints

Impact of PM Bar Position and Dimension on the Electromagnetic Characteristics of Enhanced Stator PM Hybrid Stepping Motor *Xiaobao Chai, Jinglin Liu, Shang maixia, Jingyuan Wang, Feiyang Liu, Zehua Yang*

Multi-Scale Residual Attention GAN Method for IGBT Switching Transient Data Compression and Reconstruction *Xiaotian Zhang, Weiye Wang, Zechao Liu, SHENG WU, Chao Gong, Jose Rodriguez*

Noise-Free Sensorless Control of Robotic PMSMs Based on Variable Structure Speed Observer with Embedded Single-Waveform Injection Over Full-Speed Range *Xinran Shi, Chao Gong, Hao Chen, Xing Zhao, Cheng Xue, Yihua Hu*

A Complex-Vector Resolver-to-Digital Conversion System with Prestage Systematic Error Mitigation *Wenyuan Mi, Shaochong Xiao, Jincheng Yu, Hojoon Lee, Yong Chen, Hang ZHAO*

Strategy for Parameter Tuning of PI Controller for PMSMs Based on Improved Particle Algorithm *Jingyuan Wang, Jinglin Liu, Yulin Yang, Xinran Shi, Shang maixia, Xiaobao Chai*

Parameter Identification Based on Deep Deterministic Policy Gradient for PMSM *Zehua Yang, Jinglin Liu, Feiyang Liu*

Low-Chattering Sliding Mode Observers Based on Sinusoidal Saturation Function and Dynamic Gain Co-optimization for Sensorless Control of Robotic PMSMs *Hao Chen, Zeyuan Gao, Linlong Peng, Xing Zhao, Saibo Wang, Yihua Hu*

Continuous Position Calculation Technique Based on the average velocity method for Vector-Control-based BLDCMs Used in Robotic

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Joints *Chenguang Gong, Huan Di, Siyu Wang, Saibo Wang, Jingfeng Wang, Xing Zhao*

Efficiency Analysis and Optimization of Axial Flux Permanent Magnet Motor Based on Intelligent Response Surface Method for Robots *Zeyuan Gao, Chao Gong, Jiadong Lu, Jingfeng Wang, Siyu Wang, Saibo Wang*

A control strategy for the synchronous lifting of uneven objects by joint motors of double mechanical arms based on SMESO *Cheng Wang, Jinglin Liu, Ruizhi Guan, Xiaotao Li, Yiren Chen, Zhenqi Bai*

PMSM Rotor Position Estimation via Hall Vector Filtering Phase-Locked Method *YUE LI, Ruiqing Ma, Xiong Wang, JingZhi Liang, TianTian He*

Novel FCS-MPTC Based on Priority-Ranking Technique Without Using Weighting Factors for PMSMs *Jinqiu Gao, Rongxin Wei, Saibo Wang, Siyu Wang, Jinxiao Wang*

Design and Comparison of Modular Phase-Unit Yokeless and Segmented Armature Machines *Zhijun Ou, Wenyuan Mi, Yuanfeng Qu, Xueyan Wang, Liyang Liu, Hang ZHAO*

Hidalgo

S12-I-SSGT-6 - Advanced Technologies for Battery Management Systems and Distributed Generation

Response Analysis of DC-Link Virtual Synchronized Control for Solar Grid Forming Converters *Ahmed Elsanabary, Mohamed Abido*

An Active Power Filter with Selective Harmonic Compensation and Reduced Switching Losses *Marian Liberos, Raúl González-Medina, Ivan Patrao, Enric Torán, Gabriel Garcerá, Emilio Figueres*

A Level-Based Hybrid DE-NM Strategy for Rapid Generation of SHC-PWM Solutions for Active Power Filters *Igor Araus Wastavino, Felix Rojas, Jonathan Lillo, Javier Pereda Torres, Christoph Hackl*

Residual-Enhanced Proximal Policy Optimization for Optimal Energy Management in Hybrid Energy Storage Systems *Bin Chen, Haoyang Yan, Rui Zhang, Miaobeng Wang, Wei Liu, Yucheng Zhang, Longyun Zhu, Kai Gao*

Advances in Pre-trained Large Models for Battery Management Systems in Electric Vehicles *Muaaz Bin Kaleem, Heng Li, Chenyuan Liu, Yue Wu*

Physics-informed SOH estimation of lithium-ion battery with spatio-temporal attention *Jun Peng, Tanghui Duan, Lisen Yan, Heng Li, yingze yang, Zhijun Liu*

Empirical Analysis of Energy Drift in Battery Energy Storage Systems on Supporting Grid Frequency Stability *SHENGYU TAO, Yezhen Wang, Zepeng Li, Hanyang Lin, Scott Moura, Hongbin Sun, Qiuwei Wu, Xuan Zhang*

Sodium-Ion Batteries for Energy Storage Systems: Verification of Properties and Construction of a Small-Scale Battery Storage Unit *Miroslav Tyrpekl, Martin Zavrel, Bedrich Bednar, Zdenek Frank, Vladimir Kindl*

Modeling and Control of Second-Life Batteries for Fast Charging Stations *Qian Xun, Yueyan Zhang, li wang*

Charge and Health State Estimation of Lithium-Ion Battery in More Electric Aircraft Considering Electro-Thermal-Coupled Factors *Songyan Liu, Weilin Li, Da Li*

Equalization Optimization Strategy and Simulation Verification for Reconfigurable Battery Module *Huiying Ling, Ruoyu Wang, Xuliang*

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Zhang, Yuhao Wu, Shuhang Wang, Yang Zhou, Xiangrui Meng, Jinlei Sun

Thick electrode battery modeling automated system for cardiac pacemaker applications *Victor Hueros, Cristina Fernandez, Belen Levenveld, Alejandro Varez, ANDRES BARRADO*

Castilla

S04-I-SSGT-5 - Advanced Multilevel Converters for Green Energy Integration: Topology, Modulation, Control Strategies, and Applications

Robust controller comparison for grid forming wind turbines *Gala Navarro-Martínez, Jaime Martínez-Turégano, Antonio Sala, Ramon Blasco-Gimenez*

Analysis of Power Oscillation Sharing in Grid-Connected Converters under Unbalanced Grids *Alexander Gomez-Raya, Alain Sanchez-Ruiz, Amaia Lopez-de-Heredia, IRMA VILLAR, Endika Bilbao*

Topology and Control of a Single-arm Multiplexing Multilevel Converter with Wide Operation Range *zimeng su, Yi Wang, YuHua Gao, w r, Yu yixuan, xiaoyin wu*

Cascaded H-Bridge Based on Interleaved Full-Bridge Submodules *Lara Bruno, Riccardo Mandrioli, Mattia Ricco, Vito Giuseppe Monopoli*

Circulating Current Suppression in MMC Using Submodule Capacitor Voltage Ripples *Vivek P V, Anshuman Shukla*

Robust Hybrid Modulation Strategy Incorporating Unipolar Phase-Shifted Control for Multi-Cell Asymmetric Cascaded H-Bridge Converters *Zhixiong Liu, Wanlin Guan, Baoni Sun, Ziheng Ma, Haoyu Li*

Common Mode Voltage Effects and Bearing Current Mitigation in Three-Level NPC Inverter-Driven PMSMs for Electric Vehicles *DAVIDE BARATER, Fabio Bernardi, Germán Fañanás-Puigjaner, Sergio Busquets*

An Effective dq-based Control Technique for a Grid-Connected Single-Phase PUC5 Inverter *Mustafa Alhariri, Mohamed Trabelsi, Hani Vahedi*

A Novel Hybrid Battery Based on a Bidirectional Four-Level Neutral-Point-Clamped DC-DC Power Converter Interfacing *Gabriel Garcia-Rojas, Sergio Busquets-Monge, Alber Filba-Martinez, DAVIDE BARATER*

A Model-Free Multi-Objective Deep Reinforcement Learning based Controller for Modular Multilevel Converters *AbdulRahman Serhan, Alamera Nouran Alquennah, Mohamed Trabelsi, Ali Ghrayeb, Mohamed Zribi*

Lightweight Machine Learning-based Auto-Tuning of FCS-MPC for CSC Multilevel Inverters *Sara Hamed, Alamera Nouran Alquennah, Mohamed Trabelsi, Sertac Bayhan, Haitham Abu-Rub, Ali Ghrayeb*

A Virtual Space Vector Modulation Scheme for a Reduced-Component Four-Level Flying Capacitor Converter *Javad Ebrahimi, Shadi Zargari, Suzan Eren*

Model Predictive Control of a Three-Phase Seven-Level Nested Switched-Capacitor Converter with Flying Capacitor Voltage Balancing *MATIN KESHAVARZI, Javad Ebrahimi, Alireza Bakhshai*

Escudo

S21-I-SSGT-9 - Innovations in Power Conversion and Energy Management for Electrification and Renewables Integration

Suppressing Output Voltage Fluctuations in Dynamic EV Wireless Charging via PI-Controlled Boost Converter *Hassan Khalid, Saad Mekhilef, Marizan Mubin, Mehdi Seyedmahmoudian, Alex Stojcevski, Hussain Bassi, Ahmed Alghamdi, Amr Mohamed Mahmoud, Hajer*

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	Albutuwaybh **A novel approach for flexibility market management using coordination of electric vehicles and battery systems** *Mohammad Hassan Nikkhah, Mousa Alizadeh, Ali MORADIAMANI, Mahdi Jalili, Xinghuo Yu* **KUformer: KAN-UKF-Based Transformer for Battery SoH Prediction** *Jinhao Zhang, Xilin Dai, Ruidi Zhou, Weifeng Zhang, Hao Ma* **Sensitivity-Based V2G Deployment Strategies for Voltage Support in Distribution Networks** *Xusheng Wang, Dongze Li, Abhisek Ukil, Akshya Swain* **Stackelberg Game-Based Dynamic Pricing and Optimization for Electric Vehicles and Photovoltaic-Energy Storage-Charging Station** *Yiwen Lu, Hongpeng Liu, Shengzhuo Hu, Fanli Meng* **Analysis of a real-time co-simulation framework for smart and secure EV charging infrastructures** *Erika De Bardi, giambattista gruosso* **Comparison of Low-Frequency Transformer-Based and Solid-State Transformer-Based Systems for High-Power Electrolyzer Power Supply** *Samuel Queiroz, Levy Costa, João Victor Guimarães França* **An LLC Resonant Converter With Reconfigurable Secondary-Bridge With Wide Output Voltage Range** *Samuel Queiroz, Levy Costa, Linxi Li* **A Reconfigurable LLC Resonant Converter Based on an Adjustable Turns Ratio Transformer** *Samuel Queiroz, Levy Costa, Linxi Li* **Reconfigurable Rectifier-Based Resonant Converter for Wide Output Voltage Applications** *Milan van de Zanden, Levy Costa, João Victor Guimarães França* **Modular Multi-Output Electric Vehicle Charger with Ripple-Free Wide Output Voltage Range and No Carrier Synchronization** *Diego Anchieri, Vitor Monteiro, Mattia Ricco, Riccardo Mandrioli* **Optimized Design and Experimental Validation of a 4.1 MVA/1 kHz Medium-Frequency Transformer for High-Power DC Transformers** *Jialiang Hu, Weihong Yang, Yiqing Ma, Bin Cui, Zhe Yang, Xin Jin, Xueteng Tang, Mingli Fu, Biao Zhao* **Advancing Discontinuous-Model Predictive Control for High Performance Inverters via Optimized Zero-Voltage State Selection based on Offset Voltage** *chan roh, Hyeongyo Chae* **Reactive Power Compensation Model in A Three-Level NPC Topology Using Sequential Predictive Current Control with Space Vector Pulse Width Modulation** *Juan Arnaldo Insfran Ferreira, Matias Abel Aguilar Chaves, Alfredo Renault, Leonardo Comparatore, Julio Pacher, Osvaldo Gonzalez, Marco Rivera, Patrick Wheeler* **LQR-Based Current Controller for Three-Phase Inverters with Asymmetric Loads** *Alberto Leamus, Javier Uceda, Airán Frances, Dionisio Ramírez*