

47th Annual Conference of the IEEE Industrial Electronics Society

Wednesday, 13 October 2021

07:00-08:20

Room P**S481 - SS Modeling, Control, and design of Hybrid Offgrid systems**

Chairs: Ambrish Chandra, Miloud Rezkallah

Resilient Synchronization Control of Distributed Generation Based Reconfigurable Microgrid *Farheen Chishti, Bhim Singh, Ambrish Chandra, Kamal Al-Haddad***Power Quality Improvement in a PV Based EV Charging Station Interfaced with Three Phase Grid** *Bhim Singh, Vandana Jain, Seema Kewat, Ambrish Chandra, Kamal Al-Haddad***Islanded mode microgrid using Stirling based biogas generator and solar PV systems** *Pratik Kalkal, A.V. Ravi Teja***Bumpless Transfer Control for A Class of Hybrid Stochastic Systems and Application to Electromagnetic Oscillation Circuit** *Sun Yichong, Cai Bo, Lu Shuai, Weng Rui, Li Min, Tan Tianyu***Global Maximum Power Point Tracking Strategy based on BFO Method for Standalone PV System Under Partial Shading Conditions** *Félix Dubuisson, Ambrish Chandra, Miloud Rezkallah, Hussein Ibrahim***Performance Study of a Decentralized Control Strategy for Hybrid Standalone Power Generation System** *Mouloud Belaid, Miloud Rezkallah, Ambrish Chandra, Hussein Ibrahim***Room O****S131 - SS Advances in HumanMechatronic Systems**

Chairs: Sho Yokota, Daisuke Chugo

Simultaneous robust optimization of tuned mass damper and control system of active mass damper *Kou Miyamoto, Sstoshi Nakano, Jinhua She, Daiki Sato, Yinli Chen***Detection of Glass Surface Using Reflection Characteristic** *Hiroki Sudo, Satoshi Muramatsu, Katsuhiko Inagaki, Daisuke Chugo, Hiroshi Hashimoto***An Innovative Whisker Tactile Sensor for Intelligent Robotic****Grasping** *Sachith Dewthilina Liyanage, Abdul Md Mazid, Pavel Dzitac***Object Tracking Algorithm with Two-way Parallel Fully-convolutional****Siamese Networks** *Hongyu Lu, Xiaodong Ren, Min Tong***A Control Model for Following Target Inclination Angle in Lateral****Direction for Omni-Directional Low-Floor Mobility** *Mitsuhiro Suzuki, Sho Yokota, Akihiro Matsumoto, Daisuke Chugo, Hiroshi Hashimoto***Development of a Walking Promotion Device using Arm Swing****Induced by Parametric Excitation Third report: Evaluation on experimental results in actual walking** *Kazuki Yamada, Sho Yokota, Akihiro Matsumoto, Daisuke Chugo, Hiroshi Hashimoto***Room L****S241 - SS DCDC Converters Circuits, Modeling, Control and Applications**

Chairs: Mahajan Sagar Bhaskar, Frede Blaabjerg

A High Step-Up Nonisolated DC-DC Converter With Reduced Voltage Stress and Ripple-free Input Current *Zhishuang Wang, Ping Wang, Wentao Jiang, Bo Li, Yuhui Zhao***Switch Open and Short Circuit Fault diagnosis and Fault Tolerant****Operation for Push-Pull Converter** *Jinxin Liu, Xiaobing Zhang, Yingnan Ren, Guozhao Liu, Zhiyuan Guo***Unity Power Factor Control using Interleaved Boost Converter for**

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Induction Motor Drive *Gauravkumar Prajapati, Archana Thosar, Arbind Kumar*
Series Resonant Converter with Embedded Filters for DCX of Solid-State Transformer *Shota Okutani, Pin-Yu Huang, Ryo Nishiyama, Yuichi Kado*
Comparative Analysis of Quadratic Buck-Boost Converters: Topology, Electric Stress, Reliability *Svk Naresh, Sankar Peddapati*
Fast Transient Modulation of a Dual-Bridge Series Resonant Converter *Hui Xu, Sheng-zhi Zhou, Xiaodong Li, Hao Chen, Song Hu*

Room I

T091 - TT Power Electronics & Energy Conversion

Chairs: Huihui Pan, Zhitao Liu

Feedback Linearization Control for the Receiving-Side Buck Converter of Dynamic Wireless Charging System of Electric Vehicles *Ze Zhou, Zhitao Liu, Hongye Su, Liyan Zhang*
An Online Noninvasive Estimation Method of Electrolytic Capacitor for Boost Converters *ChuanFeng Li, Yang Yu, Qingxin Liu, Xiyuan Peng*
Improved I-V Tracer for Detecting and Analyzing Photovoltaic Power Generators *Yechen Zhu, Weidong Xiao*
A Novel High-Frequency Isolated Single-Phase Full-Bridge Buck-Boost inverter *Usman Ali Khan, Ashraf Ali Khan, Fazal Akbar, Jung-Wook Park*
Stability Oriented Design Considerations in the Control of Cascaded Converters through their Impedance Models *Goutam Ghosh, Soumitro Vyapari, Viju Nair*
Operation Control Strategy of Multi-Energy DC Micro-Grid Considering Complementary Inertia of Gas and Battery *Xin Wang, Chunming Tu, Wanli Yang, Qi Guo, Yuchao Hou, Fan Xiao*

Room H

T121 - TT Signal and Image Processing and Computational Intelligence

Chairs: Xianwei Li, Tetsuyasu Yamada

Automatic Generation of Work Support Behavior with Smart Glasses based on the Deep Neural Network Corresponding to Encrypted Training Data *Kohjiro Hashimoto, Tadashi Miyosawa, Tetsuyasu Yamada*
Real-time personnel counting of indoor area division based on improved YOLOV4-Tiny *Wei Wen, Fei Xia, Lin Xia*
Biometric Information Acquisition System Using VMD in Wi-Fi Channel Status Information *Kazuya Tsubota, Yuki Nagatsu, Hideki Hashimoto*
Online Knowledge Distillation Based On Multi-Stage Multi-Generative Adversarial Network *Yi min Zhou, Zhonghao Huang, Xing yao Yang*

Room F

T071 - TT Motion Control and Mechatronics

Chairs: Liang Hu, Sehoon Oh

Design of Disturbance Suppression Control for Shaking-Table by Data-driven Control *Shinji Ishihara, Koichi Tahara, Koji Hironaka*
Equivalent Disturbance Compensator and Friction Compensation for Back-Forward Drivability Improvement *Yusuke Kawai, Juan Padron, Yuki Yokokura, Kiyoshi Ohishi, Toshimasa Miyazaki*
Design and Analysis of a Magnetic Levitation Tension Testing

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Device Mengyi Ren, Koichi Oka

An Adaptive Approach Based on Neural Network and Phase-Locked Loop for Correcting Quadrature Sinusoidal Signals of Magnetic Encoders

Siyi Yu, Weike Liu, Xiaofeng Yang, Feng Shu

Design of ABC algorithm-based Unknown-Input Estimator considering stability of initial colony

Shun Nishizawa, Toshiyuki Satoh, Naoki Saito, Jun-ya Nagase, Norihiko Saga

FDOB-Based Robust Impedance Control of Force Sensor Implemented Force Servo System

Kangwagye Samuel, Sehoon Oh

Room E

T021 - TT Control System, Robotics and Automation

Chairs: Lin Zhao, Wangli He

Event-Triggered Bipartite Consensus of Linear Leader-Following Multi-Agent Systems With Quantized Information

Qiang Wang, Wangli He, Dayu Tan, Weimin Zhong

Precise Localization for Cooperative Transportation Robot System Using External Depth Camera

Shinya Yasuda, Taichi Kumagai, Hiroshi Yoshida

Tracking and Catching of an In-Flight Ring using a High-Speed Vision System and a Robot Arm

Xiao Liang, Hairui Zhu, Yanlong Chen, Yuji Yamakawa

Secure Consensus Control of Two-timescale Networks Subject to Sequential Scaling Attacks

Kun Liang, Wangli He

Robust control of weight on bit in unified experimental system combining process model and laboratory drilling rig

Sike Ma, Min Wu, Luefeng Chen, Chengda Lu

Continuous Curvature Turns Based Method for Least Maximum Curvature Path Generation of Autonomous Vehicle

Yu Tian, Zhang Chen, Chuanyi Xue, Yiyong Sun, Bin Liang

Room R

S711 - SS Smart Sensors Actuators and IEEE 1451 Standards for SGIoTIIoTCPS

Chairs: Kang Lee, Eugene Song

Security for IEEE P1451.0-Based IoT Sensor Networks

Ke Zhou, Jun Wu, Kang B. Lee, Eugene Song

Time Synchronization of IEEE P1451.0 and P1451.1.6 Standard-based Sensor Networks

Hiroaki Nishi, Eugene Y. Song, Yuichi Nakamura, Kang B. Lee, Yucheng Liu, Kim Fung Tsang

Development of IoT-based System for Enhancing Traditional Electrical Compliance Testers in Testing Laboratories

Chi Chung Lee, Tsz Him Kong, Hong Yuen Chui, Yuk Wa Cheung, Lam Sing

Wall Shear Stress-Based Accuracy Verification of Convective Heat Transfer Coefficient Using Velocity Scale

Tatsuhiko Yamamoto, Akihito Ozaki

An Overview of Standards in Modern Human Factors

Allen C. Chen, Sho Yokota, Victor Huang, Jinhua She

Communication-Resilient Microgrid Distributed Frequency Control with an Event-Triggered Mechanism

Sicheng Deng, Tianwen Zheng, Xiaonan Lu, Lajun Chen, Shengwei Mei

Room M

S431 - SS IoT Automation Technologies, Tools and

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Applications

Chairs: Pal Varga, Federico Montori

- Accelerating task completion in IIoT based smart factory through optimal restart** *Qiushi Wang, Abhishek Gupta, Hian Leng Chan*
- Faster Deployment for Indoor Visible Light Positioning Using Xgboost Algorithms in Industrial Internet-of-Things** *Pengfei Du, Sheng Zhang, Arokiaswami Alphones, Chen Chen*
- Stein Variational Recommendation System with Knowledge Embedding Enabling the IoT Services** *Jia Liu, Yuanfang Chen, Sardar M.N. Islam, Pierluigi Siano*
- A Contemporary Approach Towards Curbing Cell Phone Use Related Road Mishaps** *Abid Siddique, Mohammed Gousuddin, Rehna V. J.*
- Secure Communication Between Information Technology and Operational Technology** *Mahyar Azarmipour, Ramy Hana, Zeeshan Ansar, Tobias Kleinert*
- Architecture pattern for automatic integration of IO-Link sensors into a System of Systems** *Paul Patolla, Dirk Reichelt, Dirk Mothes, Germar Schneider*

Room N

S151 - SS Advances in Renewable Energy Systems Condition Monitoring and Prognosis using Machine Learning

Chairs: Mohamed Benbouzid, Xiandong Ma

- Collaboratively Diagnosing IGBT Open-circuit Faults in Photovoltaic Inverters: A Decentralized Federated Learning-based Method** *Xinyi Wang, Bo Yang, Qi Liu, Tiankai Jin, Cailian Chen*
- A Hybrid Fault-Tolerant Control Strategy for Three-phase Cascaded Multilevel Inverters Based on Half-bridge Recombination Method** *Huiwen Yang, Tianzhen Wang, Yunjie Tang*
- A Hierarchical Intelligent Fault Detection and Location Scheme for DC Ring Bus Microgrid** *Xinlong Zheng, Hua Han, Manling Shi, Yao Sun, Mei Su, Hongfei Wang*
- Classification of Voltage Sag Causes based on Instantaneous Symmetrical Components using 1NN and Dynamic Time Warping** *Maria Veizaga, Sophie Bercu, Claude Delpha, Demba Diallo, Ludovic Bertin*
- Effective Implementation of Convolutional Long Short-Term Memory (ConvLSTM) Network in Forecasting Solar Irradiance** *Chibuzor Obiora, Ahmed Ali*
- A Hybrid Model of Modified Robust Linear Regression Optimized by Ant Colony Optimization for Photovoltaic System Efficiency Improvement Under Sudden Change of Environmental Conditions** *Ahmed Ali, Mpho Nkambule*

Room J

T101 - TT Power Systems and the Smart Grid

Chairs: Yong Chen, Ning Gao

- Intelligent Controller for Thermal Comfort Management in Buildings** *Mubashir Wani, Akshya Swain, Abhisek Ukil*
- Energy Management of multi-microgrids considering impacts of plug-in hybrid vehicles uncertainties and demand response** *Juhi Datta, Debapriya Das*
- Opting DC-voltage Droop Control for WF-VSCs in AC-MTDC grids for Effective Frequency and DC-voltage Support** *Satish Kumar Ancha,*

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Bibhu Prasad Padhy

Transactive Control of Industrial Pumps with Associated Storage for Demand Response Market Participation in Singapore *Rohit Chandra, Krishnanand Kaippilly Radhakrishnan, Sanjib Kumar Panda*

Fault Diagnosis and Reconfiguration for H6 Grid Tied Inverter Using Kalman Filter *Chengqi Xiao, Weimin Wu, Ning Gao, Eftichios Koutroulis, Henry Shu-Hung Chung, Frede Blaabjerg*

Parameter Estimation for Underground Cable Fault Using Stochastic Optimization *Sanhita Mishra, Soumyadeep Patra, Sarat Chandra Swain, Aurobinda Routray*

Room D

T081 - TT New Technologies for Electric Transportation

Chairs: Qingrui Zhang, Federico Faruffini

Retrofitting of Conventional Two-wheelers to Electric Two-wheelers *Nirmal A Kumar, Navaneeth M, Allan Sabu Joseph*

A Detailed Loss Model of Current-Fed Half-Bridge AC-DC Converter Considering Swinging Boost Inductor *Manish Kumar, Sumit Pramanick, B K Panigrahi*

Driving Range Extension of Electric City Buses using Opportunity Wireless Charging *Harish Karneddi, Deepak Ronanki*

Vertical control of a self-stabilizing monorail vehicle *Martin Griese, Fabian Kottmeier, Thomas Schulte*

Context Modelling applied to the Intelligent Vehicle Navigation *Federico Faruffini, Hugo Pousseur, Alessandro Correa-Victorino, Marie-Hélène Abel*

Procedure for Avoiding and Reducing Peak Loads at Large-scale Consumers via Bidirectional Charging of Electric Vehicles to Save Electricity Costs *Philipp Spichartz, Tobias Brüning, Constantinos Sourkounis*

Room B

T045 - TT Electrical Machines and Drives

Chairs: Feng Qian, Weiguo Liu

Neural Network Model-based Direct Torque and Flux Predictor for Induction Motor Drive *Kanungo Barada Mohanty, Abhimanyu Sahu, Rabi Narayan Mishra*

Origami Inspired Laser Scanner Design *Shen-Yun Chu, Shao-Kang Hung*

Second-Order Complex-Coefficient Filter PLL for Model-based Sensorless IPMSM Drives with Operation-Frequency-Adaptive Character *Bo Wang, Anqi Ge, Yong Yu, Dianguo Xu*

Novel Exciter Controller and Its Application in Rotor Position Estimation for Aircraft Three-Stage Wound Rotor Synchronous Starter-Generator *Ningfei Jiao, Xiaoke Zhang, Xu Han, Zijie Li, Peixin Liang, Weiguo Liu*

Four quadrant operation of SRM drive based on Modulated Torque Sharing Function *Ashwani Kumar Rana, Samant Singh, A V Ravi Teja*

Analysis of the effects of Considering Dynamic Cross Saturation in Mathematical Model of a Six-Phase Self-Excited Generator for Renewable Energy Applications *Mohd Rizwan Khan, Mohd Faisal Khan, Mohd Sartaj*

Room C

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T011 - TT Cloud Computing, Big Data and Software Engineering

Chairs: Yan Peng, Lei Peng

Pseudocode to Source code conversion using Sequence-to-Sequence Learning *Minhazul Arefin, Mohammed Nasir Uddin*

Integrated Prediction of Regional Traffic Situation Based on Multi-Task Spatial-Temporal Network *Jiaao Yu, Kangshuai Zhang, Lei Peng*

Knowledge driven rapid development of white box digital twins for industrial plant systems *Amar Banerjee, Subhrojyoti Roy Chaudhuri, Barnali Basak, Renganathan Dhakshinamoorthy, Seenivasan Annadurai, Naveenkumar Subramani*

Fuzzy Unsupervised Approaches to Analyze Covid-19 Spread for School Reopening Decision Making *Feby Artwodini Muqtadiroh, Diana Purwitasari, Eko Mulyanto Yuniarno, Supeno Mardi Susiki Nugroho, Apol Pribadi Subriadi, Riris Diana Rachmayanti, Mauridhi Hery Purnomo*

Automatic Classification of Lithofacies with Highly Imbalanced Dataset Using Multistage SVM Classifier *Deepan Datta, Gagandeep Singh, Aurobinda Routray, William K. Mohanty, Rahul Mahadik*

Autonomous Temporal Time Zone Management *Michal Kvet*

Room Q

S321 - SS Energy Harvesting Technologies for Industrial Applications

Chairs: Yunjia Li, Kai Tao

Mathematical Modelling and Equivalent Circuit Representation of Bladeless Wind Turbines *Vaibhav Bhardwaj, A.V. Ravi Teja*

Torsional Electromagnetic Vibrational Energy Harvester Based on Stacked Flexible Coils *Xinyi Wang, Jiaxing Li, Chenyuan Zhou, Kai Tao, Dayong Qiao, Yunjia Li*

Torsional Electromagnetic Vibrational Energy Harvester Based on Stacked Flexible Coils *Xinyi Wang, Jiaxing Li, Chenyuan Zhou, Kai Tao, Dayong Qiao, Yunjia Li*

A Novel Diagnosis Method of Proton Exchange Membrane Fuel Cells Based on Multi-Grained Cascade Forest and Principal Component

Analysis *Rui Ma, Yuqi Zhang, Hanbin Dang, Zhe Huo, Dongdong Zhao*

Stability Analysis of Fuel Cell/Battery On-Board DC Microgrid Based on Mixed Potential Theory *Yigeng Huangfu, Aiben Wang, Cong Yuan*

Comparison of different multi-winding transformer models in multi-port AC-coupled converter application *Haojun Qin, Huan Zhang, Ming Liu, Chengbin Ma*

Room A

T041 - TT Electrical Machines and Drives

Chairs: Changxing Ding, Qinghua Dong

State of Health Estimation of Battery Charging System and BLDC Motor Drive deployed in Electric Vehicle Applications *Adil Usman, Bharat Singh Rajpurohit*

Voltage Dip Analysis on Doubly Fed Induction Generator During Grid Faults in Wind Energy Conversion System *Milkias Berhanu Tuka*

Sensorless and On-line Parameter Estimation with Model Predictive Control of IPMSMs *Minh Xuan Bui, Dan Xiao, Faz Rahman, Khac Thuy Le*

Detection of Inter-turn Short Circuit Faults in Permanent Magnet Synchronous Motors with Multistrands Windings *Seongyun Kim,*

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	<p><i>Hyeyun Jeong, Hojin Lee, Sang Woo Kim</i> Operation-Area-Selected Overmodulation Strategy for Flux-Weakening Control of Surface-Mounted Permanent Magnet Synchronous Motor <i>Yong Yu, Linzhi Wang, Bo Wang, Qinghua Dong, Dianguo Xu</i> Sensor-less Back-drive Control of Direct-drivable RotLin Linear Series Elastic Actuator <i>Lang Bu, Yasutaka Fujimoto</i></p>
	<p>Room G</p> <p>T061 - TT Industrial Automation, Communication, Networking and Informatics Chairs: Yan Zhao, Wenbin Dai</p> <p>Cross-Disciplinary View of Industrial Electronics: Change, Chance, and Challenge <i>Jinhua She, Hipolito Guzman-Miranda, Victor Huang, Allen C. Chen, Stamatis Karnouskos, Larisa Dunai, Alin Tisan, Sho Yokota</i> Robust Classification with Noisy Labels for Manufacturing Applications: A Hybrid Approach Based on Active Learning and Data Cleaning <i>Shuo Zhao, Xin Li, Ying-Chi Chen</i> Process Monitoring based on Probabilistic Principal Component Analysis for Drilling Process <i>Haipeng Fan, Min Wu, Xuzhi Lai, Sheng Du, Chengda Lu, Luefeng Chen</i> Dataflow Management Platform for Smart Communities using an Edge Computing Environment <i>Shogo Shimahara, Hiroaki Nishi</i> Non-Functional Requirements Elicitation Based on Domain Knowledge Graph for Automatic Code Generation of Industrial Cyber-Physical Systems <i>Yingyue Zhang, Jiale Kang, Wenbin Dai</i> Integrated Asset Management Model based on IEC 61499 and Administration Shell <i>Bingshuo Lv, Yunpeng Zhang, Wenbin Dai</i></p>
	<p>Room K</p> <p>S581 - SS Power Electronics Converters for Green Energy Supplies Topology, Modeling, Control, and Stability Analysis Chairs: Nitin Gupta, Man Mohan Garg</p> <p>A Fuzzy Logic based Adaptive Source Current THD Controller for Thyristor-Controlled LC-Coupling Hybrid Active Power Filter <i>Wai-Kit Sou, Pak-Ian Chan, Cheng Gong, Chi-Seng Lam</i> Extended Kalman Filter Based EV Charging Station with PV, Wind, Battery and UC Integration <i>Bhargavi K. M., Bansilal Bairwa, Santhoshkumar Hampanavar, Sahithi S</i> Modeling and Analysis of Modified Ultra-Lift Luo Converter Equipped with Voltage Multiplier Cell <i>Akash Kumar Sahoo, Nirav Patel, Nitin Gupta, Prashant Jamwal</i> Reduced Order Modeling of DFIG based on Singular Perturbation Theory <i>Qunying Liu, Yijia Heng, Runsheng Zheng, Shuheng Chen</i> An Impedance Model of a VSC-HVDC System Considering DC-side Dynamics for AC grid Stability Analysis <i>Ni Liu, Hong Wang, Xiaoyong Zheng, Zhe Chen</i> On the Stability of a Minimum-Loss Controlled Dual-VSI DFIG-DC System <i>Gil Marques, Matteo Iacchetti, Sérgio Cruz</i></p>
08:30-08:40	<p>Plenary & Keynote</p> <p>IECON2021 Opening Session</p>
08:40-09:10	

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	<p>Plenary & Keynote</p> <p>IECON2021 Keynote 1: Uday Deshpande Electrification: Trends across Industries, Implications to Engineers and Engineering Dr. Uday Deshpande, CTO, D&V Electronics, USA Chairs: Sheldon Williamson</p>
09:10-09:40	<p>Plenary & Keynote</p> <p>IECON2021 Keynote 2: Lorenzo Rossi Net Zero, pros and cons. Lorenzo Rossi Director of Workspport Ltd. & CEO of TerraVis Energy Chairs: Sheldon Williamson</p>
10:00-11:20	<p>Room L</p> <p>S381 - SS Hybrid Control Techniques and Topologies for Multilevel Power Converters Chairs: Mohammad SHARIFZADEH, Hadi Y. KANAAN</p> <p>Digitization Effect in Implementation of Hybrid Modulation Technique in CHBMLI <i>Vishal Jain, Rajesh Gupta</i></p> <p>A nine-level PEC based Active Power Filter With Double-Frequency Oscillation Cancellation (DFOC) Ability In Reference Current Detection <i>Ali Zafari</i></p> <p>An Adaptive Fuzzy Passivity-based Control Strategy for Grid-Tied Packed E-Cell Converter <i>Majid Mehrasa, Mohammad Babaie, Mohammad Sharifzadeh, Seddik Bacha, Kamal Al-Haddad</i></p> <p>Circuit Reconfiguration of Packed E-Cell Multilevel Inverter for Renewable Energy Applications <i>Erfan Azimi, Mohammad Sharifzadeh, Majid Mehrasa, Kamal Al-Haddad</i></p> <p>Optimal Switching Sequence MPC for Hybrid Flying Capacitor Inverter <i>Margarita Norambuena, Guillermo Huerta, Pablo Lezana, Andres Mora</i></p> <p>Magnetic Shielding as Core material in Planar Inductors <i>Alex Fihl Hedegaard Nielsen, Anders Juhl Jørgensen, Ziwei Ouyang</i></p> <hr/> <p>Room I</p> <p>T095 - TT Power Electronics & Energy Conversion Chairs: Hasan KOMURCUGIL, Jacek Rabkowski</p> <p>Disturbance Observer-Based Feedback Linearization Control for Stand-Alone Inverters <i>Samantha Stephen, Hussain Shareef, Rachid Errouissi, Amulya Viswambharan</i></p> <p>A Robust Dynamic Compensator with Anti-windup Scheme for Grid-Interlinked Photovoltaic Inverter under Unbalanced Grid Voltages <i>Amulya Viswambharan, Rachid Errouissi, Hussain Shareef, Samantha Stephen</i></p> <p>Understanding the Kelvin pin mitigation of the MOSFET turn-on losses by fast-switching and neutralization of the clamp diode <i>Francesco Giorgio, Santi Agatino Rizzo, Nunzio Salerno, Giuseppe Scarcella, Alfio Scuto, Giuseppe Sorrentino</i></p> <p>Experimental characterization of materials with controlled Curie temperature for domestic induction heating applications <i>Alberto Pascual, Jesus Acero, Claudio Carretero, Sergio Llorente</i></p> <p>Design of control strategy for active filter with 5-level CHB topology in</p>

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delta connection *Zdenek Kehl, Tomas Glasberger, Zdenek Peroutka*
A Comparative Study of Two Control Strategies for DC-DC Boost Converter Used in DC Microgrids *Qihao Guo, Imen Bahri, Demba Diallo*

Room H

T124 - TT Signal and Image Processing and Computational Intelligence

Chairs: Jose A Antonino-Daviu, Hubert Razik

FF-GAT: Feature Fusion Using Graph Attention Networks *Ahmed N. Ahmed, Ali Anwar, Siegfried Mercelis, Steven Latré, Peter Hellinckx*

Insight into Frequency-Domain Extrapolations of Least-Squares-Based Curve Fitting Algorithms *Weihua Zhou, Jef Beerten*

Investigations on Numerical Techniques for Detecting Variations in Acoustic Emissions *Selvine George Mathias, Mathew John Mancha, Daniel Grossmann, Bernd Kujat, Kay Schiebold*

Block Matching Mosaicing for Surface Inspection Using an Autonomous Mobile Robot *Sara Roos-Hoefgeest Toribio, Ignacio Alvarez Garcia, Rafael Corsino Gonzalez de los Reyes*

Deep Learning for Postharvest Decay Prediction in Apples *Nikita Stasenko, Maxim Savinov, Valeriy Burlutskiy, Maria Pukalchik, Andrey Somov*

Enhanced Seismic Deconvolution by Side Lobe Suppression *Ali Al-Shaikhi, Bo Liu, Mohamed Mohandes, Huijian Li, Xu Liu, Ling Zhao*

Room F

T051 - TT Electronic System on Chip and Embedded Control

Chairs: Timo Hämäläinen, Wolfgang Kastner

Is Arduino a suitable platform for sensor nodes? *Dominik Widhalm, Karl M. Goeschka, Wolfgang Kastner*

Robust embedded MPC with reduced-precision arithmetic for cost-optimized implementations *Aitor del Rio Ruiz, Koldo Basterretxea*

Opportunities For A Hardware-Based OPC UA Server Implementation In Industry 4.0 *Zohra Charania, Chris Paul Iatrou, Valentin Khaydarov, Robert Wittig, Heiner Bauer, René Bachmann, Philipp Bauer, Christian Mayr, Gerhard Fettweis, Leon Urbas*

Fault-Tolerant Routing in Networks-on-Chip Using Self-Organizing Routing Algorithms *Aleksandr Romanov, Nikolay Myachin, Andrei Sukhov*

A Modern Approach to Application Specific Processors for Improving the Security of Embedded Devices *Dominik Meyer, Jan Haase, Marcel Eckert, Bernd Klauer*

A Survey on System-on-a-Chip Design Using Chisel HW Construction Language *Matti Käyrä, Timo Hämäläinen*

Room E

T026 - TT Control System, Robotics and Automation

Chairs: Gabor Sziebig, Csaba Budai

Formation Control of Multi-Robot System with Collision and Obstacle Avoidance by Novel APF *Nabarun Sarkar, Alok Kanti Deb*

Yaw Channel Tracking Control of an AUV with Delayed Output *Ravishankar Desai, Narayan Manjarekar*

Multi-Class Sensor Fault Isolation for Vehicle Dynamics with Decision Trees *Max P. May, Oliver Sawodny*

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Nonlinear Flatness-Based Observer for Vehicle Dynamics Control *Simon Göltz, Daniel L. Ossig, Weixin Fu, Oliver Sawodny*
Dynamic Obstacles Avoidance Using Nonlinear Model Predictive Control *Mukhtar Sani, Bogdan Robu, Ahmad Hably*

Room M

S432 - SS IoT Automation Technologies, Tools and Applications

Chairs: Pal Varga, Federico Montori

An AAS Modeling Tool for Capability-Based Engineering of Flexible Production Lines *Yining Huang, Saadia Dhouib, Jacques Malenfant*
Two-way Integration of Service-Oriented Systems-of-Systems with the Web of Things *Ivan Zyrianoff, Lorenzo Gigli, Federico Montori, Carlos Kamienski, Marco Di Felice*

Interoperability for Industrial Internet of Things Based on Service-oriented Architecture *An Ngoc Lam, ØYstein Haugen, Jerker Delsing*
Web of Things Interoperability for the Arrowhead Framework *Junior Dongo, Michele Albano, Arne Skou, Brian Nielsen*

A Toolchain Architecture for Condition Monitoring Using the Eclipse Arrowhead Framework *Federico Montori, Zyrianoff Ivan, Gigli Lorenzo, Riccardo Venanzi, Simone Sindaco, Federica Zonzini, Nicola Testoni, Marco Di Felice, Luca De Marchi, Tullio Salmon Cinotti*

Enabling Industrial Motion Control through IIoT Multi-Agent Communication *Razvan Luchian, Sabin Rosioru, Iulia Stamatescu, Ioana Fagarasan, Grigore Stamatescu*

Room N

S152 - SS Advances in Renewable Energy Systems Condition Monitoring and Prognosis using Machine Learning

Chairs: Mohamed Benbouzid, Sinisa Durovic

Renewable Energy Systems Prognostics and Health Management: A Review of Recent Advances *Loffi Saidi, Mohamed Benbouzid*

Sequence-To-Sequence Health Index Estimation of Rolling Bearings with Long-Short Term Memory and Transfer Learning *Tarek Berghout, Mohamed Benbouzid, Leïla-Hayet Mouss*

Fault Detection in Soft-started Induction Motors using Convolutional Neural Network Enhanced by Data Augmentation Techniques *Dario Pasqualotto, Angela Navarro, Vicente Biot-Monterde, Mauro Zigliotto, Jose Antonino-Daviu*

Machine Learning for Photovoltaic Systems Condition Monitoring: A Review *Tarek Berghout, Mohamed Benbouzid, Xiandong Ma, Sinisa Durovic, Leïla-Hayet Mouss*

Machine Learning Experiments for a Real-Time Energy Management in a Microgrid Cluster *David Rosero-Bernal, Enrique A. Sanabria-Torres, Fabio Andrade-Rengifo, Nelson L. Diaz, Cesar L. Trujillo*

Extended Speed Range Control for a Current Source Inverter Variable Speed Drive *Giovanni Migliazza, Emilio Carfagna, Giampaolo Buticchi, Fabio Immovilli, Emilio Lorenzani*

Room J

T103 - TT Power Systems and the Smart Grid

Chairs: Mo-Yuen Chow, Narayana Prasad Padhy

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Parameter Extraction of Power Entry Filters Using Probabilistic Approach *Duc-Thanh Do, Holger Hirsch*
Emulation of Complex Grid Scenarios by using Power Hardware In the Loop (PHIL) Techniques *Javier Roldan-Perez, Diana Moran-Rio, Dionysios Moutevelis, Pablo Rodriguez-Ortega, Njegos Jankovic, Mohammad Ebrahim Zarei, Milan Prodanovic*
A Neural Network Approach for Efficient Finite Control Set MPC of Cascaded H-Bridge STATCOM *Francesco Simonetti, Giovanni Domenico Di Girolamo, Alessandro D'Innocenzo, Carlo Cecati*
Robust SoC Balancing Method for Distributed Storage based Islanded Microgrids *Sidlawendé Ouoba, Azeddine Houari, Mohamed Machmoum*
Hardware In The Loop Simulation of the Smart Grid with the inclusion of IEC61850 Communication Protocol *Harshavardhan Palahalli, Marziyeh Hemmati, Enrico Ragaini, Giambattista Grusso*
Home EMS controlled by Neural Networks *Pedro Pereira, João Freire*

Room D

INTEROP1 - Automation

Smart Battery Gauge, Mo-Yuen Chow
 P2805, William Dai
 P2023, Lee Stogner
 P2668, Kim Fung Tsang
 OPEN DISCUSSIONS
 Chairs: Dietmar Bruckner

Room B

T0410 - TT Electrical Machines and Drives

Chairs: Antonino Oscar Di Tommaso, Alessandro Serpi
Physical Model of Permanent Magnet Synchronous Machine with Multilayer Winding *Jan Laksar, Lukas Veg*
Dynamic On-State Resistance Characterization of GaN FET under Hard-Switching Conditions *Shima Khoshzaman, Yikai Tang, Ingo Hahn*
Observer based Sensorless Stator Temperature Estimation of an automotive 48V IPMSM *Christoph Cheshire, Tobias Roeser, Felix Gliese, Achim Vedde, Ulrich Ammann*
Synchronous Reluctance Motor with fluid shaped barriers: preliminary and optimized design procedures *Andrea Credo, Giuseppe Fabri, Lino Di Leonardo, Marco Villani*
Design and Analysis of a Double Coaxial Magnetic Coupling to Improve Torque Density *Yusuf Akcay, Oliver Tweedy, Paolo Giangrande, Michael Galea*
Impact of Number of Nodes Used in 3D LPTN on the Results and Computational Time of the PMSM Validated by FEA and Measurement *Martin Skalicky, Roman Pechanek, Lukas Sobotka, Lukas Veg*

Room C

IF1 - Industrial Internet

Talk 1: Time Sensitive Networking: Where the Cloud meets Reality (10:00 – 10:25 am)
 Mr. Norman Finn, Network Standards Consultant (Huawei, USA)
 Talk 2: Smart Distributed Control Energy Systems (10:25– 10:50 am)
 Mr. Yongbin Sun, Vice President (China Techenergy Co. Ltd., China)

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Talk 3: Universal Automation: the Missing Link for Industry 4.0 (10:50 – 11:15 am)

Mr. John Conway, Vice President (Schneider Electric Industries, SAS, France)

Chairs: Dr. Michael Condry

Room A

T046 - TT Electrical Machines and Drives

Chairs: Giampaolo Buticchi, Giovanni Migliazza

Overview on the electromagnetic compatibility of a shielded room in the presence of wall sockets *Petrache Vicentiu, Petrache Ana Lavinia*

Impact of Bearing Faults on Vibration Level of BLDC Motor *Karolina Kudelina, Toomas Vaimann, Anton Rassõlkin, Ants Kallaste*

On-line loss and global efficiency simulation tool for electric vehicles applications *Charbel Zaghrini, Gabriel Houry, Maurice Fadel, Ragi Ghosh, Flavia Khatounian*

Braking Induction Motors Using Soft Starter Torque and Flux Control

Algorithm *Hauke Nannen, Heiko Zatocil, Gerd Griepentrog*

Exciter Remanence Effect Mitigation in a Brushless Synchronous Generator for Test-field Applications *Antti Wredfors, Juhamatti Korhonen, Juha Pyrhönen, Markku Niemelä, Pertti Silventoinen*

Online Estimation and Compensation of Back-Electromotive Forces for Synchronous Reluctance Machine *Laurent Schuller, Romain Delpoux, Jean-Yves Gauthier, Xavier Brun*

Room G

T063 - TT Industrial Automation, Communication, Networking and Informatics

Chairs: Jan Haase, Alexander Fay

Exact analysis for basic multi-rate cyclic executives *Reinder J. Brill*

Ontology-based approach for analyzing nuclear overall I&C architectures *Antti Pakonen, Teemu Mätäsniemi*

Optimized Propagation Delay Compensation for an Improved 5G RAN

Synchronization *Maximilian Schüngel, Steven Dietrich, David Ginthör, Shun-Ping Chen, Michael Kuhn*

RAP: A Ricardian Auctioning Protocol for Demand-Supply Matching using Open Bids *Eric Chiquito, Ulf Bodin, Kåre Synnes*

AQUAMesh: A Low-Power Wide-Area Mesh Network protocol for Remote Monitoring Applications in Water Environments *José Cecílio*

Evolutionary Algorithm for Incremental Scheduling in Systems of Systems with Real-Time Requirements *Setareh Majidi, Roman Obermaisser*

Room K

S251 - SS DataDriven Techniques Applicable to Smart Battery Management System to Improve Effective Battery Usage, Safety, and Reliability

Chairs: Janamejaya Channegowda, Flah Aymen

Comparing Switching Losses for Automatic and Program-Based

Switched Capacitor Model for Active Cell Balancing *Gairik Das, Vipin Valsan*

In-situ Parameter Identification of Cells in Grid-Connected Batteries *Thomas L Fantham, Daniel T Gladwin*

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	<p>Isolated Semi Integrated On-board Charger for EVs Equipped with 6-phase Traction Drives <i>Paolo Pescetto, Gianmario Pellegrino</i></p> <p>SOH diagnostic and prognostic based on external health indicator of Lithium-ion battery <i>Enhui Liu, Niu Guangxing, Xuan Wang, Bin Zhang</i></p> <p>SOH diagnostic and prognostic based on external health indicator of Lithium-ion battery <i>Enhui Liu, Niu Guangxing, Xuan Wang, Bin Zhang</i></p> <p>Generalized Method for Designing Nonisolated Safety Standard Compliant Onboard Chargers for Electric Vehicles <i>Caniggia Viana, Sepehr Semsar, Mehanathan Pathmanathan, Peter Lehn</i></p>
11:30-12:50	<p>Room L</p> <p>S382 - SS Hybrid Control Techniques and Topologies for Multilevel Power Converters</p> <p>Chairs: Mohammad SHARIFZADEH, Kamal Al-Haddad</p> <p>Novel Switched-Capacitor Compact Multilevel Converter Based on Packed E-Cell Design with Fault Tolerant Operation <i>Mohammad Sharifzadeh, Mohammadali Ahmadijokani, Majid Mehrasa, Mahdieh Sadabadi, Kamal Al-Haddad</i></p> <p>A Novel Sensor-less Voltage Balancing on PUC5 to Reduce the Size of Flying Capacitor <i>Saeed Arazm, Rawad Zgheib, Kamal Al-Haddad</i></p> <p>Grid Integration of an enhanced Packed E-Cell Inverter for Renewable Energy Applications <i>Erfan Azimi, Majid Mehrasa, Mohammad Sharifzadeh, Leopoldo Franquelo, Seddik Bacha, Kamal Al-Haddad</i></p> <p>Systematic Design of Improved Lead-Lag Direct Power Model Predictive Controller for Multilevel Active-Front-End Rectifier: A Comparative Study <i>Mostafa Abarzadeh, Armin Ebrahimian, Waqar A. Khan, Nathan Weise, Kamal Al-Haddad</i></p> <p>Efficiency Analysis of Conduction Losses in Modular Multilevel Converters with Parallel Functionality <i>Nima Tashakor, Bitar Arabsalmanabadi, Yi Zhang, Kamal Al-Haddad, Stefan Goetz</i></p> <p>Parameter Estimation of Batteries in MMCs with Parallel Connectivity using PSO <i>Bitar Arabsalmanabadi, Nima Tashakor, Yi Zhang, Kamal Al-Haddad, Stefan Goetz</i></p>
	<p>Room I</p> <p>T099 - TT Power Electronics & Energy Conversion</p> <p>Chairs: Akshay Rathore, Kamal Al-Haddad</p> <p>Control of Soft Switching Solid State Transformer based on Lyapunov Energy Function for Three-phase AC-AC Power Conversion <i>Vikram Roy Chowdhury, Rajendra Prasad Kandula, Deepak Divan</i></p> <p>Analytical EMI Modeling of an Active Neutral Point Clamped Inverter <i>Fatemeh AbolqasemiKharanaq, Ali Emadi, Berker Bilgin</i></p> <p>Enhancement of A Photovoltaic Inverter Efficiency Using A Shade-Tolerant MPPT <i>Seyedkazem Hosseini, Shamsodin Taheri, Edris Poursmaeil, Diego Espinoza-Trejo</i></p> <p>BEM Model Extended to Analyze the Performance of Medium and Large Size Wind Turbines <i>Hercules Oliveira, Jose De Matos, Luiz Ribeiro, Osvaldo Saavedra, Cesar Branco</i></p> <p>Lyapunov Energy Function Based Control of a PV Based Current Source Inverter under Unbalanced Grid Voltage Condition <i>Vikram Roy Chowdhury, Md Multan Biswas, Dhiman Chowdhury</i></p> <p>A Bidirectional DC-DC Converter with High Conversion Ratios for the Electrical Vehicle Application <i>Reza Rezaii, Mohammad Nilian, Md Safayatullah, Sumana Ghosh, Issa Batarseh</i></p>

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Room H

T125 - TT Signal and Image Processing and Computational Intelligence

Chairs: Yang Shi, Mohammad Babaei

Learned Gradient Descent Performance in Bicubic Super-Resolution Task *Iaroslav Koshelev, Andrey Somov*

Stochastic Expectation Propagation Learning of Infinite Multivariate Beta Mixture Models for Human Tissue Analysis *Narges Manouchehri, Nizar Bouguila*

A Critical Study on the Impact of Missing Data Imputation for Classifying Intrusions in Cyber-Physical Water Systems *Roozbeh Razavi-Far, Ehsan Hallaji, Maryam Farajzadeh-Zanjani, Ranim Aljoudi, Mehrdad Saif*

3D Printing Deformation Estimation Using Artificial Vision Strategies for Smart-Construction *Juan Villacrés, Robert Guamán, Oswaldo Menéndez, Fernando Auat Cheein*

Time Optimal Operation of Flexural Ultrasonic Transducers For Enhanced Ranging *Aravind B. Balasubramanian, Kartik V. Sastry, David P. Magee, David G. Taylor*

3-D Ultrasonic Sensing in Air with a Narrowband Transmitter and a Receiver Microphone Array *Aravind B. Balasubramanian, David P. Magee, David G. Taylor*

Room F

T074 - TT Motion Control and Mechatronics

Chairs: Michael Ruderman, Antonio Luque

Trajectory Planning and Sliding-Mode Velocity Control for an Under-Actuated Hovercraft Vehicle *Lukas Pröhl, Harald Aschemann*

Damping Controller Design for a DFIM-based Shredder Drive using H-Infinity Optimization *Florian Bendrat, Constantinos Sourkounis*

Model Predictive Control of a High Power Rolling-Mill Drive Considering Shaft Torque Constraints *Daniel Binder, Florian Bendrat, Constantinos Sourkounis*

Acceleration feedback concepts for dynamic emulation of mechanical loads *Michael Epp, Martin Griese, Thomas Schulte*

Coil Switching and Control of an Iron Core Moving Magnet Linear Motor *Pai-Hsueh Yang, Koichi Sakata, Gaurav Keswani*

On the Design and Development of Vision-Based Autonomous Mobile Manipulation *Shafiqul Islam, Jorge Dias, Anderson Sunda-Meya*

Room E

T0211 - TT Control System, Robotics and Automation

Chairs: Valeriy Vyatkin, Gabor Sziebig

Control of a Sun Tracking Robot Based on Adaptive Sliding Mode Control with Kalman Filtering and Model Predictive Control *Jan-Philip Rehbein, Benedikt Haus, Paolo Mercorelli*

Inferring Cost Functions Using Reward Parameter Search and Policy Gradient Reinforcement Learning *Emir Arditi, Tjasa Kunavar, Emre Ugur, Jan Babic, Erhan Oztop*

Cascaded Kalman Filters for a Sliding Mode Control in a Peltier Structure for a Innovative Manufacturing System *Felix van Rossum, Benedikt Haus, Paolo Mercorelli, Andreas Zedler*

Multi-Quadcopter Formation Control Using Sampled-Data Event-

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Triggered Communication With Gain Optimization *Zipeng Huang, Ya-Jun Pan, Robert Bauer*

A Comparative Study of Sliding-Mode-Based Control Strategies of a Quad-Rotor UAV *Enrique Paiva, Hector Fretes, Jorge Rodas, Maarouf Saad, Yassine Kali, Jose Luis Lesme, Fernando Lesme*

Robust Predictor Feedback Input Delay Compensation with Application to Daylight Harvesting Control *Afagh Mohagheghi, Mehrdad Moallem*

Room M

S024 - SS Advanced Control of GridConnected Converters for Distributed Generation and Power Quality

Chairs: Hadi Y. KANAAN, Fadia SEBAALY

Adaptive Virtual Inertia Synthesis via Enhanced Dispatchable Virtual Oscillator Controlled Grid-Tied Inverters *Sima Azizi Aghdam, Mohammed Agamy*

Self-synchronization Scheme for Network of Grid-following and Grid-forming Photovoltaic Inverters *Shantanu Gupta, Muhammad F. Umar, Mohammad B. Shadmand, Sudip Mazumder*

Model predictive control for single-stage grid-tied three-port dc-dc-ac converter based on dual active bridge and interleaved boost topology *Md Safayatullah, Sumana Ghosh, Sahin Gullu, Issa Batarseh*

Fault-Tolerant Z-Source-based Isolated DC-DC Building Blocks for Mission-Critical DC Distribution Applications *Hussain Sayed, Harish S. Krishnamoorthy*

Isolated Quasi-Switched Boost Series Resonant DC-DC

Converter *Minh-Khai Nguyen, Truong-Duy Duong, Anh-Dung Nguyen, Caisheng Wang, Young-Cheol Lim, Joon-Ho Choi*

AC/DC Converter based on Dual Active Bridge with Reactive Power Management *Pablo Guzman, Nimrod Vazquez, Marco Liserre, Rodolfo Orosco, Jaime Arau, Claudia Hernandez*

Room J

T105 - TT Power Systems and the Smart Grid

Chairs: Imad Mougharbel, Nazih Moubayed

Artificial Neural Network Aided Cable Resistance Estimation in Droop-Controlled Islanded DC Microgrids *Habibu Hussaini, Tao Yang, Yuan Gao, Cheng Wang, Mohamed A. A. Mohamed, Serhiy Bozhko*

Real-time Model Development of the IEEE Benchmark Distribution Feeder Test System for Microgrid Stability and Controls *Hamed Nademi, James Choi, Prottay Adhikari, Luigi Vanfretti, Shehab Ahmed, Kourosh Sedghisigarchi*

Distributed Cooperative LFC Protocols for Regulation Synchronization for Networked Multi-area Power Grid Networks *Shafiqul Islam, Anderson Sunda-Meya, Jorge Dias*

Robust Adaptive Load Frequency Control for Multi-area Power System Grid Networks with Uncertainty *Shafiqul Islam, Anderson Sunda-Meya*

Anomaly Detection In Smart Grids Using Machine Learning *Prem kumar reddy Shabad, Abdulmueen Alrashide, Osama Mohammed*

Room D

T082 - TT New Technologies for Electric Transportation

Wednesday, 13 October 2021

Chairs: Ritesh keshri, Giambattista Gruosso

Adaptive Voltage Controller for Flux-weakening Operation in PMSM Drives *Zisui Zhang, Babak Nahid-Mobarakeh, Ali Emadi*

Electric Vehicle Smart Charging to Maximize Renewable Energy Usage in a Single Residence *Kartik V. Sastry, Thomas F. Fuller, Santiago Grijalva, David G. Taylor, Michael J. Leamy*

Non-Dominated Sorting Genetic Algorithm Based Determination of Optimal Torque-Split Ratio for a Dual-Motor Electric Vehicle *Marco Veliz Castro, Shruthi Mukundan, Claudio Lopes Filho, Glenn Byczynski, Bruce Minaker, Jimi Tjong, Narayan Kar*

SoC Estimation Techniques for Efficient Agricultural Robots *German Monsalve, Alben Cardenas, Wilmar Martinez*

Mission Profile-Oriented Active Thermal Control of a Bidirectional Three-Level Buck-Boost GaN-Based DC-DC Converter for Electric Vehicles Powertrains *Christian A. Rojas, Ruben Gonzalez, Leonardo Callegaro, Hector Young*

Pack-Level Electrochemical Impedance Spectroscopy in EV Batteries Enabled by a DC Fast Charger *Zhe Gong, Seyed A. Assadi, Seif Sarofim, Michelle Tessy, Dylan Lamont, Aurora Nowicki, Joshua Piruzza, Khalid Fatih, Yeong Yoo, Olivier Trescases*

Room B

S361 - SS High Power Multilevel Converters Topologies, Combination of Converters, Modulation and Control

Chairs: Alain Sanchez, Iosu Marzo

Reactive Power Limits of Single-Phase and Three-Phase DC-Link VSC STATCOMs under Negative-Sequence Voltage and Current *Iosu Marzo, Jon Andoni Barrena, Alain Sanchez-Ruiz, Gonzalo Abad, Ignacio Muguruza*

Error Tolerance Analysis for SHE-PWM Calculation in a 3L-NPC Converter *Irati Ibanez-Hidalgo, Alain Sanchez-Ruiz, Angel Perez-Basante, Salvador Ceballos, Asier Zubizarreta, Yunwei Li, Zhongyi Quan*

Methodology to Compare Meta-heuristic Algorithms to Solve Selective Harmonic Elimination-PWM and Optimal Pulse Pattern

Formulations *Irati Ibanez-Hidalgo, Izaskun Oregi, Sergio Gil-Lopez, Angel Perez-Basante, Alain Sanchez-Ruiz, Ainhoa Pujana, Asier Zubizarreta, Salvador Ceballos*

Target Current Modulation as a Novel Approach for Active Balancing in Automotive MMSPCs *Tobias Merz, Nils Hellmann, Eduard Specht, Marc Hiller*

Experimental Comparative Analysis of Efficiency and THD for a Three-phase Five-level Cascaded H-Bridge inverter Controlled by Several MC-PWM Schemes *Giuseppe Schettino, Claudio Nevoloso, Rosario Miceli, Antonino Oscar Di Tommaso, Gioacchino Scaglione, Carlo Cecati, Concettina Buccella*

Electromagnetic Losses Minimization in High-Speed Flywheel Energy Storage Systems *Andrea Floris, Alfonso Damiano, Alessandro Serpi*

Room C

S&YP - Students & Young Professionals

Welcome by IEEE IES President and Introduction to the IEEE IES Student & Young Professionals (S&YP).

Prof. Marek Jasinski, Warsaw University of Technology, Poland, IEEE IES S&YP Activity Committee

Prof. Terry Martin, University of Arkansas, USA, IEEE IES President

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Prof. Sheldon Williamson, OntarioTech University, Canada, IEEE IECON General Chairperson

S&YP – 3 Minutes Speeches.

Chair: Hani Vahedi, Andrii Chub, Marek Turzynski

Room A

T0413 - TT Electrical Machines and Drives

Chairs: Qingsong Wang, Chunyan Lai

Power Hardware-in-the-Loop based Emulation of An Induction

Machine with Stator Winding Faults *Yupeng Liu, Lebohang Ralikalakala, Paul Barendse, Pragasen Pillay*

Detection of Broken Rotor Bars in Induction Motors through the k-NN Algorithm Combined with a Deterministic-Stochastic Subspace

Method for System Identification *Raissa Raimundo da Silva, Mateus Giesbrecht*

Analysis of Open Phase and Phase-to-Phase Short Circuit Fault of

PMSM for Electrical Propulsion in an eVTOL *John Ramoul, Gayan Watthewaduge, Alan Dorneles Callegaro, Babak Nahid-Mobarakeh, Armen Baronian, Ali Emadi*

High-Frequency Signal Injection Based Adaptive Full-Order Observer for Low-Speed Sensorless IPMSM Drives *Cesar José Volpato Filho, Rodrigo Padilha Vieira*

Adaptive Flux Weakening Controller for Dual Three-Phase PMSM

Drives in Vector Space Decomposition *Wesam Taha, Diego F. Valencia, Zisui Zhang, Babak Nahid-Mobarakeh, Ali Emadi*

High Torque Density Traction Motor Using Soft Magnetic Composites Material with Surface Ring-type Halbach-array PM Rotor

Topology *Sumeet Singh, Pragasen Pillay*

Room G

T066 - TT Industrial Automation, Communication, Networking and Informatics

Chairs: Jan Haase, Luis Gomes

Towards a Quantitative Time Analysis and Decision Support for the Deployment of AI-Algorithms in Distributed Cyber-Physical Production Systems *Dominik Hujo, Birgit Vogel-Heuser, Marius Krüger, Fabian Schuhmann*

Accelerating of Feature Recognition of Weld Joints in Siemens NXOpen with Numba JIT and Parallelization *Tuan Tran, Andrei Lobov*

Worst-Case Stealthy False-Data Injection Attacks on Remote State Estimation *Jing Zhou, Jun Shang, Tongwen Chen*

Decision Graph and Matrix Visualization during Interdisciplinary Engineering Collaboration *Haya Elaraby, Xintong He, Minjie Zou, Alison Olechowski, Dorothea Pantförder, Greg Jamieson, Birgit Vogel-Heuser*

Data-driven Bottom-up Cluster-tree Formation based on the IEEE 802.15.4/ZigBee Protocols *Miguel Lino Ferreira Neto, Carlos Barros Montez, Erico Leão, Aujor Tadeu Cavalca Andrade*

Room K

S582 - SS Power Electronics Converters for Green Energy Supplies Topology, Modeling, Control, and Stability Analysis

Wednesday, 13 October 2021

Chairs: Nitin Gupta, Man Mohan Garg

Dynamic Modelling Requirements for Tuning of Cascaded Voltage and Current Loops in VSMS *Shuan Dong, Yu Christine Chen*

On the Analysis of Quasi-Discontinuous Modulations for Dual-Active-Bridge *Pablo Guzman, Nimrod Vazquez, Marco Liserre, Rodolfo Orosco, Jaime Arau, Claudia Hernandez*

Modeling and Simulation of a Reduced-Order Single-Phase PQ Inverter Using the Dynamic Phasor Method *Udoka C. Nwaneto, Andrew M. Knight*

Dynamic Phasor Modeling and Control of a Single-Phase Single-Stage Grid-Connected PV System *Udoka C. Nwaneto, Andrew M. Knight*

A Coupled Inductor-Based Dual-Switch High Step-up DC-DC Converter with Common Ground *Saeed Habibi, Ramin Rahimi, Mehdi Ferdowsi, Pourya Shamsi*

Experimental Comparison of High-Power Soft-Switching Boost Converters with Auxiliary Switches *Minh-Khai Nguyen, Nima Abdolmaleki, Jianfei Chen, Caisheng Wang, Zhigang Yao, Shilei Zhou, Jiaoke Zheng*

Thursday, 14 October 2021

07:00-08:20

Room P

S551 - SS NetworkBased Cooperative Intelligence of Heterogeneous Microgrid Clusters

Chairs: Jingang Lai, Xiaoqing Lu

VSG Control Strategy Based on Model Predictive for Islanded Microgrid Inverter *Xuemei Zheng, Xu Shi, Haoyu Li, Yong Feng*

Full-order Terminal Sliding mode Control for Virtual Synchronous Generator based Inverter *Minghao Zhou, Xingguo Wu, Hongyu Su, Wei Xu, Long Xu, Ying Chi*

Cascaded 3-Phase-Bridge Converter Based on Virtual Synchronous Generator Control *Yang Yu, William Cai, Hanying Gao, Qingbo Guo, Minghao Zhou, Shiqiang Hou*

A novel swarm intelligence optimization based predictive control of PV systems for complex conditions *Yingxue Chen, Linfeng Gou, Chujia Sun*

Distributed Economical Dispatch Control for an AC Microgrid-Like Electric Vehicle Park *Chang Yu*

A Robust Deadzone Compensation Method Against Parameter Variations based on Kalman Filter and Neural Networks *Le Pei, Liyi Li, Jiayi Liu, Zhenxing Cheng, Qingbo Guo, Hongchen Liu*

Room O

S132 - SS Advances in HumanMechatronic Systems

Chairs: Sho Yokota, Mihoko Niitsuma

Autonomous Mobile Robot Navigation by Reinforcement Learning Considering Pedestrian Movement Tendencies *Kanako Amano, Haruka Isshiki, Yuka Kato*

Effective Voltage Control of Liquid Crystal Lens for Rapid Focal Length Change *Tsugumi Fukui, Sota Shimizu, Keigo Muryobayashi, Marenori Kawamura, Susumu Sato, Nobuyuki Hasebe*

A Portable Interactive Projection Device to Provide Visual Support for Children with Special Needs *Bruno Leme, Mika Oki, Kenji Suzuki*

Stiffness Estimation from Vision and Touch Using Object Detection and Probabilistic Model: An Application to Object

Thursday, 14 October 2021

Identification *Masahiro Kamigaki, Seiichiro Katsura*
Control Barrier Function Based Assist Control with Shifting Sensor and Footprint Positions *Shunsuke Kimura, Naito Kakuya*
Study on forestry control system to improve forestry workers safety *Yuki Ayuta, Kouhei Okuda, Eisuke Kawamoto, Satoshi Muramatsu, Katsuhiko Inagaki, Daisuke Chugo, Syo Yokota, Hiroshi Hashimoto*

Room L

S242 - SS DCDC Converters Circuits, Modeling, Control and Applications

Chairs: Mahajan Sagar Bhaskar, Frede Blaabjerg

Numerous Patterns of Inductor Currents in DCM of Coupled SIDO

Boost Converter *Nupur Nupur, Shabari Nath*

A 10MHz Forward-Flyback Resonant DC/DC Converter *Lei Huang, Ling Gu*

Three-Port Magnetically Coupled Resonant Wireless Energy Router with Dual Sources and Dual Loads and Its Power Management

Strategy *Chaoyang Yan, Fuxin Liu, Haojie Shen, Xuling Chen*

Adaptive Continuous Sliding Mode Control of Buck Converters Based on Zero-Crossing Checking *Yanmin Wang, Weiqi Zhang, Zekun Zhang, Haoran Cai*

An Isolated High Step-Up Three Switch Quasi-Z-Source DC-DC

Converter *Kang Liu, Xiaoquan Zhu, Kaiwen Ye, Liming Jiang*

A Synchronous Rectification Method of Bidirectional CLLC Resonant Converter Based on Phase and Duty Cycle Regulation *Xiaobo Liu, Xiaohua Wu, Xiangke Li, Xinyue Zhang, Fei Deng, Shixian Sun*

Room I

T092 - TT Power Electronics & Energy Conversion

Chairs: Dapeng Tian, Guo Xu

Inductor Switched Series Loaded Resonant Converter For Led

Applications *Sree Vidhya Vaidyanadhan, Guru Sumanth G, Sankar Peddapati, Svk Naresh*

A Novel Current Limiting Control Strategy for Three-Phase Three-Wire Inverter with Transformer *Xuecheng Liang, Li Peng*

Hybrid Switched Inductor Step-Up Ultra-Sparse Matrix Converter for Wind Generator Applications *Maraka Israyelu, Sashidhar Sampathirao*

An Improved Extended Phase Shift Modulation for DAB Converter with the Blocking Capacitor *Jian Tang, Guo Xu, Liting Li, Jingtao Xu, Mei Su*

An Efficiency Optimization Control Method With Fast Dynamic

Response For Multi-Phase Interleaved Synchronous Rectifier BUCK

Converter *Peng Zhang, Yang Liu, Jin Zhao, Hanshu Zhang, Qiaoqiang Lv*

Modified Switched-Inductor Based DC-DC Buck-Boost Converter for Low-Power Applications *Hamood-Ur- Rehman*

Room H

T122 - TT Signal and Image Processing and Computational Intelligence

Chairs: Xianqiang Yang, Wang Zhenwei

Three-dimensional Reconstruction of Complex Spatial Surface Based on Line Structured Light *Hongsheng Shi, Zhenwei Wang, Hong Chen*

Aurora Image Classification Robust to Noise Labels *Takeru Endo, Mitsuharu Matsumoto*

Thursday, 14 October 2021

A Visual Odometry for Wide Angle Fovea Sensor SLAM *Tomoki Takamura, Sota Shimizu, Rei Murakami, Alessandro Carfi, Fulvio Mastrogiovanni*

Application of Walsh Filter in Geophysical Well-Log Data Interpretation for Automated Lithological Bed Boundary Detection *Gagandeep Singh, Deepan Datta, William K. Mohanty, Aurobinda Routray, Rahul Mahadik*

Study of brain activity for total sleep deprivation. *Teja Mannepalli, Nandini Rajaram, Priyadarshini Mishra, Aurobinda Routray*

Reduction in the ill-posedness of the EEG source localization problem *Teja Mannepalli, Aurobinda Routray*

Room F

T072 - TT Motion Control and Mechatronics

Chairs: Changzhu ZHANG, Chuanzhi Zang

Absolute Angle Calculation for Magnetic Encoder Based On Magnetic Flux Density Difference *Shota Komatsuzaki, Akishi Takeyama, Keita Sado, Yuki Nagatsu, Hideki Hashimoto*

Band-Stop Bandwidths Adjustment for a Periodic Disturbance Observer *Hiroki Tanaka, Hisayoshi Muramatsu*

A Study on Motor Control Method within Temperature Limit of Coil for Improving Motor Performance *Kenta Iizuka, Yuki Nagatsu, Hideki Hashimoto*

Design of Trajectory Generator of a Glass Facade Cleaning Robot *Kouki Kanbe, Shunsuke Nansai, Hiroshi Itoh*

Imitation learning for variable speed motion generation over multiple actions *Yuki Saigusa, Ayumu Sasagawa, Sho Sakaino, Toshiaki Tsuji*

Implementation of assembly task based on guided policy search algorithm *Qingwei Dong, Chuanzhi Zang, Peng Zeng, Guangxi Wan, Yunpeng He, Xiaoting Dong*

Room E

T022 - TT Control System, Robotics and Automation

Chairs: Tong Wang, Duanjin Zhang

Two-Phase Jointly Optimal Strategies and Winning Regions of the Capture-the-Flag Game *Zhao Zhou, Jiahao Huang, Jiapeng Xu, Yang Tang*

Investigation on Fractional Order Controller Using Ball-and-Beam System *Monika Sharma, Bharat Singh Rajpurohit*

Robust Stackelberg Strategy for Stochastic LPV Systems and Application to Wind Power Generator *Muneomi Sagara, Hiroaki Mukaidani, Hua Xu*

Fault and Attack Collaborative Detection for Cyber-Physical System in Complex Network Environment using Delta Operator *Zheng Du, Li Zhang, Mengkai Liu, Jianxun Zhou, Duanjin Zhang*

Configuration-aware Model Predictive Motion Planning in Narrow Environment for Autonomous Tractor-trailer Mobile Robot *Nobuaki Ito, Hiroyuki Okuda, Shinkichi Inagaki, Tatsuya Suzuki*

Inertial-Kinect Fusion for Robot Navigation based on the Extended Kalman Filter *Xiaoyue Sang, Zhaohui Yuan, Xiaojun Yu*

Room R

S141 - SS Advances in Protection System DC and AC Power Network

Chairs: Satarupa Bal, Xiaoqing Song

Thursday, 14 October 2021

Smart Energy Management for Prosumers in Local Energy Communities *Weng Kean Yew, David Flynn*
High Gain Multilevel Inverter Based Grid Integrated Solar Power Transfer System with Power Quality Enhancement *Renuka Varma, Nirmal Mukundan C M, Jayaprakash P, Ahmed Al Durra, Tarek El-Fouly*
Fault Location on Three-Terminal Transmission Lines Based on a Meta-Heuristic Algorithm *Duy Chau Huynh, Thanh Huu Truong, Matthew Walter Dunnigan*
Evaluation of 6-terminal 36-slot Induction motor Drive with 1:2 Speed Ratio using PPM *Sheetal Umredkar, Ritesh Kumar Keshri, Vijay B Borghate, Mohan M Renge*

Room M

S171 - SS Advances of Modular Power Electronics Converters for Transportation Applications

Chairs: Chunyang Gu, Giovanni De Carne

Comparative Study of Current Control Techniques for Fault-tolerant Five-phase PMSM *Huanran Wang, Giampaolo Buticchi, Chunyang Gu, Shun Bai, Michael Galea*
Active Rectifier Control for Selective Fuse Tripping in a DC Microgrid *Jiajun Yang, Giampaolo Buticchi, Chunyang Gu, Pat Wheeler, Sebastian Brueske*
An Advanced Extended Phase Shift Modulation Strategy of Dual Active Bridge Converter Considering Magnetizing Inductance *Yicong Cai, Chunyang Gu, Jiajun Yang, Jing Li, Giampaolo Buticchi, He Zhang*
Comparison of Traction Substation Topologies for AC 25kV Electrical Railway *Milos Straka, Vojtech Blahnik, Martin Pittermann*
A High-Frequency Pulsating DC-Link for Electric Vehicle Drives with Reduced Losses *Zhongxi Li, Aobo Yang, Gerry Chen, Zhiyong Zeng, Angel Peterchev, Stefan Goetz*
Feed-forward decoupling control to enhance robust stability of PV inverter connected to a weak grid. *Antoine Musengimana, Zheng Xuemei, Li Haoyu*

Room N

S341 - SS Fuel Cell System Application in Transportation Electrification

Chairs: Rui Ma, Liangfei Xu

A Novel Bidirectional DC Solid State Power Controller for Fuel-Cell-Powered UAVs *Yuqing Fei, Shuai Ding, Yao Li, Xinyi Li, Zhongzheng Zhou, Bowen Zhang, Weilin Li*
Design of Multi-objective Optimization Energy Management Strategy Based on Genetic Algorithm for a Hybrid Energy System *Yigeng Huangfu, Chongyang Tian, Peng Li, Sheng Quan, Yonghui Zhang, Rui Ma*
Energy Management Strategy of Distributed Electric Propulsion Aircraft Hybrid Power System based on State Machine *Rui Ma, Minghao Yuan, Yang Zhou, Yufan Zhang, Fuwang Yang*
A Design of Air System Control Algorithm for Full Power Fuel Cell Vehicles *Hui Tao, Jianhui Zhang, Liangfei Xu, Zunyan Hu, Jianqiu Li, Minggao Ouyang*
Research on Multi-Objective Optimized Energy Management Strategy for Fuel Cell Hybrid Vehicle Based on Work Condition Recognition *Yigeng Huangfu, Zelong Zhang, Liangcai Xu, Wenzhuo Shi, Shengrong Zhuo*

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Lookup Table-based Electro-Thermal Real-Time Simulation of Output Series Interleaved Boost Converter for Fuel Cell Applications *Qian Li, Hao Bai, Elena Breaz, Robin Roche, Fei Gao*

Room J

T102 - TT Power Systems and the Smart Grid

Chairs: Fangzhou Liu, Salvy Bourguet

A Grey Wolf Algorithm Optimized SVM Method for Voltage Sag Identification in Distribution Systems *Mo Wenxiong*

A Local Density Clustering Based Method for Disturbance Source Identification of Power quality in Distribution Systems *Wang Yong*
Location Method for Three Phase Unbalance Sources in Distribution Network Based on CSO Optimized Deep Belief Network *Luan Le*

A PSO Optimized Support Vector Machine Method for User Identification of Distribution System with Electric Vehicles *Xu Zhong*
Energy management of microgrids: from a mixed-integer linear programming problem to a rule-based real-time algorithm *Anthony Roy, Francois Auger, Jean-Christophe Olivier, Bruno Auvity, Emmanuel Schaeffer, Salvy Bourguet*

Interface Compensation for More Accurate Power Transfer and Signal Synchronization within Power Hardware-in-the-Loop

Simulation *Zhiwang Feng, Rafael Peña-Alzola, Paschalis Seisopoulos, Mazheruddin Syed, Efren Guillo-Sansano, Patrick Norman, Graeme Burt*

Room D

S061 - SS Advanced Technologies for Inductive Power Transfer

Chairs: Chaoqiang Jiang, Teng Long

Analysis of Inductor Current for Series Resonant Tank at Different Practical Operating Conditions *Sayan Sarkar, Wing Hung ki, Yao Yuan*
Resonant Frequency Characteristics of a Wireless Power Transfer System based on Dual-Receiver Configuration without Cross Coupling *Shohei Komeda, Rin Arai*

An Online Switching Frequency Modulation for Power Fluctuation Minimization of Non-Stationary Wireless Power Transfer *Weizhou Ye, Jannis Noeren, Lukas Elbracht, Nejila Parspour*

A measurement method for the characterization of the ferromagnetic bottom layer of cookware used in domestic induction heating *Felix Rehm, Patrick Breining, Marc Hiller*

Effect of Hybrid Modulation on Performance of Wireless Battery Charger Operating in CC/CV Mode *Deniss Stepins, Kathari Neeraja, Janis Zakis, Oleksandr Husev, Bohdan Pakhaliuk, Victor Shevchenko*

Computational Feasibility of Multi-objective Optimal Design Techniques for Grid-Connected Multi-cell Solid-State-

Transformers *Jaydeep Saha, Naga Brahmendra Yadav Gorla, Aravinth Subramaniam, Sanjib Kumar Panda*

Room B

S621 - SS Power Electronics for Transportation Electrification Applications

Chairs: Tarcio André dos Santos Barros, Marcelo Vinicius de Paula

Design and Analysis of 10 kW Electric Vehicle Charging Station *Indranil Banerjee, Mayank Mukesh, Shivam Prakash Gautam, Vikas Kumar*

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Simulation Assessment of the Impact of Pulsed Loads in DC

Shipboard Microgrid *Luona Xu, Baoze Wei, Yun Yu, Juan C. Vasquez, Josep M. Guerrero*

A review on single-phase, single-stage OBC topologies for EVs with 48~V powertrains *Thilini Wickramasinghe, Bruno Allard, Nicolas Allali*

Efficiency Evaluation of Six-Phase VSI and NSI for 400V and 800V

Electric Vehicle Powertrains *Saif Absar, Wesam Taha, Ali Emadi*

Performance Evaluation of Space Vector PWM Methods with DC Link Voltage Control for EV/HEV Powertrains *Haleema Qamar, Hafsa Qamar, Rajapandian Ayyanar*

Room C

T111 - TT Sensors, Actuators, Systems Integration and Nano-technologies

Chairs: Mingsi Tong, Qingsong Xu

Design and Analysis of a Piezoelectric-Actuated Biaxial Asymmetrical Compliant Micromanipulator *Zekui Lyu, Qingsong Xu*

A New Closed-barrier Covering Optimization Method for Heterogeneous Nodes in Hybrid Wireless Sensor Networks *Peng Wang, Yonghua Xiong, Jinhua She*

Payload Estimation for Hydraulic Excavators Using a Depth Camera *Hiroshi Yoshida, Tatsuya Yoshimoto*

DAWSSM: A plug-and-play Drone Assisted Water Sampling and Sensing Module *Digvijay Singh, Rishabh Singh, Rahul Ajmeria, Manik Gupta, Ponnalagu R N*

Development of a Magnetic Absolute Encoder Using Eccentric Structure and Long Short-Term Memory *Akishi Takeyama, Shota Komatsuzaki, Keita Sado, Yuki Nagatsu, Hideki Hashimoto*

Smart home's wireless sensor networks lifetime optimizing using Q-learning. *Ismael Jrhilifa, Hamid Ouadi, Abdelilah Jilbab*

Room Q

S211 - SS Computational intelligence for power system networks and smart grid

Chairs: Vasundhara Mahajan, Narayana Prasad Padhy

Rule extraction from electricity load profile data for smart metering analytics *Geordie Dalzell, Xinghuo Yu, Peter Sokolowski*

A New Novel Approach for Optimal Capacitor Placement in Radial Distribution Networks using Data Envelopment Analysis *Shubham Gupta, Vinod Kumar Yadav, Madhusudan Singh*

Oscillation Mode Assessment in Power System Using Multivariate Variational Mode Decomposition *Rahul S, Sunitha R, Akhil V M*

A PMP Energy Management Strategy based on State Switching for a Fuel Cell UAV *Rui Ma, Jian Song, Hongyu Zhang, Bowen Zhang, Yuang Wang, Bo Liang*

An Energy Management Strategy of More-Electric Aircraft Based on Fuzzy Neural Network Trained by Dynamic Programming *Yigeng Huangfu, Wenzhuo Shi, Liangcai Xu, Zelong Zhang, Zijun Ren, Shengrong Zhuo*

Energy Management Strategy for All-electric Propulsion UAV based on Fuel Cell Power System *Malo Cresson, Rui Ma, Liangcai Xu*

Room A

Thursday, 14 October 2021

T042 - TT Electrical Machines and Drives

Chairs: Xuan Wang, Christopher H. T. Lee

Analysis of Vernier Machine with Stator-V-Shaped Permanent-Magnet

Arrangement *Fawen Shen, Yuming Yan, Shanmukha Ramakrishna, Chandana Jayampathi Gajanayake, Shuai Wang, Christopher H. T. Lee*

Design of a Decoupled Double-Stator Flux-Switching Permanent-

Magnet Rotary-Linear Motor with Two Degree-of-Freedom Motion *Yaojie He, Hao Chen, Christopher H. T. Lee*

Harmonic Reduction for Two-Slot Pitch Winding Permanent Magnet

Vernier Machines with Stator Shifting Technique *Shuangchun Xie, Hao Chen, Libing Cao, Yuefei Zuo, Xin Yuan, Boon Siew Han, Chi Cuong Hoang, Christopher H. T. Lee*

A Novel Fault Tolerant Flux Switching Memory Machine with Highly

Flux Controllability *Yuming Yan, Fawen Shen, Ramakrishna Shanmukha, Chandana Jayampathi Gajanayake, Shuai Wang, Christopher H. T. Lee*

Position Sensorless Torque Ripple Control of Switched Reluctance

Motor Drive using B-Spline Neural Network *Chetan S. Matwankar, Sumit Pramanick, Bhim Singh*

The Online Stator Winding Insulation Monitoring for PMSG-PWM

rectifier System under Various Working Conditions *Dayong Zheng, Geye Lu, Yanyong Yang, Qinghao Zhang, Pinjia Zhang*

Room G

T062 - TT Industrial Automation, Communication, Networking and Informatics

Chairs: Ye Zhao, Qimin Xu

Highest Wellbore Stability Obstacle Avoidance Drilling Trajectory

Optimization in Complex Multiple Strata Geological

Environment *Jiafeng Xu, Xin Chen, Min Wu, Weihua Cao*

Clock Synchronization Based on Non-Parametric Estimation

Considering Dynamic Delay Asymmetry *Yafei Sun, Qimin Xu, Xiang Chen, Qiwen Yun, Cailian Chen*

Flexible Switching Architecture with Virtual-Queue for Time-Sensitive

Networking Switches *Qiwen Yun, Qimin Xu, Yanzhou Zhang, Yingxiu Chen, Yafei Sun, Cailian Chen*

CANS: Communication Limited Camera Network Self-Configuration for

Intelligent Industrial Surveillance *Jingzheng Tu, Qimin Xu, Cailian Chen*

Intelligent generating method and application of heating furnace

target billet heating curve *Xiang Xu, Zhengjun Yu, Jian He, Xuebo Chen*

Modeling and Analysis of Water Injection Cooling Molding

System *Jianhao Song, Feng Gao, Qian Huang, Zhiyue Liu, Longjie Zhang, Yong Chen*

Room K

S031 - SS Advanced Electrical Machines and Drives for Transportation Electrification

Chairs: Qingsong Wang, Xing Zhao

Initial Rotor Position Estimation of Brushless Synchronous Starter/

Generators Based on the Excitation System *Shuai Mao, Xu Han, Jianqiu Li, Qian Zhang, Zunyan Hu, Liangfei Xu*

Passive Variable Field PM Motor Utilizing Space Harmonics *Takumi Kumai, Masahiro Aoyama*

Design and Analysis of a Ferrite-PM-Assisted Hybrid Reluctance

Machine for Electric Vehicle Propulsion *Weiyu Wang, Xing Zhao, Sigao*

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	<p><i>Wang, Shuangxia Niu, Qingsong Wang</i> Analysis of Torque Performance of Motor With Continuous Flat Wire <i>Jinpeng Song, Jianqiu Li, Zunyan Hu, Liangfei Xu, Jiayi Hu, Minggao Ouyang</i> Analysis of Vernier Machine with Stator-V-Shaped Permanent-Magnet Arrangement <i>Fawen Shen, Yuming Yan, Shanmukha Ramakrishna, Chandana Jayampathi Gajanayake, Shuai Wang, Christopher H. T. Lee</i> High resolution initial rotor position estimation of SRM using peak current detection <i>Samant Kumar Singh, Ashwani Kumar Rana, A. V. Ravi Teja</i></p>
08:30-09:00	<p>Plenary & Keynote IECON2021 Keynote 3: Babak Fahimi Towards a Reliable, Sustainable, and Eco-friendly Electric Propulsion System Dr. Babak Fahimi University of Texas at Dallas, Distinguished Chair of Engineering Chairs: Kamal Al-Haddad, Xinghuo Yu</p>
09:00-09:30	<p>Plenary & Keynote IECON 2021 Keynote 4: Ivano Labricciosa The Industrial Digital Nexus – Our Greatest Engineering Opportunity Ivano Labricciosa President & CEO Oshawa Power And Utilities Corporation Chairs: Kamal Al-Haddad, Xinghuo Yu</p>
10:00-11:20	<p>Room O S331 - SS Energy and Health Management of DC Microgrids Chairs: Zhixue Zheng, Zhongliang Li A comparative study for optimal sizing of a grid-connected hybrid system using Genetic Algorithm, Particle Swarm Optimization, and HOMER. <i>Hoda Elaoui, Hussein Obeid, Stéphane Le Masson, Olivier Foucault, Hamid Gualous</i> Three-Layer Hierarchical Model Predictive Control Concept for Industrial DC Microgrids <i>Elias Knoechelmann, Alexander Maennel, Moritz Schappler</i> Development of An Energy Management Strategy for Port Cranes <i>Rofhiwa Takalani, Lesedi Masisi</i> Reinforcement Learning based Energy Management for Fuel Cell Hybrid Electric Vehicles <i>Liang Guo, Zhongliang Li, Rachid Outbib</i> Design Guidelines for Energy Efficient AC to DC Power Supplies <i>Michael Chrysostomou, Nicholas Christofides, Stelios Ioannou, Christos Marouchos</i> Towards Sustainable Models of Computation for Artificial Intelligence in Cyber-Physical Systems <i>Massimiliano Pirani, Aldo Franco Dragoni, Sauro Longhi</i></p>
	<p>Room L S411 - SS Improving Battery Management Systems through Signal Processing, Machine Learning, Data Fusion, and Control Algorithms Chairs: Balakumar BALASINGAM, Krishna R. PATTIPATI Lithium-ion Battery State of Health Estimation based on Cycle</p>

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Synchronization using Dynamic Time Warping *Kate Qi Zhou, Yan Qin, Billy Pik Lik Lau, Chau Yuen, Stefan Adams*

Battery Thermal Model Identification And Surface Temperature Prediction *Pradeep Kumar, Balakumar Balasingam, Gary Rankin, Krishna R. Pattipati*

Comparative Study and Development of Optimized Energy Efficient Battery Thermal Management System for Electric Vehicles in India *Pradeep Kumar, Yasser Rafat, Peeyush Varshney, Deepak Chaudhary, Mohammad Saad Alam, Balakumar Balasingam*

Underwater Environmental Impact and Thermal Management of Unmanned Underwater Vehicle Li-Ion Batteries *Tomas Salazar, Sean Youngblood, Sung-Yeul Park*

Model Predictive Control of HVAC System in a Battery Electric Vehicle with Fan Power Adaptation for Improved Efficiency and Online Estimation of Ambient Temperature *Maryam Alizadeh, Sumedh Dhale, Ali Emadi*

Battery Cell Dynamic Modeling Using the RC Equivalent Circuit for RTDS Frameworks *Morteza Rezaei Larijani, MohammadReza Zolghadri, Shahin Hedayati Kia, Ahmed El Hajjaji*

Room I

T096 - TT Power Electronics & Energy Conversion

Chairs: Josep Pou, Gonzalo Abad

A Modified SHMPWM Algorithm based on the 3L-NPC Inverter Connected with the 10kV Grid *Tao Jing, Alexander Maklakov, Andrey Radionov, Vadim Gasiyarovv*

Neural Network Modeling of Nonlinear Filters for EMC Simulation in Discrete Time Domain *Jan-Philipp Roche, Jens Friebe, Oliver Niggemann*

An Isolated Variable-Resistance Active Gate Driver for Use in SiC-Driven Inverters *Julius Wiesemann, Axel Mertens*

Development of a SPICE modelling strategy for power devices in GaN technology *Enrico Bottaro, Mario Cacciato, Alessandra Raffa, Santi Agatino Rizzo, Nunzio Salerno, Pier Paolo Veneziano*

Benefits of Finer Semiconductor Device Granularity on Power Converter Thermal Stress and MTTF *Roya Rafiezadeh, Sergio Busquets-Monge, Salvador Alepuz*

Impact of Temperature and Switching Rate on Properties of Crosstalk on Symmetrical & Asymmetrical Double-trench SiC Power MOSFET *Juefei Yang, Saeed Jahdi, Bernard Stark, Ruizhu Wu, Olayiwola Alatise, Jose Ortiz Gonzalez*

Room H

S071 - SS Advanced Technology for Electric Vehicle Charging Systems and its Management

Chairs: C. Bharatiraja, Sheldon Williamson

Technological Overview of Onboard Chargers for Electrified Automotive Transportation *Harish Karneddi, Deepak Ronanki, Ricardo Lizana Fuentes*

Power Management of a Smart Vehicle-to-Grid (V2G) System Using Fuzzy Logic Approach *Majid Mehrasa, Reza Razi, Khaled Hajar, Antoine Labonne, Ahmad Hably, Seddik Bacha*

Limiting discharge cycles numbers for plug-in electric vehicles in bidirectional smart charging algorithm *Reza Razi, Khaled Hajar, Majid Mehrasa, Antoine Labbone, Ahmad Hably, Seddik Bacha*

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A Survey on Charging Station Architectures for Electric Transportation *Raghda Hariri, Fadia Sebaaly, Charles Ibrahim, Sheldon Williamson, Hadi Y. Kanaan*

Multibattery charger system based on a three-level dual-active-bridge power converter *Jose M. Campos-Salazar, Sergio Busquets-Monge, Alber Filba-Martinez, Salvador Alepuz*

Optimal Sizing of Electric Vehicle Charging Stations in Residential Parking *Abdelhak Borhani, Hamid Ouadi, Mohamed Najoui*

Room F

T031 - TT Electric Energy Storage Systems

Chairs: Varsha A. Shah, Sachin Jain

SOC, Temperature and Dual-Objective Balancing in Reconfigurable Batteries for Electric Vehicles *Jan Kleiner, Lorenz Lechermann, Lidiya Komsijska, Christian Endisch, Michael Hinterberger*

A Sensitivity Analysis on Power to Energy Ratios for Energy Storage Systems providing both Dynamic Firm and Dynamic Containment Frequency Response Services in the UK *Abdulkarim A Ahmouda, Daniel T Gladwin*

Data-selection for state estimation of large-scale battery systems *Zhuo Wang, Daniel T. Gladwin, Matthew J. Smith, Thomas L. Fantham*

Multidimensional Machine Learning Balancing in Smart Battery Packs *Roberta Di Fonso, Xin Sui, Anirudh B. Acharya, Remus Teodorescu, Carlo Cecati*

A Review of Lithium-ion Batteries Diagnostics and Prognostics Challenges *Seyedreza Azizighalehsari, Jelena Popovic, Prasanth Venugopal, Braham Ferreira*

Hybrid Battery-SC and Battery-Battery Multistage Design and Energy Management for Power Sharing *Khadim Ullah Jan, Anne Migan Dubois, Demba Diallo*

Room E

T027 - TT Control System, Robotics and Automation

Chairs: Hao Luo, Zhiwen Chen

A DMP-based online adaptive stiffness adjustment method *Jiale Dong, Weiyong Si, Chenguang Yang*

On Improving TLS Identification Results Using Nuisance Variables with Application on PMSM *Dominik Friml, Michal Kozubik, Pavel Vaclavek*

Trajectory sequence generation and static obstacle avoidance for automatic positioning tasks with a tower crane *Matthias Thomas, Jiacheng Qiu, Oliver Sawodny*

Semi-Automatic Video Frame Annotation for Construction Equipment Automation Using Scale-Models *Carl Borngrund, Tom Hammarkvist, Ulf Bodin, Fredrik Sandin*

Virtual Leader based Trajectory Generation of UAV Formation for Visual Area Coverage *Hilton Tnunay, Kaouther Moussa, Ahmad Hably, Nicolas Marchand*

Trajectory Planning for Concrete Element Fabrication with Optimal Control *Boris Blagojevic, Benjamin Schönemann, David Nigl, Lucio Blandini, Oliver Sawodny*

Room M

S451 - SS Low Power Smart Sensors for Industrial Applications Hardware and Software Design

Thursday, 14 October 2021

Chairs: Reza Abrishambaf, António Espírito-Santo

ESD wrist strap-based EDA sensor cum ESD strap integrity monitor *Ashish Joglekar, Gaurav Bhandari, Rajesh Sundaresan*

Vehicle Route Prediction System in the context of Motion Sickness Mitigation *Tiago Aston, Rui Gomes, Paulo Cardoso*

On the Power Consumption of a Bluetooth Device Operating in Beacon Mode *Luigi Ferrigno, Fillipo Milano, Antonio Espirito Santo, Jose Salgado, Marco Laracca, Vincenzo Paciello*

IEC 61499 and IEEE 1451 for Distributed Control and Measurement Systems *Reza Abrishambaf, Helbert da Rocha, Antonio Espirito-Santo*

MARTE2 embedded signal processing unit for the ITER magnetics diagnostics *Giuseppe Avon, Arturo Buscarino, André Neto, Filippo Sartori*

Security Certification of Cyber Physical Systems for Critical Infrastructure based on the Compositional MILS Architecture *Andreas Hohenegger, Gerald Krummeck, Janie Baños, Alvaro Ortega, Michal Hager, Jiri Sterba, Tomas Kertis, Petr Novobilsky, Jan Prochazka, Benito Caracuel*

Room N

S471 - SS Modeling, Control and Design of Propulsion Drive for EVs

Chairs: Kundan Kumar, Rakesh Kumar

Techno Economic Aspects of The Wireless Electric Vehicle Charging *K Vidhya, C. Sharmeela, S. Balaji, S. Elango, P. Sanjeevikumar, M. S. Bhaskar*

Data Driven Fault Classification Technique for Grid Connected PV Inverter *Azra Malik, Ahteshamul Haque, K. V. Satya Bharath, Sanjeevikumar Padmanaban*

Analysis of Solar PV Fed Dynamic Wireless Charging System for Electric Vehicles *Kundan Kumar, Kantipudi V.V.S.R. Chowdary, Sanjeevikumar Padmanaban, Ramjee Prasad*

Reduced Switch Count Three-Phase Five-Level Boosted ANPC Inverter with Unipolar PWM Scheme for Electric Vehicle Propulsion Drive *Swapan Kumar Baksj, Utkal Ranjan Muduli, Ranjan Kumar Behera, Khalifa Al Hosani, Khaled Al Jaafari, David Wenzhong Gao*

Average-Value Modeling of Multi-Phase Machine-Converter Systems with Asymmetric Internal Faults *Seyyedmilad Ebrahimi, Navid Amiri, Juri Jatskevich*

Design Criteria for EV Drivetrain *Tamanwè Payarou, Sumeet Singh, Mohanraj Muthusamy, Pragasen Pillay*

Room J

T104 - TT Power Systems and the Smart Grid

Chairs: Enrique Romero-Cadaval, Mo-Yuen Chow

Elasticity & Dynamic Assessment of Objectives Weights with Multiple Demand Response Programs *Charles Ibrahim, Imad Mougharbel, Hadi Y. Kanaan*

A Hardware-in-the-Loop Co-simulation of Multi-modal Energy System for Control Validation *Diran Liu, Dominik Hering, Daniele Carta, Andre Xhonneux, Dirk Müller, Andrea Benigni*

Research needs for harmonic stability analysis of power electronic devices in low voltage networks *Elias Kaufhold, Jan Meyer, Peter Schegner*

A Novel Multilevel Interleaved-Based PFC Rectifier with Modular DC Interfaces *Vitor Monteiro, Joao Afonso*

Interfacing Power Electronics Systems for Smart Grids: Innovative

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Perspectives of Unified Systems and Operation Modes *Vitor Monteiro, Tiago Soares, Joao P. Lopes, Manuel Matos, Joao Afonso*
Continuous Control Set Model Predictive Control of a Bridgeless-Boost Three-Level Active Rectifier *Vitor Monteiro, Jose Afonso, Ana Rodrigues, Tiago Sousa, Joao Afonso*

Room D

IF2 - Industrial Automotive Applications

Talk 1: The Future of Mobility in India (10:00 – 10:25 am)

Dr. Tapan Sahoo, Executive Director (Maruti Suzuki India Ltd, India)

Talk 2: Fuel Cell vehicles Testing Standards: Current Status in China and perspectives (10:25 – 10:50 am)

Mr. Yupeng Wang, Chief Engineer (China First Auto Works (FAW), China)

Talk 3: 5G and MEC: Impact and Challenges in Mobility (10:50 – 11:15 am)

Mr. Naoki Shimizu, General Manager, Technology Development (Mitsubishi Electric

Automotive America, Silicon Valley Office, USA)

Chairs: Dr. Victor Huang

Room B

T0411 - TT Electrical Machines and Drives

Chairs: Atif Iqbal, Alessandro Serpi

Influence of the Magnetic Load on High Speed Synchronous

Reluctance Machines Design *Gianvito Gallicchio, Mauro Di Nardo, Marco Palmieri, Michele Degano, Chris Gerada, Francesco Cupertino*

Performance Improvement of Fault-Tolerant Control for Dual Three-Phase PMSM Drives Under Inter-Turn Short Circuit Faults *Hüseyin Tayyer Canseven, Abdurrahman ÜNSal*

Combined Electrical-Thermal Gray-Box Model and Parameter

Identification of an Induction Motor *Marius Stender, Oliver Wallscheid, Joachim Böcker*

Magnetic Equivalent Circuit Modeling of a Single-phase Brushless

Exciter for Aircraft Starter/Generator *Lihong Xie, Xibo Yuan, Giovanni Raimondi, Mark Worthington*

A Comparison of Sensorless MTPA and Quasi-MPF Control for VSD-PMSynRM *Alper Tap, Kadir Akgul, Ali Fuat Ergenc, Murat Yilmaz, Lale T. Ergene*

Impact of Airgap on the Performance of 3-Phase Permanent Magnet Hybrid Stepper Motor *Murat Onsal, Yucel Demir, Metin Aydin, Mustafa Kamil Guven*

Room C

S&YP-WiE - Round table

Mentors - Industry Link Round Table title: "Energy, Information and Industrial revolution"

Invited Keynote Panelists: Seta Bogosyan, Lucia Lo-Bello, Morgan Kiani, Jose Rodriguez, Regina Roos, Reinaldo Tonkoski, starting with short presentations of panelists 10 minutes each then discussion.

Chairs: Andrii Chub, Hong Li, Marek Jasinski

Closing remarks by IEEE IES Vice President for Membership

Prof. Yousef Ibrahim, Federation University Australia, IEEE IES VP Membership.

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Room A

T047 - TT Electrical Machines and Drives

Chairs: Giampaolo Buticchi, Giovanni Migliazza

Studying the Algorithm of Optimal Correction of Control Structure

Parameters for Generator Excitation Control *Fedor Mitin*

Deterministic winding function model for slotted induction machines validated by air gap magnetic field measurements *Matthias Stiller, Ingo Hahn*

Two-level Topology Optimization based on a Metaheuristic Method and Morphological Reconstruction *Shabnam Ruzbehi, Ingo Hahn*

Topology Optimization of Electrical Machines for NVH Purposes in E-mobility Applications - Part 1 *Johan Cederlund, Shafigh Nategh, David Lennström*

Modelling the Influence of the Mechanical Forces on the Commutation Process of a DC Motor *Johannes Wagner, Ingo Hahn*

Online Incremental Inductance Identification for Reluctance

Synchronous Motors *Matteo Berto, Luigi Alberti, Florian Martin, Marko Hinkkanen*

Room G

T064 - TT Industrial Automation, Communication, Networking and Informatics

Chairs: Reinder J. Bril, Teemu Mätäsniemi

A Method to Automatically Generate Semantic Skill Models from PLC Code *Aljosa Köcher, Tom Jeleniewski, Alexander Fay*

A Digital Twin for Analysis of Radiation Heating in Thermoforming Processes *Enrico Spateri, Fredy Ruiz, Giambattista Gruosso*

Benchmarking The Operation Times Of Nosql And Mysql Databases

For Python Clients *Mike Reichardt, Michael Gundall, Hans Dieter Schotten*

Robust detection of persons in emergency situations in public buildings *Jan Haase*

A Control Injection Attack against S7 PLCs - Manipulating the Decompiled Code *Wael Alsabbagh, Peter Langendörfer*

Speed Limits for Single-Beam Laser Marking *David Castells-Rufas, Francesc Bravo-Montero, Jordi Carrabina*

Room K

S501 - SS Modern Power Converters and Control for Renewable Energy Systems and SmartMicro Grids

Chairs: Pandav Kiran Maroti, Sanjeevikumar Padmanaban

A High-Step up and Low-Spikes Inverter based on Two T-type Coupled Inductors *Qing Cheng, Wei Wang, Yueshi Guan, Tingting Yao, Dianguo Xu*

A Comparison of Fixed-Parameter Active-Power-Oscillation Damping Solutions for Virtual Synchronous Generators *Yun Yu, Gibran David*

Agundis Tinajero, Sanjay K Chaudhary, Luona Xu, Nur Najihah Binti Abu Bakar, Josep M. Guerrero, Juan C. Vasquez

Islanding Classification With Optimized k-Nearest Neighbors for

Three-Phase Grid Connected Photovoltaic System *Faizah Fayaz, Ahteshamul Haque, K. V. Satya Bharath, Sanjeevikumar Padmanaban*

DC microgrid voltage stability by Model Free Super-Twisting Sliding Mode Control *Sarah Kassir, Moustapha Doumiati, Mohamed Machmoum, Clovis Francis, Maher El Rafei*

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	<p>A Lumped, Resonant Switched Capacitor Converter <i>Nakul Narayanan K., Andrew Cross, Hassan Taghizadeh, L. Umanand</i></p> <p>Doubly Fed Induction Generator with Multi-Vector Model Predictive Power Control <i>Mohammad Ebrahim Zarei, Milan Prodanovic, Dionisio Ramirez</i></p>
11:30-12:50	<p>Room L</p> <p>S461 - SS Model Predictive Control for Power Converters Chairs: Fadia SEBAALY, Hadi Y. KANAAN</p> <p>Direct Predictive Control for a Nine-Level Packed E-Cell (PEC9) Converter Based Shunt Active Power Filter (SAPF) <i>Fadia Sebaaly, Hadi Y. Kanaan, Jose Rodriguez, Kamal Al-Haddad</i></p> <p>Weighting Factorless Sequential Model Predictive Control Method with Fixed Switching Frequency for Five-Level T-type Photovoltaic Inverters <i>Mokhtar Aly, Fernanda Carnielutti, Ahmed Shawky, Emad M. Ahmed, Margarita Norambuena, Samir Kouro, Jose Rodriguez</i></p> <p>Rapid Stabilization of DC Microgrids with CPLs: Nonlinear Model Predictive Control <i>Elham Kowsari, Jafar Zarei, Roozbeh Razavi-Far, Mehrdad Saif</i></p> <p>Modulated Model Predictive Control for a Four-Leg Indirect Matrix Converter <i>Mohammad Hosseinzadeh, Maryam Sarebanzadeh, Marco Rivera, Javier Munoz</i></p> <p>A Model Predictive Current Control for a Three-Phase Modular Matrix Converter <i>Maryam Sarebanzadeh, Mohammad Ali Hosseinzadeh, Marco Rivera, Javier Munoz</i></p> <p>Model Predictive Control for an Improved Transformer-less Five-level PV Inverter Topology <i>Maryam Sarebanzadeh, Mohammad Hosseinzadeh, Cristian Garcia, Margarita Norambuena&#8236;; Jose Rodriguez</i></p>
	<p>Room I</p> <p>T0910 - TT Power Electronics & Energy Conversion Chairs: Deepak Ronanki, Arvind Kadam</p> <p>Linear Active Disturbance Rejection Control Design for Single-Phase UPS Inverters <i>Reza Rezaii, Reza Khalili, Issa Batarseh, Chinwendu Enyioha</i></p> <p>A Data-Driven Based Online Learning Control of Voltage Source Converter for DC Microgrids <i>Ahmed Soliman, Mahmoud Amin, Fayez El-Sousy, Osama Mohammad</i></p> <p>Modeling and Minimization of Switching Loss in Dual Active Bridge Converters <i>Negar Noroozi, Amirreza Poorfakhraei, Mehdi Narimani, Ali Emadi</i></p> <p>Dimming DC-DC LED Drivers: Luminous Efficiency, Power Losses, & Best-in-Class <i>Vasu Gupta, Gabriel A. Rincon-Mora</i></p> <p>Enhancing Multistep Finite Control Set Performance of 3L-NPC Converters using Optimal Pulse Patterns <i>Cristóbal González, Alejandro Angulo, Fernando Mancilla-David</i></p> <p>General Approach to Synthesize Multi-Port Power Converters for Hybrid Energy Systems <i>Sina Vahid, Ayman EL-Refaie</i></p>
	<p>Room H</p> <p>TUT04 - Power Hardware-in-the-loop Machine Emulators – A game-changer in industrial systems development and testing</p>

Thursday, 14 October 2021

Presenters

Dr. R. Sudharshan Kaarthik,
Associate Professor, Indian Institute of Space Science and Technology,
Thiruvananthapuram, India.

Dr. K. S. Amitkumat
Team-Lead, Power Testbed Applications,
OPAL-RT Technologies,
Montreal, Canada

Dr. Uday Deshpande,
CTO, D&V Electronics, USA

Room F

TUT02 - Fault-Tolerant and Cyber-Resilient Control of Renewable Microgrids

Presenters

Youmin Zhang
Professor
Concordia University, Montreal, Canada

Hamed Badihi
Associate Professor
Nanjing University of Aeronautics and Astronautics
Nanjing, Jiangsu, China

Saeedreza Jadidi
PhD Candidate
Concordia University, Montreal, Canada

Room E

TUT01 - Future power conversion techniques for utility scale grid integration of renewables

Presenters

Dr. Kaushik Basu
Associate Professor
Indian Institute of Science, Bangalore

Dr. Anirban Pal
Post-Doctoral Fellow
University of Nottingham, UK

Room M

S102 - SS Advances in Component and System Modeling and Simulation of Power Systems in Transition to Converter Dominated Systems

Chairs: Phylcia Cicilio, Timothy Hansen

Diesel Generator Model Development and Validation using Moving Horizon Estimation *Manisha Rauniyar, Phylcia Cicilio, Niranjana Bhujel, Ujjwol Tamrakar, Timothy M. Hansen, Mariko Shirazi, Robert Fourney, Hossein Moradi Rekabdarkolae, Reinaldo Tonkoski*

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Model Development of Diesel Generator using Volts/Hertz Limiter and Comparing Governor Models for Remote Islanded Microgrids *Chinmay Shah, Phylicia Cicilio, Mariko Shirazi, David Light, Dayne Broderson, Richard Wies, Manisha Rauniyar, Reinaldo Tonkoski, Timothy M. Hansen*

Cable Insulation Aging Simulation *Xuan Wang, Ahmed Arman, Mohammad Ali, Bin Zhang*

Power factor optimization with semi-definite programming relaxation in three-phase wireless power transfer systems for electric vehicles *Shuang Nie, Zhichao Luo, Peter Lehn*

Analyzing Rectangular Coil Wireless Power Transfer Based on Time Domain Discontinue Galerkin Method *Homa Arab, Bitu Arab, Steven Dufour, Kamal AL-Haddad*

Evaluation of DC-DC buck-boost partial power converters for EV fast charging application *Rodrigo Venegas Muñoz, Hugues Renaudineau, Sebastian Rivera, Samir Kouro*

Room J

T106 - TT Power Systems and the Smart Grid

Chairs: Ambrish Chandra, Rawad Zgheib

An energy management system for power exchange between multiple residential neighborhood microgrids *Pedro J. Arciniega, Diego Arcos-Aviles, Mauricio Rodriguez, Wilmar Martinez*

A hybrid generation system modeling for residential use in isolated areas of Ecuador *Jonathan Acosta, Mauricio Rodriguez, Carlos Alvarez, Diego Arcos-Aviles, Michelle Herrera, Paul Ayala, Jacqueline Llanos, Wilmar Martinez*

A Computational Model for Aging Dependability in Polymeric Cable Insulation *Qasim Khan, Shady S. Refaat, Haitham Abu-Rub, Hamid A Toliyat*

RISP: Tunable Fault-Tolerance for Distributed Iterative Numerical Solvers for the Smart Grid *Carlos J. Vélez-Rivera, Emmanuel Arzuaga-Cruz, Fabio Andrade, Agustín A. Irizarry-Rivera*

Online Estimation of Electromechanical Oscillations from Phasor Measurements *Mohammad Jahvani, Martin Guay*

Distributed Economic Dispatch over Strongly Connected Communication Networks *Mohammad Jahvani, Martin Guay*

Room D

INTEROP2 - TEAM (Automotive)

Cloud Computing Simulation platform for e-mobility, Siemens

Real-Time Sim & HIL for grids & EVs, Typhoon HIL

Energy Management & EVs, NC State University (MY Chow)

AUTO 4 (TBD), TBD

OPEN DISCUSSIONS

Chairs: Fei Gao, Akshay Rathore

Room B

T0212 - TT Control System, Robotics and Automation

Chairs: Wanxin Jin, Ya-Jun Pan

Adaptive and Neural Network-based Control Methods Comparison using different Human Torque Synthesis for Upper-limb Robotic Exoskeleton *Georgeta Bauer, Ya-Jun Pan*

A novel approach to extract the angular position estimation error for position and speed estimation of Interior Permanent Magnet

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Synchronous Machine *Carlos Enrique Alvaro Mendoza, Jesús De León Morales, Mohamed Assaad HAMIDA, Malek Ghanes*

Distributed Formation Tracking Control with Edge-Triggered Communication Mechanism *Zipeng Huang, Robert Bauer, Ya-Jun Pan*

Development of Agricultural Robot Platform with Virtual Laboratory Capabilities *German Monsalve, Oriane Thiery, Simon De Moreau, Alben Cardenas*

Task Space Bilateral Teleoperation of Co-manipulators using Power-based TDPC and Leader-follower Admittance Control *Chen Cai, Ya-Jun Pan, Steven Liu, Lucas Wan*

Terminal Sliding Mode Control for the Formation of a Team of Quadrotors and Mobile Robots *Ryan Adderson, Ya-Jun Pan*

Room C

WiE - Women in IES Session

15.30 - 15.40 UTC Welcome and Introduction to the Women in IES initiative
Prof. Lucia Lo Bello, University of Catania, Italy, IES representative for Women in Engineering

Prof. Yousef Ibrahim, Federation University Australia, IES VP for Membership

15.40-16.00 UTC: Invited Speech

Prof. Seta Bogosyan, Turkey/USA

Title: "Connected and Autonomous Transportation: Challenges and Need for International Networks"

Chair: Lucia Lo Bello

16.00-16.20 UTC: Invited Speech

Dr. Regina Roos, Typhoon-HIL GmbH, Switzerland

Title: "Diversity or Division of Work"

Chair: Morgan Kiani

16.20-16.40 UTC Invited Speech

Prof. Maria Ines Valla, Argentina

Title: "Women in Engineering within the National Research Council in Argentina"

Chair: Regina Roos

16.40-16.50 UTC: Wrap-up and Closing

Chairs: Lucia Lo Bello

Room A

T0414 - TT Electrical Machines and Drives

Chairs: Jose Antonino-Daviu, Shafiqh Nategh

Modeling and Design of a Tubular Linear Generator for Direct-Drive

Free-Piston Engine *Christophe S. Cyusa, Tamanwè Payarou, Dwaipayan Barman, Tamas Bertenyi, Philip Raphals, Chunyan Lai, Pragasen Pillay*

Performance of Mutually Coupled Switched Reluctance Machines in Generating Mode with Sinusoidal Current Excitation *Peter Azer, Aniket Anand, Ali Emadi*

Automatic Flux Linkage and Inductance Measurement for a Variable Flux Machine at Different Magnetization States *Bigyan Basnet, Pragasen Pillay*

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In-Situ Magnetization of a Cold Sprayed Permanent Magnet Rotor Using an Impulse Magnetizer *Mathews Bobby, Sumeet Singh, Jean-Michel Lamarre, Maged Ibrahim, Fabrice Bernier, Pragasen Pillay*

Dead Time Analysis of a Power-Hardware-in-the-Loop Emulator for Induction Machines *Seyedeh Nazanin Afrasiabi, Chunyan Lai, Pragasen Pillay*

On The Design and Performance Improvement of Single-Phase Induction Motors for Residential, Commercial and Industrial Applications *Olusegun Solomon*

Room G

TUT03 - Reliable and Stable Operation of DFIG Wind Power Converter

Presenters

Dao Zhou, Associate Professor, Aalborg University, Denmark

Chao Wu, Postdoc, Aalborg University, Denmark

Heng Nian, Professor, Zhejiang University, China

Yipeng Song, Control Engineer, Siemens Gamesa Renewable Energy, Denmark

Room K

S502 - SS Modern Power Converters and Control for Renewable Energy Systems and SmartMicro Grids

Chairs: Pandav Kiran Maroti, Rakesh Kumar

Capacitor Voltage Balancing Control Scheme for 2/3-Level DAB Converters *Chaochao Song, Ariya Sangwongwanich, Yongheng Yang, Frede Blaabjerg*

Distributed Predictive Control using Frequency and Voltage Soft Constraints in AC Microgrids including Economic Dispatch of Generation *Alex Navas-Fonseca, Claudio Burgos-Mellado, Juan S. Gomez, Jacqueline Llanos, Enrique Espina, Doris Saez, Mark Sumner*

A New Robust Control Strategy for Grid-Forming Voltage Source Converters *Saeed Ouni, S. Milad Hoseinizadeh, Houshang Karimi, Jean Mahseredjian*

On Droop-based Voltage and Frequency Restoration Techniques for Islanded Microgrids *Iresha Poonahela, Sertac Bayhan, Haitham Abu-Rub, Miroslav Begovic, Mohammad Shadmand*

Space Vector Modulation Scheme for Three-Phase Single-Stage SEPIC-Based Grid-Connected Differential Inverter *Ahmed Shawky Ahmed Shawky, Mokhtar Aly, Emad M. Ahmed, Samir Kouro, Jose Rodriguez*

Control of Grid-tied Dual-PV LLC Converter using Adaptive Neuro Fuzzy Interface System (ANFIS) *Sumana Ghosh, Abdullah Alhatlani, Reza Rezaii, Issa Batarseh*

Friday, 15 October 2021

07:00-08:20

Room P

S571 - SS Power Efficiency and Smart Measures Based on Advanced Techniques

Chairs: Djaffar OULD ABDESLAM, Dirk Benyoucef

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Recommendation System for Energy Consumption Behavior Change on Residents' Response and Stress *Yuki Takayama, Yuiko Sakuma, Hiroaki Nishi*

High Frequency PCB Trace Current Measurement in Power Converters Based on Tunnel Magnetoresistance *Weicong Lin, Shuai Shao, Junming Zhang*

Air-Conditioning Control with Spatial Recognition Using Stereo Infrared Array Sensors *Yuki Takayama, Saki Saito, Yuiko Sakuma, Hiroaki Nishi*

An Improved Incremental Conductance Based MPPT Algorithm for Photovoltaic Systems *Yacine Triki, Ali Bechouche, Hamid Seddiki, Djaffar Ould Abdeslam*

Hybrid AI improves Energy Forecasts by combining Fuzzy Rules, Evolutionary Strategies and Neural Networks *Matthias Lerner, Christoph Reich, Djaffar Ould Abdeslam*

Room O

S221 - SS DC Grid Technologies and Applications DC Grid Technologies, Circuit Breakers, Protection and Control

Chairs: Satish Naik Banavath, Harish Krishnamoorthy

A Boost Converter Integrated With DC Circuit Breaker *Yuyang Liu, Yufeng Wang, Shuai Ding, Yufei Tao, Weilin Li*

Enhancement of DC MCB Performance using Power Semiconductor Devices *Muhammed Ajmal C, Venkata Raghavendra Itte, Satish Naik B*
H-bridge Based Bidirectional Z-Source DC Circuit Breaker with Improved Device Stress and Automatic Reclosing Capability *Venkata Raghavendra Itte, Satish Naik B, Sreekanth Thamballa*

Enhancement of Power Rating for a Bidirectional DC Circuit Breaker using Modular Commutation Circuits *Shubham Agrawal, Subba Reddy B, Loganathan Umanand*

Comparison of Switching Patterns of SVM for a Novel High Gain Indirect Matrix Converter *Maraka Israyelu, Sashidhar Sampathirao*

Current Source Isolated Bidirectional Series Resonant DC-DC Converter for Solar Power/Fuel Cell and Energy Storage

Application *Kiran Bathala, Dharavath Kishan, Nagendrappa Harischandrappa*

Room L

S243 - SS DCDC Converters Circuits, Modeling, Control and Applications

Chairs: Mahajan Sagar Bhaskar, Sanjeevikumar Padmanaban

A Novel Switching Loss Analysis of Coupled-Inductor Impedance-Source Inverters *Hongpeng Liu, Lai Wei, Qingchao Kong*

Comprehensive Analysis on the Imbalance of Voltage and Current in Multi-module Series-parallel WPT Systems *Shuci Yu, Fuxin Liu, Minghua Zhou, Xuling Chen*

Small Signal Modeling of Series Resonant Converter based on State-plane Analysis *Vishal Anand Aisur Gopalakrishnan, Utsab Kundu, Ranganathan Gurunathan, Kaushik Basu*

A High efficiency and High power density Asymmetrical Half-bridge Flyback Converter for Data Centers *Mingxiao Li, Ziwei Ouyang, Michael A.E. Andersen*

Power loss modelling and efficiency optimization of a multi-output

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Flyback converter *Fabio Cacciotto, Mirko Sciortino, Danilo Termini, Mario Cacciato, Santi Agatino Rizzo, Giacomo Scelba*
Novel Isolated Multiple-Input Buck-Boost DC-DC Converter for Renewable Energy Sources *Immanuel Ninma Jiya, Huynh Van Khang, Ahmed Salem, Nand Kishor, Rade Ciric*

Room I

T093 - TT Power Electronics & Energy Conversion

Chairs: Yulin Si, Kaiyun Lu

Modeling and Design Considerations in the Control of an Isolated Bidirectional Electric Vehicle Charger *Goutam Ghosh, Viju Nair*
Design and Experiment of a New Wave Power Conversion Device for Self-Powered Sensor Buoy *Hengyu Wang, Weimin Wu, Lixun Zhu, Eftichios Koutroulis, Kaiyun Lu, Frede Blaabjerg*

Two-Stage Wide-Output High-Frequency-Voltage Inverter for Electrosurgical Generator *Ling Gu, Lingchen Wang*

A Voltage Overshoot Design Method for DC-DC Converter Based on State Overshoot Concept *Hong Li, Qian Liu, Zhipeng Zhang, Xiaheng Jiang, Guoen Cao, Yajing Zhang*

Multistage High Gain DC-DC Converter Topologies using SDLC Network for DC microgrid *Sija Gopinathan, V. Seshagiri Rao, Kumaravel S*

A Virtual Inertia Control Strategy with Current Feedforward to Improve Voltage Stability for Power Router *Shaokun Niu, Tong Liu, xl Liu, Qicai Ren, Zhiwei Chen, Alian Chen*

Room H

T123 - TT Signal and Image Processing and Computational Intelligence

Chairs: Xianke Dong, Bernhard Haslhofer

Learning Rule Optimization and Comparative Evaluation of Accelerated Self-Organizing Maps for Industrial Applications *Madhavi Gayathri, Amanda Ariyaratne, Sachin Kahawala, Daswin De Silva, Daminda Alahakoon, Vishaka Nanayakkara, Evgeny Osipov, Xinghuo Yu*

Adaptive change detection of the temperature pattern of the face for identifying deceit *Saswata Satpathi, Sourav Bagchi, Aurobinda Routray, Parthasarathi Satpathi, Ritwik Dash*

On an improved F0 estimation based on l2-norm regularized TV-CAR speech analysis using pre-filter *Keiichi Funaki*

Attention based Object Classification for Drone Imagery *Choi Jehwan, Jo Kanghyun*

Human Face Detection and Tracking Using RetinaFace Network for Surveillance Systems *Moh. Edi Wibowo, Ahmad Ashari, Ardacandra Subianto, Wahyono Wahyono*

Transfer Learning Strategies for Anomaly Detection in IoT Vibration Data *Clemens Heistracher, Anahid Jalali, Indu Strobl, Axel Suendermann, Sebastian Meixner, Stephanie Holly, Daniel Schall, Bernhard Haslhofer, Jana Kemnitz*

Room F

T073 TT Motion Control and Mechatronics

Chairs: Zhang Chen, Feng Shu

Fault Tolerance Algorithm of Steering Actuator in Three-Wheeled Electric Mobility Based on Model Predictive Control *JungHyun Choi,*

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Hiroshi Fujimoto, Sehoon Oh

Adaptive Iterative Sliding Mode Control: Development, Synthesis, and Application of a Flexure-Joint Biaxial Gantry Stage *Wenxin Wang, Jun Ma, Zilong Cheng, Xiaoxue Zhang, Xiaolong Chen, Xiaocong Li, Tong Heng Lee*

Fractional-Order Sliding Mode Control with Adaptive Neural Network for High-Precision Position Control of Reluctance Actuators *Zidong Liu, Yunlang Xu, Pan Wang, Xiaofeng Yang, Zhi Li, Feng Shu*

Autonomous Parameter Design for Cascade Structure Feedback Controller Based on Time and Frequency Domain Optimization *Eitaro Kuroda, Yoshihiro Maeda, Makoto Iwasaki*

Cascaded NMPC for the Precise Position Control of a Pneumatic Actuator *Ricus Husmann, Harald Aschemann*

A nonlinear optimal control approach for voltage source inverter-fed three-phase PMSMs *Gerasimos Rigatos, Masoud Abbaszadeh, Patrice Wira, Pierluigi Siano*

Room E

T023 - TT Control System, Robotics and Automation

Chairs: Zhiguang Feng, Qinyuan Ren

Tele-driving including time-varying delay based on MPC with stability constraints *Hiroki Nagakura, Yuhei Hatori, Yutaka Uchimura*

Multi-surface Sliding Mode Control of a Thrust Vectored Quadcopter with a Suspended Double Pendulum Weight *Clevon Peris, Michael Norton, Sui Yang Khoo*

Plug-and-play adaptation in autopilot architectures for unmanned aerial vehicles *Peng Li, Di Liu, Simone Baldi*

Multi-Agent Cooperative Pursuit-Evasion Control Using Gene Expression Programming *Yinjie Ni, Shuhua Gao, Sunan Huang, Cheng Xiang, Qinyuan Ren, Tong Heng Lee*

sGS-sPALM for Optimal Decentralized Control: A Distributed Optimization Approach *Xiaoxue Zhang, Jun Ma, Zilong Cheng, Wenxin Wang, Xiaolong Chen, Tong Heng Lee*

An Effective Neuro-adaptive Control Approach for Underwater Flexible Cranes With Uncertainties *Yue Wang, Zhengguo Zheng, Ning Sun, Tong Yang, He Chen, Zhuoqing Liu*

Room R

S311 - SS Emerging Techniques in Design, Optimization, and Interconnection with the Grid for Solar Photovoltaic System

Chairs: Mohd Tariq, Ali I. Maswood

A Single Input Dual Output High Gain DC-DC Converter With Reduced Voltage Stress *Shahrukh Khan, Kush Varshney, Mohammad Zaid, Mohd Tariq, Javed Ahmad, Zeeshan Sarwer*

CORDIC based Orthogonal Signal Generation with In-loop Moving Average Filter for Single Phase PLL Systems *Muddasani Satyanarayana, A V Ravi Teja*

Flexible Power Point Tracking Algorithm for Photovoltaic Systems Using the Newton's Method *Anusha Kumaresan, Hossein Dehghani Tafti, Glen G. Farivar, Naga Brahmendra Yadav Gorla, Neha Beniwal, Josep Pou*

A Novel Converter-level Si Material Degradation Monitoring Method Based on the DC Bus Leakage Current *Qinghao Zhang, Geye Lu, Pinjia Zhang*

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Adaptive Active Grounding Fault Regulation Method Considering the Influence of Line Impedance in Distribution Network *Yuchao Hou, Qi Guo, Chunming Tu, Jiayuan Gao, Fei Jiang, Fan Xiao*
A Novel Method for Calculating the Three-phase Unbalanced Shunt Compensation Current in the Low Voltage Distribution Network *Li Yin, Alian Chen*

Room M

S421 - SS Internet of Things Technology for Industrial Smart City Applications

Chairs: Umair Mujtaba QURESHI, Zuneera UMAIR

Designing a System for Data-driven Risk Assessment of Solar Projects *Zuneera Umair, Inez M. Zwetsloot, Luk Kin Ming Marco, Jiwoo Shim, Daniil Kostromin*

A Two-step Barrier Coverage Redeployment Strategy for Hybrid Sensor Networks *Hao Zhou, Gong Chen, Yonghua Xiong, Jinhua She*
Mobile Proximity Channel Using Vibration *Kam Hon Lau, Umair Mujtaba Qureshi, Bruno Silva, Gerhard Petrus Hancke*

Activity Monitoring of the Potential COVID'19 Individuals in Quarantine Facility *Mehak Fatima Qureshi, Rizwan Ahmed Kango, Nafeesa Zaki, Faisal Karim Shaikh*

Altitude Calibration toward Floor Change Detection *Benjawan Srisura, Piyakul Tillapart, Suparwat Charoenvikrom, Songsak Channarukul*

A Differential Evolution Approach to Trust based Ridesharing Systems *Fu-Shiung Hsieh*

Room N

S342 - SS Fuel Cell System Application in Transportation Electrification

Chairs: Rui Ma, Elena Breaz

An Optimization Energy Management Strategy Based on Dynamic Programming for Fuel Cell UAV *Yigeng Huangfu, Tianying Yu, Shengrong Zhuo, Wenzhuo Shi, Zelong Zhang*

PEMFC water management fault diagnosis method based on principal component analysis and support vector data description *Lu JingJing, Gao Yan, Zhang LuYu, Li Kai, Yin Cong*

Modeling of Pt Degradation in Polymer Electrolyte Fuel Cells: Effect of Electrode Potential Cycles *Weibo Zheng, Liangfei Xu, Zunyan Hu, Yujie Ding, Jianqiu Li, Minggao Ouyang*

A Novel Power Decoupling Control Strategy for Brushless Doubly-Fed Machine *Yonglu Chen*

Observer-based Adaptive Sliding Mode Control of Interleaved Boost Converter for Fuel Cell Vehicles *Xinyang Hao, Issam Salhi, Salah Laghrouche, Youcef Ait Amirat, Abdesslem Djerdir*

Dynamic Modelling of Fuel Cell Systems for Electric Propulsion *Nastaran Shakeri, Mehdi Zadeh*

Room J

T131 - TT TT Renewable Energy Systems and Smart Grid

Chairs: Yang Tang, Brendan McGrath

A Novel Spotted Hyena Optimization for MPPT under Partial Shading Conditions *Swetha K.T., Barry Venugopal Reddy, Abin Robinson, Rohit*

Friday, 15 October 2021

Kumar Jain

Research on High Proportion Renewable Energy of Hybrid Energy Storage Containing Hydrogen Storage *Ying Wang, Yong Gang Li, Xiuting Sun, Shumin Zhao*

A Low-cost and Stand-alone Ground Based Sensing Station for Efficient Solar Forecasting in PV Power Systems *Qiyang Lei, Xiaozhou Liu, Weidong Xiao, Yang Du*

Dynamic Flexible Power Point Tracking in Photovoltaic Power Plants *Aditi Narang, Ghias G. Farivar, Hossein D. Tafti, Salvador Ceballos, Josep Pou, Christopher D. Townsend, Georgios Konstantinou*

Novel Shade Dispersion Method to Extract Maximum Power under partial shading condition *Vinaya Chandrakant Chavan, Suresh Mikkili, Praveen Kumar Bonthagorla*

Solar PV Detection Using an Optimal Template Approach with Genetic Algorithm *Wenhua Ling, Geordie Dalzell, Xinghuo Yu, Brendan McGrath, Peter Sokolowski*

Room D

S051 - SS Advanced Sensing and Control for Intelligent Robots

Chairs: Zhan Li, Yang SHI

Immersive Operation System for Hexapod Robot with Follow-the-Contact-Point Gait Control *Yuya Murai, Shinkichi Inagaki, Tatsuya Suzuki*
Local identification of 3D point cloud based on structured light *Zhang Jiahao, Zhang Jian*

A Multi-target Tracking Algorithm for Fast-moving Workpieces Based on Event Camera *Yuanze Wang, Chenlu Liu, Sheng Li, Tong Wang, Weiyang Lin, Xinghu Yu*

Path Planning of Mobile Robot Based on Adaptive Ant colony algorithm *Xiuqing Yang, Ni Xiong, Yong Xiang, Mingqian Du, Xinzhi Zhou, Yong Liu*

Trajectory Control and Simulation of 6-DOF Robotic System Based On Screw Theory *Yong Xiang, Xiaoke Deng, Yi Chen, Chenlu Liu, Xiaobo Xu, Mao Li*

Subpixel segmentation for ceramic defects *Weihua Liu, Xianqiang Yang, Yimin Wang, Xuebo Yang, Weiyang Lin*

Room B

S291 - SS Emerging NearField Wireless Power Transfer Technologies

Chairs: Minfan Fu, Ming Liu

Bidirectional High-Frequency Inductive Power Transfer Systems Based on Differential Load-Independent Class E Converters *Yifan Jiang, Heyuan Li, Minfan Fu*

Resonant circuit topology Comparison and CC / CV Characteristic Evaluation Considering the Difference in Power Supply in Capacitive Wireless Power Transfer circuits *Shunya Kuroda, Takehiro Imura*

A Modular Stacked Architecture with Virtual AC Bus for Multi-port Wireless Energy Interconnection System *Minghua Zhou, Fuxin Liu, Kelin Lei, Xuling Chen*

Analysis and Optimization of High-Power MCR Bidirectional WPT System With High Distance-Diameter Ratio *Haojie Shen, Fuxin Liu, Chaoyang Yan, Xuling Chen*

Proposal of Sensorless Vehicle Detection Method for Start-up Current

Friday, 15 October 2021

Control in Dynamic Wireless Power Transfer System *Takumi Hamada, Daisuke Shirasaki, Toshiyuki Fujita, Hiroshi Fujimoto*
Optimal Coil Design and Control Strategy for a High-power and Medium-frequency Wireless Power Transfer System *Xiang Hao, Huan Zhang, Jibin Song, Ming Liu, Chengbin Ma*

Room C

S091 - SS Advanced signal and image processing techniques for condition monitoring of Electric Machines and Drives

Chairs: Jose A Antonino-Daviu, Hubert Razik

On-line Method for High-sensitivity Leakage Current Measurement of Converter-connected Transformers in Microgrids *Geye Lu, Yang Wu, Dayong Zheng, Pinjia Zhang*

Light-weight Convolutional Neural Network for Distracted Driver Classification *Duy-Linh Nguyen, Putro Muhamad Dwisnanto, Xuan-Thuy Vo, Kang-Hyun Jo*

A New Diagonally Implicit Implementation of the Continuous-Discrete Extended Kalman Filters for State and Parameter Estimation of Nonlinear Dynamic Systems *Jean-Marie Guihal, Francois Auger, Nicolas Bernard, Emmanuel Schaeffer*

Mechanical fault detection for induction motors based on vibrational analysis: a case study *Verdiana Del Rosso, Andrea Andreucci, Simonetta Boria, Maria Letizia Corradini, Antonio Ranalli*

Local Mahalanobis Distance Envelope Using A Robust Healthy Domain Approximation For Incipient Fault Diagnosis *Junjie Yang, Claude Delpha*

A Three-Phase Current Reconstruction Algorithm for an Improved Fault Tolerant Control Using Positive Fundamental Component Estimator *Abdelilah Chibani, Abdelmadjid Gouichiche, Zakaria Chedjara, Yacine Badaoui, Patrice Wira, Ahmed Safa*

Room Q

S731 - SS Static and dynamic wireless charging solution for EVs Coil configuration, design, and control of power electronics converters

Chairs: Subrata Banerjee, Kundan Kumar

Methodology of Inductive Power Transfer Asymmetrical Coils Design for Space-Constrained Applications *Hou-Wa Wong, Kin-long Leong, Io-Wa lam, Iok-U Hoi, Chi-Seng Lam*

Three-element compensation network for DWPT systems for power transfer boosting *Rupesh Kumar Jha, Sireesha Tamada, Anand Kumar, Swati Jaiswal, Giuseppe Buja*

An Inductive Power Transfer Converter with Irradiance-Adaptive Hybrid MPPT Control Strategy for Floating-PV System *Chio-Kuan Choi, Io-Wa lam, Iok-U Hoi, Chi-Seng Lam*

Comparative Analysis of Classical and Predictive Control of Bidirectional Quasi Z-Source Converter *Md Tuhin Rana, Anurag Sarkar, Md Abid, Subrata Banerjee, Kundan Kumar*

Simulation Analysis of Different Operating Modes of ZETA-SEPIC Converter for Electrical Vehicles *Ankit Sagathiya, Ronak Babariya, Jiten Chavda, Saraswat Shivani*

Parallel Collaborative Motion Planning with Alternating Direction Method of Multipliers *Xiaoxue Zhang, Zilong Cheng, Jun Ma, Lin Zhao,*

Friday, 15 October 2021

Cheng Xiang, Tong Heng Lee

Room A

T043 - TT Electrical Machines and Drives

Chairs: Xueqian Wang, Gaolin Wang

Capacitor Current Reduction of Double Three Phase PMSM Drive

System by Real-time MPC *Akiyoshi Suzuki, Shinji Doki, Koji Imai, Yasuaki Aoki, Kosuke Kondo*

Grid Current Harmonic Suppression for Motor Drive with Reduced DC-

Link Capacitance in Weak Grid *Zekun Ren, Gaolin Wang, Dawei Ding, Guoqiang Zhang, Nannan Zhao, Dianguo Xu*

Voltage-Current Hybrid Model Based Extended Flux Observer with

Multiple SOGs for Sensorless IPMSM Drives *Zhibin Feng, Guoqiang Zhang, Siqi Wang, Gaolin Wang, Dianguo Xu*

Online Estimation of DC-Link Capacitance for Permanent Magnet

Synchronous Motor Drive with Reduced DC-Link Capacitor *Bingqi Zhou, Gaolin Wang, Runfeng Gao, Guoqiang Zhang, Nannan Zhao, Dianguo Xu*

Unknown Disturbance Compensation Control of PMSM based on

Extended State Observer *Ziqiang Zhang, Xianting Zhang, Ruiqing Ma, Peng Chen, Weizhou Yang*

A Modified Current Controlled Induction Motor Drive Based on Steady State Model of Vector Drive Using Proportional Resonant Controllers

in Stationary Reference Frame *Himanshu Swami, Amit Kumar Jain*

Room G

S121 - SS Advances in Electric Vehicle Charging and Next Generation Wireless Technology

Chairs: Rajesh Gupta, Karthikeyan V.

Bidirectional Power Flow Control of Single Phase Matrix Converter

Based Hybrid WPT for E-Vehicle Charging and Discharging *Abhishek Singhal, Narsa Reddy Tummuru*

Wind Energy based EV Charging Station along with Power Quality

Enhancement *Zubaida Khan, Rajesh Gupta*

Maximum Output Power Design Considering the Efficiency in Wireless

Power Transfer Coils *Yuto Yamada, Takehiro Imura*

A Rack Coil for Metal Foreign Object Detection in WPT System *Chao*

Qi, Hongyu Duan, Junwei Guo, Tian Sun, Wenwu Wang, Funing Yang

Proposal of Ferrite-less and Capacitor-less 85 kHz Four-layer Coil for

Stationary Wireless Power Transfer *Koki Hanawa, Takehiro Imura*

A Novel Type of V-Trench SiC-MOSFET and an Improved High-Power

Single-Ended Inverter for very Low Loss Operation *Shougo Hirooka,*

Hideki Omori, Kunihiro Sakamoto, Toshimitsu Morizane, Hidehito Matayoshi

Room K

S032 - SS Advanced Electrical Machines and Drives for Transportation Electrification

Chairs: Qingsong Wang, Xing Zhao

Speed Synchronous Control of Dual-BLDCMs based on MRAC for a

Hoist Application *Weizhou Yang, Ruiqing Ma, Tianxing Li, Qianbao Mi, Ziqiang Zhang, Jiayong Peng*

Phase-lead Repetitive Control of a PMSM with Field-oriented Feedback

Linearization and a disturbance observer *Yusai Zheng, Zhenwei Cao, Zhihong Man, Artheec Kumar, Song Wang*

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	<p>Networked PMSM System with Multiple-step Predictive Control and Sliding Mode Control <i>Yanmin Wang, Guangxin Duan, Yuchen Liu</i></p> <p>Multi-Objective Optimization of a Quadruple 3-Phase Inductive Electrically Excited Synchronous Machine for 48V Traction Drives <i>Andreas Gneiting, Nejila Parspour</i></p> <p>AC Losses Analysis Approaches for Electric Vehicle Motors with Hairpin Winding Configuration <i>Payam Shams Ghahfarokhi, Andrejs Podgornovs, Antonio J. Marques Cardoso, Ants Kallaste, Anouar Belahcen, Toomas Vaimann</i></p> <p>Rapid analytical method to evaluate eddy current losses in hairpin wound IM due to PWM <i>Lino Di Leonardo, Andrea Credo, Marco Tursini, Marco Villani</i></p>
08:30-09:00	<p>Plenary & Keynote</p> <p>IECON2021 Keynote 5: Praveen Jain Resonant Power Conversion: Insights from a Lifetime of Experience Praveen Jain Queen's University, Canada Chairs: Makoto Iwasaki</p>
09:00-09:30	<p>Plenary & Keynote</p> <p>IECON 2021 Keynote 6: Jay Iyengar Trends in Off-Hwy vehicle Electrification Technology Jay Iyengar Chief Technology Officer, CNH Industria Chairs: Makoto Iwasaki</p>
10:00-10:20	<p>Room C</p> <p>ICELIE 2021 Opening Chairs: Larisa Dunai, Gayan Kahandawa</p>
10:00-11:20	<p>Room O</p> <p>S721 - SS Solid State Transformer for Modern Power Grid Chairs: Marco Liserre, Pradyumn Chaturvedi</p> <p>Potentials and Challenges of Multiwinding Transformer-Based DC-DC Converters for Solid-State Transformer <i>Thiago Pereira, Felix Hoffmann, Rongwu Zhu, Marco Liserre</i></p> <p>Breadth-First Search Leakage Tolerant Commutation Method for Matrix Converters in Three-Phase Solid State Transformers <i>Pedro Costa, Sónia Pinto, Fernando Silva</i></p> <p>New Operation Opportunities for the Solid State Transformer in Smart Homes: A Comprehensive Analysis <i>Vitor Monteiro, Joao Lopes, Carlos Moreira, Joao Afonso</i></p> <p>Inverter and Battery Drive Cycle Efficiency Comparisons of Multilevel and Two-Level Traction Inverters for Battery Electric Vehicles <i>Nina Sorokina, Julian Estaller, Anton Kersten</i></p> <p>Optimal Switching Sequence Model Predictive Control for Single-Phase Cascaded H-Bridge <i>Pablo Jesús Gómez García, Luis Galván García-Pérez, Eduardo Galván Díez, Juan Manuel Carrasco Solís, Sergio Vázquez Pérez</i></p> <p>Half-Bridge Trans-Z-Source Inverter with High Boost Factor <i>Hamed Mashinchi Maheri, Elias Shokati Asl, Ebrahim Babaei, Mehran Sabahi,</i></p>

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Dmitri Vinnikov

Room L

S351 - SS Futureproof Power Electronic Systems and Control for Residential Microgrids

Chairs: Dmitri Vinnikov, Enrique Romero-Cadaval

Performance Evaluation of the Universal Photovoltaic String Converter During the Operation in DC Microgrid Environment *Oleksandr Matiushkin, Dmitri Vinnikov, Oleksandr Husev*

Energy Management of an Isolated Microgrid: A Practical Case *Ali Ghasemi-Marzbali, Roya Ahmadihangar, Sina Gouran Orimi, Mohammad Shafiei, Tobias Häring, Argo Rosin*

Machine Learning Approach for Flexibility Characterisation of Residential Space Heating *Tobias Häring, Roya Ahmadihangar, Argo Rosin, Helmuth Biechl*

New High-Gain Non-Inverting Buck-Boost Converter *Omar Abdel-Rahim, Andrii Chub, Dmitri Vinnikov, Andrei Blinov*

Kalman-filter Based Maximum Power Point Tracking for a Single-Stage Grid-Connected Photovoltaic System *Ehsan Farrokhi, Hoda Ghoreishy, Roya Ahmadihangar, Argo Rosin*

Current-Fed Partial Power Converter for Photovoltaic Applications in DC Microgrids *Tanel Jalakas, Roman Kosenko, Andrii Chub, Dmitri Vinnikov, Andrei Blinov*

Room I

T097 - TT Power Electronics & Energy Conversion

Chairs: Gonzalo Abad, Samir Kouro

Current Sensorless Control Strategy for Nine-Level Packed-E-Cell Rectifier *Naki Guler, Hasan Komurcugil, Sertac Bayhan, Samet Biricik*

Comprehensive Analysis of Harmonic Signature Resulting from Open Switch Fault in Interleaved Boost Converter *Abdelmadjid Gouichiche, Yacine Badaoui, Ahmed Safa, Abdelilah Chibani, Mohamed Benbouzid, Zakaria Chedjara*

Modeling, Analysis and Control of Current Source Converter *Quentin Combe, Serge Pierfederici, Mathieu Weber, Stephane Dufour*

General DAB 1st Harmonic TPS State Space Model *Simon Uicich, Jean-Yves Gauthier, Xuefang Lin Shi, Bruno Allard, Arnaud Plat*

On the impact of controller implementations on passivity and damping properties in grid-following MMC-HVdc applications *Carolin Hirsching, Alexander Bisseling, Simon Wenig, Max Goertz, Christina Bischoff, Michael Suriyah, Thomas Leibfried*

Managing Inrush Current in A Variable Speed Drive Short Term Power Interruption Ride-Through Module *Freeman Chiranga, Lesedi Masisi*

Room H

S301 - SS Emerging Techniques in Design, Optimization and Testing of Traction Electric Machines for Electrified Transportation

Chairs: Wenlong Li, Mohammad Sedigh Toulabi

Sustainability Aspects of Electrical Machines For E-Mobility

Applications Part II: Aluminium Hairpin vs. Copper Hairpin *Alessandro Acquaviva, Michela Diana, Bharadwaj Raghuraman, Linnea Petersson, Shafiqh Nategh*

Multiobjectively optimized PMSynRM cooling for increased vehicle

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efficiency Raik C. Orbay, Alexandra Tokat, Michele Becciani, Torbjörn Thiringer, Georgios Mademlis, Aditya Pratap Singh, Carl Holmberg
Performance Comparison Between Rare-Earth and Ferrite-based PM Transverse Flux Generator for Small-Scale Direct-Drive Wind Turbine Reza Nasiri-Zarandi, Ahmadreza Karami-Shahnani, Mohammad Sedigh Toulabi
Torque and Loss Optimized Rotor Bar Design for an Induction Machine Using a Nondominated Genetic Algorithm Through Objective Function Modeling Tim Stachl, Areej Fatima, Mohammad Sedigh Toulabi, Wenlong Li, Anthony Lombardi, Jimi Tjong, Narayan C. Kar
Permeance-Based Equivalent Circuit Modeling of Induction Machines Considering Leakage Reactances and Non-Linearities for Steady-State Performance Prediction Areej Fatima, Tim Stachl, Mohammad Sedigh Toulabi, Wenlong Li, Jimi Tjong, Glenn Byczynski, Narayan C. Kar
Improvement of Electromagnetic Force and Acceleration in an Asymmetrical Star-Delta Winding IPMSM through Stator and Rotor Geometrical Modifications Pengzhao Song, Mohammad Sedigh Toulabi, Wenlong Li, Shruthi Mukundan, Glenn Byczynski, Jimi Tjong, Narayan C. Kar

Room F

S161 - SS Advances in Renewable Energy Systems Resilient Control

Chairs: Mohamed Benbouzid, Hafiz Ahmed

A Data-Driven Detection strategy of False Data in Cooperative DC Microgrids Yixian Yang, Li Guo, Xialin Li, Jiabin Li, Wei Liu, Huihui He
Combined Control of Grid Connected Converters for Resiliency Improvement of Smart Micro Grids against Multiple Risks Mohammadsadegh Eslahi, Sadegh Vaez-Zadeh, Jose Rodriguez
A Modified Perturb and Observe MPPT Method for Photovoltaic Power Systems Rasool Kahani, Mohsin Jamil
Using Electric Water Heater Tank as an Energy Storage Solution to Solve the Duck Curve Issue Nicolas Sockeel, Sumit Srivastava, Benjamin Futrell, Robert Cox, Michael Mazzola
Hybrid Fault-Tolerant and Cyber-Resilient Control for PV System at Microgrid Framework Saeedreza Jadidi, Hamed Badihi, Youmin Zhang
PLL-Based Sensorless Control for Single-Stage Current Source Inverter in Motor Drive Application Emilio Carfagna, Giovanni Migliazza, Giampaolo Buticchi, Emilio Lorenzani, Zhuang Xu, Zhixiang Zou, He Zhang

Room E

T028 - TT Control System, Robotics and Automation

Chairs: Yunsong Xu, Okyay Kaynak

Robust Discrete-Time Sliding-Mode Control for a Duocopter Using an Extended Kalman Filter Joey-Falk Woitas, Harald Aschemann
Flexible Multibody System Model of a Spider Crane with two Extendable Booms Anja Patricia Regina Lauer, Boris Blagojevic, Otto Lerke, Volker Schwieger, Oliver Sawodny
Change-based causes in counterexample explanation for model checking Polina Ovsiannikova, Antti Pakonen, Valeriy Vyatkin
Efficient Polyline Surface Mapping with Strong Error Bounds Yujie Lian, Georg Rempfer, Hadi Askaripoor, Jonas Landsgesell, Alois Knoll
Robust Fault-Tolerant Control Design for Fuzzy Networked Control

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Systems with Data Drift and Sensor Failure *Jafar Zarei, Hossein Kargar, Roozbeh Razavi-Far, Mehrdad Saif*
On the Interaction Force Sensing Accuracy Of Franka Emika Panda Robot *Razvan Andrei Budau Petrea, Massimiliano Bertoni, Roberto Oboe*

Room M

S422 - SS Internet of Things Technology for Industrial Smart City Applications

Chairs: Umair Mujtaba QURESHI, Gerhard Petrus HANCKE

OTP-Based Symmetric Group Key Establishment Scheme for IoT Networks *Sujash Naskar, Tingting Zhang, Gerhard Hancke, Mikael Gidlund*

IoT Bicycle Sharing Service for Smart City Transport *Riaan Fourie, Musa Ndiaye, Gerhard Hancke*

Empirical Analysis of LoRaWAN-based Adaptive Data Rate

Algorithms *Charles Lehong, Bassey Isong, Francis Lugayizi, Adnan Abu-Mahfouz*

A Lyapunov-based Real Time Energy Management System for Smart IoT Homes *Hailing Zhu, Khmaies Ouahada, Adnan Abu-Mahfouz*

A Machine Learning approach to Intrusion Detection in Water

Distribution Systems – Literature Review *Ignituous Mboweni, Daniel Ramotsoela, Adnan Abu-Mahfouz*

Augmented and Mixed Reality based Decision Support Tool for the Integrated Resource Plan *Devashen Govender, Jayendran Moodley, Reevana Balmahoon*

Room N

S541 - SS Multiphase machines and their controls

Chairs: Mohan Aware, Atif Iqbal

Sensorless controls of a 7-phase bi-harmonic Surface-mounted PM Machine *Florent Becker, Franck Scuiller*

Hybrid Resonant Induction Machine for High-Speed

Applications *Ahmad Abdullallah, Yoshiyuki Komi, Rajesh Deodhar, Chiaki Umemura*

Availability analysis and quantification of electrical multiphase machines *Louis Dassonville, Jean-Yves Gauthier, Xuefang Lin-Shi, Ali Makki, Alexandre Siccardi*

Modelling, Harmonic Compensation, and Current Sharing Between Winding Sets of Asymmetric Nine-Phase PMSM *Sobhan Mohamadian, Carlo Cecati*

A Novel Spoke Type Interior PM Rotor Structure for a 9-Phase Unbalanced and Asymmetric Winding Motor *Yucel Demir, Metin Aydin*

Virtual-Flux Finite Set Model Predictive Control of Dual-Three Phase IPMSM Drives *Williem Agnihotri, Diego Valencia, Wesam Taha, Babak Nahid-Mobarakeh*

Room J

T132 - TT TT Renewable Energy Systems and Smart Grid

Chairs: Fernando Lezama, Zita A. Vale

Implementation and Performance Analysis for Energy Harvesting-based Wireless Sensor Networks *Nga Dinh Haugen, ØYstein Tveito, Phuong Ha, Otto Anshus*

ANN Based Power Management Strategy For Standalone

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Microgrids *Preetha Sreekumar, Maitha Alhosani, Vinod Khadkikar*
Generation of a TMY for Tripoli City Using the Finkelstein –Schafer Statistical Method *Farag Alargt, Yosof Khalifa, Ahmad Kharaz*
Design and Computational Fluid Dynamics Simulation of a Novel Stirred Photo-Bioreactor *Rayane Hijazi, Jihane Rahbany Mounsef, Hadi Y. Kanaan*
Adaptive nonlinear control of floating wind turbines: new adaptation law and comparison *Mohammed Taleb, Alice Marie, Cheng Zhang, Mohamed Hamida, Pierre-Etienne Testelin, Franck Plestan*
An Overview of Grid-Forming Control for Wind Turbine Converters *Yun Yu, Sanjay K. Chaudhary, Saeed Golestan, Gibran David Agundis Tinajero, Juan C. Vasquez, Josep M. Guerrero*

Room D

INTEROP3 - IEEE 1451 & Wireless Interface

P1451.0, Lee/Song/Schmalzel
 P1451.5X, Kim Fung Tsang
 IEEE 1451 & IEC 61499 Interoperability, Reza Abrishambaf
 OPEN DISCUSSIONS
 Chairs: Allen Chen, Eugene Song

Room B

T0412 - TT Electrical Machines and Drives

Chairs: Shoujun Song, Atif Iqbal
Lifetime characterization of partial discharge properties of insulation material exposed to voltage pulse stress *Ali Qerkini, Markus Vogelsberger, Werner Grubelnik, Edgar Moser, Thomas Wolbank*
A Novel Resistance Optimization Approach for Non-Regenerative Resistive Dynamic Braking for PMSM *Melih Nafi Ekim, Alpay Oguz Unal, Ali Bekir Yildiz*
Performance Comparison of Different IPM Motor Topologies for Spindle Motor Drives *Oguzhan Ocak, Mehmet Gulec, Metin Aydin*
Speed, EMF and Rotor Position Estimation of PMSM using Phase Locked Loop and Simple Sliding Mode Observer *Mihai Comanescu*
Modified Virtual Inertia Mechanism Based ESS for A real Multi-Source Power System Application: the Egyptian Grid *Hussein Abubakr, Josep M. Guerrero, Juan C. Vasquez*
Real-time simulation Model of Ultracapacitors for Frequency Stability Support from Wind Generation *Chenrui Zhang, Elyas Rakhshani, Nidarshan Veera Kumar, Jose Luis Rueda Torres, Peter Palensky, Francisco Gonzalez-Longatt*

Room A

T048 - TT Electrical Machines and Drives

Chairs: Qingsong Wang, Xing Zhao
Enhanced Cooling of Multilayer PCB Motor Windings Using Thermal Vias *Andreas Bauer, Benjamin H. Zacher, Christian Schumann*
Saliency-Based Position Sensorless Control of a Heavily Cross-Saturated PMSM *Richard Spiessberger, Andreas Brunner, Manfred Schroedl*
Thermal Modelling of a Liquid Cooled Traction Machine with 8-layer Hairpin Windings *Antonino La Rocca, Tianjie Zou, Mohsen Moslemin, David Gerada, Chris Gerada, Alasdair Cairns*

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Design and Optimization of a Quadruple 3-Phase Permanent Magnet Assisted Synchronous Reluctance Machine *Dennis Grundmann, Andreas Gneiting, Julian Marius Fischer, Nejila Parspour*

Prediction of the Impact of Thermal Cycling on Machine Lifetime Based on Accelerated Life Testing and Finite Element Analysis *David A. Hewitt, Jiabin Wang*

Steady-state Thermal Analysis of the Contact in Bearings Exposed to Electrical Currents *Omid Safdarzadeh, Martin Weicker, Andreas Binder*

Room G

T065 - TT Industrial Automation, Communication, Networking and Informatics

Chairs: Jan Haase, Alexander Fay

Towards the Digitization using Asset Administration Shells *Lucas Sakurada, Paulo Leitao, Fernando De la Prieta*

Multi-agent System for Monitoring Temperature in Sensing Surfaces including Hard and Soft Sensors *Fabio Amaral, Lucas Sakurada, Paulo Leitao, Jorge Larangeira*

Middleware Architecture for Application Layer Interoperability of Standardized Digital Representations *Harish Kumar Pakala, Alexander Belyaev, Christian Diedrich*

Co-Design Process for Upskilling the Workforce in the Factories of the Future *Carla Geraldés, Florbela Fernandes, Lucas Sakurada, Ann Lilit Rasmussen, Rene Bennyson, Umberto Pellegrini, Paulo Leitao*

Towards cloud-based virtual commissioning of distributed automation applications with IEC 61499 and containerization technology *Tuojuan Lyu, Udayanto Atmojo, Valeriy Vyatkin*

Missing Data Imputation for Real Time-series Data in a Steel Industry using Generative Adversarial Networks *Kisan Sarda, Amol Yerudkar, Carmen Del Vecchio*

Room K

S034 - SS Advanced Electrical Machines and Drives for Transportation Electrification

Chairs: Qingsong Wang, Xing Zhao

Lyapunov Function based Stability Analysis of Symmetric Induction Machine *Ramkrishan Maheshwari, Deepak Patil, Sanjeet Dwivedi, Thomas Ebel*

Multiphysics Design and Modeling of Rotating Electrical Machines *Mostafa Ahmadi Darmani, Silvio Vaschetto, Andrea Cavagnino*

An Eco-driving Strategy for an Electric Bus: IPMSM Drive-train *Robson Jele, Lesedi Masisi*

Analysis and Control Development of IPM Traction Machines with Skewed Rotor using Unskewed Machine Model *Khoa Dang Hoang, Panagiotis Lazari, Kais Atallah*

A multi-phase multilevel powertrain for full electric aircraft *Simone Tedeschini, Sobhan Mohamadian, Carlo Cecati*

Internal Model Based Speed Estimation and Lyapunov Energy Function Based Control of a Surface Mount PMSM for Electric Vehicle Application *Vikram Roy Chowdhury, Sara Yazdani, Dwaipayan Barman, Md Multan Biswas, Dhiman Chowdhury*

10:20-10:50

Room C

ICELIE 2021 Keynote 1: Luis Gomes

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10:50-11:20

Room C

ICELIE 2021 Keynote 2: Hamadou Saliah Hassane

11:30-12:50

Room O

S222 - SS DC Grid Technologies and Applications DC Grid Technologies, Circuit Breakers, Protection and Control

Chairs: Satish Naik Banavath, Sreekanth Thamballa

Development of Current Limiting Ultra-Fast Solid-State Circuit Breakers *Zhongying Wang, E. M. Sankara Narayanan*

A Dual-Bridge Hybrid DC Circuit Breaker *Hanwen Zhang, Gen Li, Yanbo Wang, Chuang Liu, Zhe Chen*

Solid-State Circuit Breaker Component Simulation *Matthew Hughes, Nathan Weise*

Sliding Mode Current Observer for a Bidirectional Dual Active Bridge Converter *Farzaneh Bagheri, Naki Guler, Hasan Komurcugil*

Embedded Electrochemical Impedance Spectroscopy into Battery Management System *Desmon Simatupang, Abdulraouf Benshatti, Sung-Yeul Park*

A Novel Modular, Reconfigurable Battery Energy Storage System Design *Amir Farakhor, Huazhen Fang*

Room L

S244 - SS DCDC Converters Circuits, Modeling, Control and Applications

Chairs: Mahajan Sagar Bhaskar, Sanjeevikumar Padmanaban

A Novel Expandable Diode-Capacitor Based DC-DC Converter with High Voltage Gains *Zahra Saadatizadeh, Xiaodong Liang*

Dynamic Phasor-Based Modeling and Analysis of Dual-Loop Controlled DC-DC Converters *Udoka C. Nwaneto, Andrew M. Knight*

Dynamic Modeling and Online Parameter Identification of a Coupled-Inductor-Based DC-DC Converter with Leakage Inductance Effect

Consideration *Amir Farakhor, Huazhen Fang*

ZVS/ZCS Three-Winding Coupled Inductor Based Non-isolated Bidirectional DC-DC Converter with Ripples Elimination at High Current Port and MPPT of Photovoltaic Systems *Zahra Saadatizadeh, Xiaodong Liang*

Open Circuit Fault-tolerant Operation of a Modified Hybrid String Inverter/Rectifier Leg *Reza Emamalipour, John Lam*

A Two-Phase Interleaved High-Voltage Gain DC-DC Converter with Coupled Inductor and Built-in Transformer for Photovoltaic

Applications *Ramin Rahimi, Saeed Habibi, Mehdi Ferdowsi, Pourya Shamsi*

Room I

T0911 - TT Power Electronics & Energy Conversion

Chairs: Mohammad Sharifzadeh, Fadia Sebaaly

A Novel Step-down Three-Port Power Converter for Semi-Isolated Renewable and Hybrid Energy Storage System Applications *Sina Vahid, Pouya Zolfi, Ayman EL-Refaie*

Voltage-Control Reference Estimation-based Quadratic Integration-exploited Model Predictive Current Control-driving Binary Capacitor Voltage Control-based MMC *Sanghun Choi, A. P. Meliopoulos*

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Optimal Common-Mode Voltage for Maximum Power Transfer of Grid-Tied PV CHB Inverters *Felipe Calderon, Alejandro Angulo, Pablo Acuna*
A Multi-Input Solar Converter Interface for AC Microgrid Architecture *Pouya Zolfi, Sina Vahid, Ayman EL-Refaie*
A Novel Non-Isolated Multi-Port DC-DC Converter for Hybrid Streetcar Application *Pouya Zolfi, Sina Vahid, Ayman EL-Refaie*
PLL-based Clock Recovery Stability Analysis for Distributed Power Electronics Communication Networks with Sub-nanosecond Synchronization Accuracy *Yu Rong, Jun Wang, Zhiyu Shen, Boran Fan, Dushan Boroyevich, Rolando Burgos*

Room H

TUT08 - Extended Kalman Filters for State of Charge Estimation: Modelling, Implementation and Performance Monitoring

Presenter

Dr. Balakumar Balasingam

Assistant Professor

University of Windsor, Canada

Room F

TUT06 - Transient stability of power electronics-dominated power networks: principle and application

Presenters

Prof. Hua Geng

Professor

Tsinghua University, China

Dr. Xiuqiang He

Post-doc

Tsinghua University, China

Room E

TUT05 - Ethics of Artificial Intelligence and Automation for Industrial Applications

Presenters

Daswin De Silva

Associate Professor

La Trobe University, Victoria, Australia

Donna Burnett

Ethics and Governance Lead

La Trobe University, Victoria, Australia

Damien Trentesaux

Research Center UMR CNRS 8201, Automation & Control Department

INSA Hauts-de-France State Engineering School

Stamatis Karnouskos

SAP, Germany

Room M

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S531 - SS Multilevel and High Power Density ACDC, DCAC, DCDC Converter Topology selection, Design, Control and Applications

Chairs: Abhijit Choudhury, Sandeep Anand

The Modular Multilevel Magnetic Stimulator: Energy-Efficiency, Pre-Charging and Overlap Protection *Benjamin Lohse, Florian Schwitzgebel, Fabian Neukirchinger, Anton Kersten, Manuel Kuder, Thomas Weyh*

Design and Experimental Study of a GaN-based Three-Port Multilevel Inverter *Mohamed Tamasas Elrais, Issa Batarseh*

A 70kW Three-Level Active Neutral Point Clamped Traction Inverter PCB Design for Optimizing the Stray Inductance and Thermal Performance *Yicheng Wang, Amirreza Poorfakhraei, Mehdi Narimani, Ali Emadi*

Comparison of two modulated model predictive control strategies applied to a three-level three-phase voltage source inverter *Josue Andino, Paúl Ayala, Jacqueline Llanos, Diego ÑAuñAy, Wilmar Martinez, Diego Arcos-Aviles*

An HVDC inverter based on the Asymmetric Alternate Arm Converter with thyristor valves *Diego Soto-Sanchez, Rubén Peña, Lorena Flores, Iván Andrade, Ramón Blasco-Gimenez*

Back To Back Modular Multilevel Converter With Dynamic Hybrid Link For High Performance Drive *Jonathan Lillo, Felix Rojas, Dario Valdes, Javier Pereda, Roberto Cardenas*

Room N

S661 - SS Recent Advances in Power Conversion Topologies and Control Algorithms for PV Systems under Normal and Abnormal Conditions

Chairs: Kawther Ezzeddine, Mahmoud Hamouda

Stability Analysis of Grid-connected PV Farms with High Switching Frequency Power Electronics *Mohammad Mahdavyfakhr, Isla Ziyat, Patrick Palmer*

Topologies and Control Strategies of Partial Power DC/DC Converters for Photovoltaic Systems *Nicolas Weldt, Jose Espinoza, Daniel Sbarbaro, Luis Moran, Samir Kouro*

Real-time Modeling of Offshore Wind Turbines for Transient

Simulation and Studies *Thai-Thanh Nguyen, Tuyen Vu, Thomas Ortmeyer, George Stefopoulos, Greg Pedrick, Jason MacDowell*

TVS Diode Coupled Gate Driver Circuit for Series Connected Power Devices used in Circuit Breaker Applications *Lakshmi Ravi, Jian Liu, Dong Dong, Rolando Burgos, Xiaoqing Song, Pietro Cairoli*

Phase Change Material Cooling for Wide Band-Gap Switching

Devices *Taosha Jiang, Xiaoqing Song, Utkarsh Raheja, Pietro Cairoli*

An 800V/300 kW, 44 kW/L Air-Cooled SiC Power Electronics Building Block (PEBB) *Zibo Chen, Houshang Salimian, Chen Chen, Pengkun Liu, Ruiyang Yu, Alex Q. Huang*

Room J

T134 - TT TT Renewable Energy Systems and Smart Grid

Chairs: Bachir Kedjar, Subrata Banerjee

Emulation of A Self-Excited Induction Generator Feeding Nonlinear Loads *Yupeng Liu, Pragasen Pillay*

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Low Cost PV Emulator Based on Programmable DC Power Supply and LabVIEW *Loenel Estrada, Nimrod Vazquez, Julio Ortega, Héctor López, Claudia Hernández, Joaquín Vaquero*

Equivalent Circuit Parameter Extraction of PV Modules using Light Intensity Modulation Impedance Spectroscopy *Sean Youngblood, Thomas Link, Adrian Gibson, Aaditya Sekar, Sung-Yeul Park*

Model Predictive Control Horizon Impact Over the Flexibility of a Net Zero Energy Building *Juan Oviedo-Cepeda, Fatima Amara, Andreas Athienitis*

Power based Fault Detection Method for PV Arrays *Harrison Illes, Yousef Mahmoud*

Modeling and Validation of Renewable Energy Sources in the OpenIPSL Modelica Library *Fernando Fachini, Luigi Vanfretti, Marcelo de Castro, Tetiana Bogodorova, Giuseppe Laere*

Room D

S052 - SS Advanced Sensing and Control for Intelligent Robots

Chairs: Yiyong Sun, Weiyang LIN

FF-GAT: Feature Fusion Using Graph Attention Networks *Ahmed N. Ahmed, Ali Anwar, Siegfried Mercelis, Steven Latre, Peter Hellinckx*

Multiple-Pilot Collaboration for Advanced Remote Intervention using Reinforcement Learning *Ziwei Wang, Weibang Bai, Zhang Chen, Bo Xiao, Bin Liang, Yeatman Eric M.*

Dynamic Kalman filter-based velocity tracker for Intelligent vehicle *Md Asif Khan, Tegveer Singh, Akramul Azim, Vivek Burhanpurkar, Rodolphe Perrin*

Positioning Improvement for a Laser Scanning System using cSORPD control *Jose A. Nunez-Lopez, Lars Lindner, Oleg Sergiyenko, Julio C. Rodriguez-Quinonez, Wendy Flores-Fuentes, Paolo Mercorelli*

Stiffness Estimation in Single Degree of Freedom Mechanisms using Regression *Aravind B. Balasubramanian, David P. Magee, David G. Taylor*

Application of social constraints for dynamic navigation considering semantic annotations on geo-referenced maps *João Pedro Vilasboas, Marcelo Sampaio, Giovane Moreira, Adriel Souza, Jose Amado, Dennis Aranibar, Yudith Cardinale, Joao Soares*

Room B

T0213 - TT Control System, Robotics and Automation

Chairs: Ya-jun Pan, Gabor Sziebig

Electric Wheelchair Sensing and Control Algorithms for Users with Neurological Disorders *Norberto Scarone, Gustavo Monte, Ruben Bufanio, Damian Marasco, Ariel Agnello, Pablo Liscovsky*

New Conditions for the Stability and Instability of Feedback Systems *L.H. Keel, S.P. Bhattacharyya*

Stabilizing Set Based Design of Digital Controllers Based on Mikhailov's Criterion *M. A. Rahman, L. H. Keel, S. P. Bhattacharyya*

Assistive Robotics: Robotic Trajectory Planning for Upper Extremity Rehabilitation in Patients with Hemiparesis *Sibyla Andreuchetti Vioto e Silva, Victor Barros Coch, Mateus Borges de Oliveira Pinto, Vinicius Menezes Oliveira*

Distributed Adaptive Protocol for Asymptotic Consensus for a Networked Euler-Lagrange Systems with Uncertainty *Shafiqul Islam, Jorge Dias, Gurdial Arora, Anderson Sunda-Meya*

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Distributed Tracking Synchronization Protocol for a Networked of Leader-follower Unmanned Aerial Vehicles with Uncertainty *Shafiqul Islam, Jorge Dias, Anderson Sunda-Meya*

Room C

ICE1 - ICELIE

Chairs: Martin Novak, David Checa

Teaching Devices and Controls during the Pandemic *Jie Sheng*

Effectiveness of multi-abstraction computing tools on promoting exploratory self-learning in engineering: a case study using a custom

Real-Time Operating System for remote learning *Paulo Garcia*

Virtual reality-based tool applied in the teaching and training of condition-based maintenance in induction motors *David Checa, Andres Bustillo, Juan Jose Saucedo-Dorante, Roque A Osornio-Rios, Irving Armando Cruz-Albarran*

Delivery of online electronics and mechatronics labs during lockdowns *Amal Jayawardena, Gayan Kahandawa, Lasitha Piyathilaka*

SensorQuad The Flying Sensor Platform for Teaching *Martin Novak*

Educational experiences on virtual teaching of electric motors

condition monitoring courses *Jose Antonino-Daviu, Larisa Dunai*

Room A

T0415 - TT Electrical Machines and Drives

Chairs: Abhijit Choudhury, Hind Dirani

On the Influence of Air-gap Length Variations in Low-Speed Linear Three-phase Electrical Induction Motors *Rolando Caicedo Castro, Ernesto Ruppert Filho*

Servo Actuators with Induction Motor using Predictive Current Control with Duty Cycle Optimization *Guilherme Alves Arantes, Stefan T. C. Alves dos Santos, Paulo R. Ubaldo Guazzelli, Manoel Luis de Aguiar*

Switched Reluctance Motor Design for an EV Propulsion

Application *Omar Zayed, Mohamed Omar, Mohamed Bakr, Mehdi Narimani, Ali Emadi, Berker Bilgin*

Comprehensive Analysis of High-Speed Cascaded H-Bridge (CHB)

Medium-Voltage Adjustable Speed Drives *Omar Zayed, Ahmed Elezab, Mehdi Narimani, George Cheng, Navid Zargari*

Estimation of Electrical Parameters of the Single-, Double- and Triple-Cage Models of Induction Motors Using Manufacturer Data *Matheus Perin, Luis A. Pereira, Gabriel B. da Silveira, Dhamens M. S. Almansa, Iuri Marcelo, Luis G. Cavichioli*

Analysis of Measurement Error Compensation of Stationary & Stator Currents done through Auto-Associative Neural Network *Thyago Estrabis, Matheus Pelzl, Raymundo Cordero, Walter Suemitsu, Luigi Galotto, Gabriel Gentil*

Room G

TUT07 - Electric Vehicles and Role of Power Electronics in Fast Charging-Impact on Grid, Challenges, Trends and Future

Presenters

P. Sanjeevikumar

CTiF Global Capsule, Aarhus University, Denmark

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M. S. Bhaskar
Prince Sultan University (PSU), Saudi Arabia

Irfan Khan
Texas A&M University, TX, USA

Room K

S033 - SS Advanced Electrical Machines and Drives for Transportation Electrification

Chairs: Qingsong Wang, Xing Zhao

A Flexible Model of PMSM to Design High Density Traction Systems for Electric Vehicles *Benoit Blanchard St-Jacques, Adib Ghadamyari, Ruisheng Shi, Pragasen Pillay*

Winding Function-Based Stator Winding Layout Optimization of a Concentric Winding Squirrel Cage Induction Machine for Torque Enhancement *Buddhika De Silva Guruwatta Vidanalage, Mohammad Sedigh Toulabi, Wenlong Li, Anthony Lombardi, Jimi Tjong, Narayan. C Kar*

Comparative study of losses in the AHB converter driving SRMs through Hysteresis and PI-PWM current controllers *Gustavo Xavier Prestes, Rodrigo Padilha Vieira*

Finite Control Set Model Predictive Control for Switched Reluctance Motor Drives with Reduced Torque Tracking Error *Rasul Tarvirdilu-Asl, Shamsuddeen Nalakath, Diego F. Valencia, Berker Bilgin, Ali Emadi*

A Novel Control Strategy to Mitigate the Parameter Saturation Problems in Synchronous Reluctance Machines *Anant Singh, Ramakrishnan Raja, Tomy Sebastian, Amina Shrestha, Md Sariful Islam, Kaushik Rajashekara*

Torque Ripple Minimization Control Strategy in Synchronous Reluctance Machines *Anant Singh, Ramakrishnan Raja, Tomy Sebastian, Kaushik Rajashekara*

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Room P

S611 - SS Power Electronics for Energy Access and OffGrid Systems

Chairs: Venkatesh Boddapati, Ramjee Prasad

Series Arc Fault Detection in Low Voltage Distribution System with Signal Processing and Machine Learning Approach *Arvind Kumar Gupta, Aurobinda Routray, VN Achutha Naikan*

A Novel algorithm for Electric Vehicle charging scheduling with Renewable Energy Source *Nethravathi S, Venkatakirthiga M*

Active Distribution System Protection Using High-frequency component analysis by DWT-MRA *Jnaneswar Kolli, Ankur Singh Rana, Mini Shaji Thomas*

A bidirectional converter control design to improve the performance of isolated microgrid *Hercules Oliveira, Luiz Ribeiro, Jose De Matos, Joao Caracas, Guilherme Farias, Osvaldo Saavedra, Lucas Pinheiro*

A Novel Four-port LLC Converter for Dual PV and Battery Integration *Sumana Ghosh, Md Safayatullah, Mohamed Elrais, Issa Batarseh*

Room O

S231 - SS DCDC Converter Topologies and their

Saturday, 16 October 2021

Intelligent Control for Energy Storage Systems

Chairs: Varsha A. Shah, Sachin Jain

Component Based and Machine Learning Aided Optimal Filter Design for Full-Bridge Current Doubler Rectifier *GuiHua Liu, YanBo Chen, Yuan Gao, JiaNing Zhu, BoXin Wang, Tao Yang*

Exploring various topology using DC-DC converter in hybrid energy storage system for electric vehicles *Vima Mali, Brijesh Tripathi*

Ultracapacitor Based Voltage Lift Converter with PID Controller as a Function of Current *Ujjval B Vyas, Varsha A Shah, Athul Vijay P K*

Analysis on Resonant Converter for Ultracapacitor Charging by Considering Terminal Voltage of Ultracapacitor as State Space Variable *Athul Vijay P K, Varsha A Shah, Ujjval B Vyas*

Analyses and Design of a High Power Bidirectional 48V-12V DCDC Converter System for Electric Vehicle Application *Hai Liu, Lenian He*

A Comparative Study of Energy Storage Systems based on Modular Multilevel Converters *Fernando Davalos Hernandez, Federico Ibanez, Rahim Samanbakhsh, Ramiro Velazquez*

Room L

S521 - SS Multilevel Converters Topologies, Control Strategies and Protection

Chairs: Josep Pou, Sreekanth Thamballa

Suppression of lower order harmonics by Switched-Capacitive filtering using Polygonal Space Vector Structures and Capacitor Sizing for Induction Motor Drive Applications *Rahul Dewani, Gopakumar K., Umanand L., Subhashish Bhattacharya*

Suppression of Lower Order Harmonics using a 21-Concentric 42-sided polygonal Space Vector Structure for Induction Motor Drive Applications *Rahul Dewani, Gopakumar K., Umanand L., Leopoldo G. Franquelo, Kaushik Rajashekara*

Battery Fault Tolerance of Modular Multilevel Converter-Based Battery Energy Storage Systems with Redundant Submodules *Gaowen Liang, Glen G. Farivar, Naga Brahmendra Yadav Gorla, Ezequiel Rodriguez Ramos, Josep Pou*

Effect of Zero-Sequence Voltage on the Maximum Average Neutral-Point Current Limit of Neutral-Point-Clamped Converters *Neha Beniwal, Glen G. Farivar, Salvador Ceballos, Naga Brahmendra Yadav Gorla, Josep Pou*

A MMC Topology with AC Short-Circuit Fault Ride-Through Capability and its Control Strategies *Chenghao Zhang, Song Tang, Feng Jiang, Min Chen*

A 24-sided Polygonal Voltage Space Vector Structure for IM drive with Open end winding Configuration *Prashant Surana, R Rakesh, K Gopakumar, L Umanand*

Room I

T094 - TT Power Electronics & Energy Conversion

Chairs: Jinxin Liu, Yangang Wang

An Improved Voltage Control Strategy Based on Finite-Time Theory for Virtual Synchronous Generator *Wenlu Cai, Chunshui Du, Qiguo Shi, Guangwei Wang, Aiping Wang, Dezheng Chui*

An Improved Adaptive Inertia and Damping Combination Control of Virtual Synchronous Generator *Qiguo Shi, Chunshui Du, Yongchao Sun, Wenlu Cai, Aiping Wang, Dezheng Chui*

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Parasitic Inductance Design for Preventing Oscillatory False Triggering of Parallel-Connected GaN-FETs *Yusuke Hatakenaka, Kazuhiro Umetani, Masataka Ishihara, Eiji Hiraki, Hiroshi Tadano*

Substrate Solder Crack Evaluation and Modelling of Power Module under Passive Cycling *Zhongxu Wang, Yangang Wang, Lee Coulbeck, Xiang Li, Wei Gong*

Discrete-Model Based Analysis of Flyback Converter Circuit *Bilal Canol, Ali Bekir Yıldız*

A New PWM Control based on an Optimized Zero Sequence Component injection: Application in a Two-Level Inverter. *Adrien Bourgeade, Malek Ghanes, Maurice Fadel, Abdelkader Bouarfa, Jean-Pierre Barbot*

Room H

S641 - SS Predictive Maintenance Architectures and Applications for Industrial Systems

Chairs: Luis Lino Ferreira, Barış Bulut

LSTM-based Anomaly Detection for Railway Vehicle Air-conditioning Unit using Monitoring Data *Toshihide Yokouchi, Minoru Kondo*

Smart Machine Box with Early Failure Detection for Automatic Tool Changer Subsystem of CNC Machine Tool in the Production Line *Shang-Chih Lin, Shun-Feng Su, Yennun Huang*

Autonomous CPSoS for Cognitive Large Manufacturing Industries *Maria J. Santofimia, Felix J. Villanueva, Julian Caba, Jesus Fernandez-Bermejo, Xavier del Toro, Nirmalie Wiratunga, Juan R. Trapero, Ana Rubio, Claudio Salvadori, Juan C. Lopez*

Flexible Architecture for Data-Driven Predictive Maintenance with Support for Offline and Online Machine Learning Techniques *Alda Canito, Marta Fernandes, João Mourinho, Serkan Tosun, Kamer Kaya, Ayşegül Turupcu, Angel Lagares, Hüseyin Karabulut, Goreti Marreiros*

Predictive Maintenance of home appliances: Estimation of Washing Machine Parameters *Luis Ferreira, André Oliveira, Nuno Teixeira, Jorge Landeck, Baris Bulut, Nuno Morgado, Orlando Sousa*

Automated Pipe Inspection Based on Image Processing *Veysel Yüksel, Yusuf Engin Tetik, Mehmet Yılmaz, Omer Cahit Özdemir*

Room F

S122 - SS Advances in Electric Vehicle Charging and Next Generation Wireless Technology

Chairs: Rajesh Gupta, Rajasekar S.

Standalone Wind Energy Conversion System for EV Battery Charging and AC Residential Loads *Zubaida Khan, Rajesh Gupta*

A Single-Ended Wireless V2H Using A New Phase Control Method Without Mutual Communication *Genki Kengaku, Hideki Omori, Masahito Tsuno, Toshimitsu Morizane, Hidehito Matayoshi*

Standalone PV based Boost Derived Hybrid Converter for EV Charging Applications *Gunupuru Govinda Rao, Rajesh Gupta*

Soft-Switching Based Integrated On-board Charger For Electric Vehicles *Jyoti Gupta, Rakesh Maurya, Sabha Raj Arya*

Smart Vehicular System: Demand, Curiosity, Challenges, And Power Electronics Skills *M.S. Bhaskar, Dhafer Almakhlles, P. Sanjeevikumar*

A Modular Coil Design for High-Power Wireless EV Charging *Ali Ramezani, Mehdi Narimani*

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Room E

T024 - TT Control System, Robotics and Automation

Chairs: Yukang Cui, Xin Gong

Adaptive Super-Twisting Guidance Law with Extended State Observer *Sunil Kumar, Rahul Kumar Sharma, Shyam Kamal*

A Utility Operation Model Design and Analysis of a Massage Robot *Shutong Li*

Path Extraction for Autonomous Mobile Robot Using Skeletonization *Ryuki Higuchi, Yasutaka Fujimoto*

Verification of Coaching effect by Instructor-like Assistance System Based on Model Predictive Constraint Satisfaction *Takuma Yamaguchi, Syota Matsubayashi, Tatsuya Suzuki, Kazuhisa Miwa*

Robust Unknown Input Observer for Uncertain Non-Linear Systems using Sliding Modes with Fault Detection *Bhagyashri Gurjar, Bijnan Bandyopadhyay*

Human-Assisted Grasping for Manipulation of Biological Cells *Jiuyun Li, Quang Minh Ta, Chao Liu, Chien Chern Cheah*

Room R

S462 - SS Model Predictive Control for Power Converters

Chairs: Fadia SEBAALY, Jose Rodriguez

Design of a Database-Driven Model Predictive Control System for Excavator-Environment Interaction *Tomofumi Okada, Toru Yamamoto, Takayuki Doi, Kazushige Koiwai, Koji Yamashita*

Model Predictive Current Control of PMSM Drives for Achieving both Fast Transient Response and Ripple Suppression *Hiroaki Kawai, Julien Cordier, Ralph Kennel, Shinji Doki*

Event-Triggered Continuous Control Set-Model Predictive Control for Three-Phase Power Converters *Hao Lin, Jianxing Liu, Xiaoning Shen, Yunfei Yin, Jose Ignacio Leon, Leopoldo Garcia Franquelo, Ligang Wu*

Switched-Capacitor Two-Output Multilevel Inverter (SCMLI) with Common Ground for Photovoltaic Applications *Zhiyuan Xu, Jia Yao, Adrian Ioinovici*

Automatic Generation of Attack Strategy for Multiple Vulnerabilities Based on Domain Knowledge Graph *Xiaosheng Chen, Wendi Shen, Genke Yang*

Room M

S691 - SS Reliable and Stable Operation of Wind Energy Generation Systems

Chairs: Chao Wu, Meng Huang

Transient Stability Enhancement of Inverter-based Resources with Virtual Synchronous Generator on Active Power Control

Kongyuan Li, Peng Cheng, Limin Jia

Impedance Analysis of DFIG System based on DPC without PLL at Fundamental Frequency *Bin Hu, Heng Nian, Meng Li, Hao Tong, Jun Yang, Hongyu Zhang*

Comparison of DC-link Voltage Control Schemes on Grid-side and Machine-side for Type-4 Wind Generation System Under Weak

Grid *Liang Huang, Chao Wu, Dao Zhou, Frede Blaabjerg*

Grid-Following and Grid-Forming Control in Power Electronic Based Power Systems: A Comparative Study *Xian Gao, Dao Zhou, Amjad*

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Anvari-Moghaddam, Frede Blaabjerg

Active Damping Control Strategies for WEC with VSM considering DC-Link Dynamics *Max Rose, Katharina Günther, Constantinos Sourkounis*
Novel control compatible distance protection in the outgoing line of type-4 wind power plants *Kaiqi Ma, Zhe Chen, Claus Leth Bak*

Room N

S181 - SS An Interdisciplinary Approaches and Advances in Grid Interfaced Transportation System

Chairs: Anup Kumar Panda, Man Mohan Garg

An Antlion Optimization technique based Hybrid Series APF for Harmonic Mitigation *Arjun Baliyan, Nitisha Shrivastava, Sayed Javed Alam*
Normalized Gaussian Kernel LMS controlled Grid interactive PV based EV Charging Station *Prerana Mohapatra, Venkata Ramana Naik N, Anup Kumar Panda, Nishit Tiwary*

Design and Hardware Realization of an Asymmetrical Fuzzy Logic-based MPPT Control for Photovoltaic Applications *Claude Bertin Nzoundja Fapi, Patrice Wira, Martin Kamta, Bruno Colicchio*

A Cascaded Pseudo Open Loop Synchronization Technique for Grid Connected Application *Ahmed Safa, Zakaria Chedjara, Abdelmadjid Gouichiche, Youcef Messlem, El Madjid Berkouk, Patrice Wira*

Distribution Factor Assessment for PEVs Charging Stations with V2G Capability in Power Systems *Nasim Rashidirad, Hanane Dagdougui*

Application of VSG Control in Microgrids with Unknown Frequency Dynamic of Diesel Generator *Xialin Li, Xunyang Wang, Li Guo, Rui Liu, Hongda Wang, Jianchun Xing*

Room J

S701 - SS Resilient, Sustainable, and Secure Inverter Intensive Power Grids

Chairs: Xiaonan Lu, Bo Chen

An PLL-Equivalent Model for Low Frequency Dynamic Analysis of Weak-Grid connected VSC *Xialin Li, Chen Zhang, Lin Zhu, Pengfei Li, Zhi Wang, Li Guo*

Reduced-order Modeling and Dynamic Stability Analysis of DC Systems Connected to Weak Grids in DC Voltage Control

Timescale *Pengfei Li, Li Guo, Xialin Li, Chen Zhang, Lin Zhu, Ye Zhang*

Simulating and Evaluating Privacy Issues in Distributed Microgrids: A Cyber-Physical Co-Simulation Platform *Nianzhi Hang, Feng Ye, Zheyuan Cheng, Xianghui Cao, Mo-Yuen Chow*

Model Reduction for Inverter-Dominated Networked Microgrids with Grid-Forming Inverters *Yuhua Du, Xiaonan Lu, Dongbo Zhao*

Photovoltaic (PV) System Levelized Cost of Energy (LCOE) Evaluation with Grid Support Function Valuation and Service Lifetime

Estimation *Shijia Zhao, Yuxi Men, Xiaonan Lu, Dongbo Zhao, Alex Huang*

Comparative Small-Signal Stability Analysis of Grid-Forming and Grid-Following Inverters in Low-Inertia Power Systems *Lizhi Ding, Xiaonan Lu, Jin Tan*

Room D

T025 - TT Control System, Robotics and Automation

Chairs: Jingying Li, Yong He

AI Quadraped Robot Assistant for the Visually Impaired *Ajaykumaar*

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Sivacoumare, Sheethal Maria S, Sarga Satheesh, Athul T, Manikandan V, Vinopraba T

Dynamic event-triggered consensus for discrete-time multi-agent systems *Mengshen Chen, Huaicheng Yan, Meng Wang, Zhichen Li*

An improved moth-flame optimization algorithm based on fusion mechanism *Luchao Jiang, Kuangrong Hao, Xue-song Tang, Tong Wang, Xiaoyan Liu*

Stability Analysis for Delayed Neural Networks Based on A Sufficient And Necessary Condition on Polynomial Inequalities *Fei Long, Yong He*

Neural Network Control based Stabilization of Nonlinear Systems in Arbitrary Time *Vijay Kumar Singh, Parijat Prasun, Bhawana Singh, Shyam Kamal, Sandip Ghosh*

An Investigation of G-L and R-L Based FOMRAC and Optimal FOPID on Unstable FOPTD Process *Deep Mukherjee, LLOYDs Raja, Palash Kundu, Apurba Ghosh*

Room B

S021 - SS Advanced Control of GridConnected Converters for Distributed Generation and Power Quality

Chairs: Hadi Y. KANAAN, Mohammad SHARIFZADEH

Reduced DC Voltage Fed Grid Connected Transformer-less Shunt Compensator with AC-Side Impedance-Source Configuration *Guddy Satpathy, Burle Tulasi Rao, Dipankar De*

Improved Quality of Compensation in Three-Level Shunt Active Power Filter Using Fractal Approach Based Current Hysteresis

Controller Siddharthsingh K. Chauhan, M. T. Shah, Dr. P. N. Tekwani

Design of IDA-PBC Controller for LCL-Filtered Grid-Connected

Inverter *Min Huang, Fan Chen, Zhicheng Zhang, Weimin Wu, Zhilei Yao, Lixun Zhu*

A Decentralized Adaptive SOC Balancing Strategy in VSG-based Islanded Power System *Meng Chen, Dao Zhou, Frede Blaabjerg*

Adaptive Vector Control of Grid-tied VSC using Multilayer Perceptron-Recurrent Neural Network *Prabhat Ranjan Bana, Mohammad Amin*

A time scale based energy management strategy for hybrid energy storage system in DC Microgrid *Mohamed Mroueh, Sarah Kassir, Moustapha Doumiati, Clovis Francis, Mohamed Machmoum*

Room C

ICE2 - ICELIE

Chairs: Truong Phung, Eiji Hiraki

Project-Based Learning Using Remote-Controlled Plane for Students in Mechatronic Course *Kou Miyamoto, Jinhua She*

Development of an Experimental System for Remote Learning *Jinseok Woo, Tatsuya Kurihara, Yasuhiro Ohshima*

Tiny Approaches to the Interactive online lectures under the COVID-19 pandemic *Eiji Hiraki, Masataka Ishihara, Kazuhiro Umetani*

E-Learning challenges for electronics and mechatronics education during lockdowns *Amal Jayawardena, Gayan Kahandawa, Mark Petty*

Cooperation between Theoretical and Practical Education through Power Electronics Circuits *Taichi Kawakami, Kazuhiro Umetani, Shigeo Morimoto*

Synchronous learning and teaching in engineering education in

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response to COVID situations *Truong Phung*

Room Q

S111 - SS Advances in DataDriven Process Monitoring and Control for Complex Industrial Systems

Chairs: Hao Luo, Zhiwen Chen

Incident early warning based on sparse autoencoder and decision fusion for drilling process *Zheng Zhang, Xuzhi Lai, Min Wu, Sheng Du*

Fruit Maturity Recognition from Agricultural, Market and Automation

Perspectives *Koteswar Rao Jerripothula, Sarvesh Kumar Shukla, Samyak Jain, Shudhanshu Singh*

Data-driven Wasserstein distributionally robust optimization for

refinery planning under uncertainty *Jinmin Zhao, Liang Zhao, Wangli He*

Data-driven Quality Estimation for Production Processes with Lot-level

Quality Control *Naveen John Punnoose, Prahlad Vadakkepat, Ai Poh Loh, Edward Yapp Kien Yee*

Design of a Database-Driven Nonlinear Generalized Predictive

Controller *Zhe Guan, Tomofumi Okada, Toru Yamamoto*

Quality monitoring for injection moulding process using semi-

supervised learning approach *Nam Doan, Tung Tran Van, Edward Yapp Kien Yee*

Room A

T044 - TT Electrical Machines and Drives

Chairs: Qingbin Gao, Dan Xiao

Hybrid Ferrite Al-Ni-Co PM Assisted Synchronous Reluctance Motor for Air-Conditioner Compressors *Vegireddy Gowtham, Sashidhar Sampathirao*

Deadbeat Predictive Direct Torque and Active Flux Control with

Disturbance Observer *S M Showybul Shakib, Dan Xiao, Rukmi Dutta, Muhammed Rahman*

Discrete Adaptive Full-Order Observer for Speed Sensorless Induction

Motor Drives under Low PWM-to-Output Frequencies Ratio *Yong Yu, Wenbo Zhao, Bo Wang, Dianguo Xu*

Implementation of PSO Algorithm for Speed Control of Brushless DC

Motor *Suraj Kamde, Meghraj Morey*

Performance Analysis and Fault Modelling of High Resistance Contact

in Brushless DC Motor Drive *Annima Gupta, Kalaiselvi Jayaraman, Sugunakar Ravula Reddy*

Position and Speed Estimation in Low Speed Range for IPMSM Based

on Disturbance Observer *Ryosuke Nakatsuka, Takahiro Nozaki*

Room G

T067 - TT Industrial Automation, Communication, Networking and Informatics

Chairs: Songlin Zhuang, Toshimasa Miyazaki

A Genetic Algorithm based Scheduling Method for Automotive

Ethernet *Hyeong-jun Kim, Kyoung-chang Lee, Suk Lee*

Identification of Modules from Graphical Control Specification *Santonu Sarkar*

Combinational Optimization Power (COP) - A Practical Power

Budgeting Method for Many-cores *Xin Li, Zhi Li, Yaqi Ju, Huajie Lin, Wei Zhou*

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	<p>Context Aware Compression for Environmental Edge Devices using LPWAN. <i>Gilad Itzkovitch, Matthew Kuo</i></p> <p>A novel distributed cooperative control approach for islanded microgrids with communication delays <i>Tao Yang, Xiaoqing Lu</i></p> <p>Continues Sliding-Mode Control Of Robotic Manipulators With Uncertain Control Gain <i>Haofan Yu, Kemeng Wei, Dong Wang</i></p> <p>Room K</p> <p>S511 - SS Modular Power Converters Topologies, Control and Applications</p> <p>Chairs: Deepak Ronanki, Apparao Dekka</p> <p>A Junction Temperature Balance Control Among Sub-Modules for Modular Multilevel Converter <i>Hongqi Ding, Fujun Ma, Rong Han, Liheng Lin, Qianming Xu, Yulin Kuang</i></p> <p>Space Vector Modulated Direct Torque Control of an Open-end Winding Induction Motor Drive with Three-Level Inversion <i>V. Praveenkumar Kunisetti, Vinay Kumar Thippiripati</i></p> <p>Selective Voltage Vector Based Predictive Torque Control of an Open-end Winding Induction Motor Drive with Four-Level Inversion for EV's <i>Kunisetti V. Praveenkumar</i></p> <p>Modified Multi-output Asymmetric Multi-level Inverter <i>Bhabhor Mehulkumar, Baria Virat, Jammala Venkataramanaiah</i></p> <p>Fault Limiting Circuit based protection for DC and AC Faults in HB-MMC HVDC Systems <i>Sukrashis Sarkar, Anandarup Das</i></p> <p>Short Endurance Drive Cycle Analysis of MMC Based Absolute Battery Operated Harbor Vessel <i>Vidyasagar Tummakuri, Thanga Raj Chelliah, Deepak Ronanki</i></p>
08:30-09:30	<p>Plenary & Keynote</p> <p>Special lecture by IES TC Cluster-3</p>
10:00-11:10	<p>Room C</p> <p>ICE3 - ICELIE</p> <p>Chairs: Primož Podržaj, Salma Alarefi</p> <p>Student Journey Map (SJM): a scenario-based approach to professionalizing digital education <i>Emmanuel Fragniere, Camille Pellaton, Randolph Ramseyer, Maria Sokhn, Charline Unternährer</i></p> <p>E-Teaching High Accuracy Motion Control Techniques in Covid-19 time <i>Roberto Oboe, Giulia Michieletto</i></p> <p>Blended Learning for Remote Software Simulation Laboratory of a Solar Power System <i>Salma M S Al Arefi</i></p> <p>An Erasmus+ project: Interactive Course for Control Theory (ICCT) <i>Primož Podržaj, Miha Finžgar, Žan Pirnar, Sandi Ljubič; Michele Lanzetta, Lorenzo Pollini, Pietro Venturini, Bertalan Pizag, Peter Korondi, Csaba Budai</i></p> <p>Internet Technologies in Academic Remote Teaching: Case Study of Numerical Methods <i>Jerzy Baranowski, Waldemar Bauer, Katarzyna Grobler-D&#281;bska</i></p>
10:00-11:20	<p>Room L</p> <p>S522 - SS Multilevel Converters Topologies, Control Strategies and Protection</p> <p>Chairs: Josep Pou, Naga Brahmendra Gorla</p>

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Validation of an Extended Loss-Optimised Branch Energy Control for Modular Multilevel Converters under Unbalanced Grid Conditions *Rebecca Dierks, Axel Mertens*

A Review on Artificial Intelligence Based Strategies for Open-Circuit Switch Fault Detection in Multilevel Inverters *Bushra Masri, Hiba Al Sheikh, Nabil Karami, Hadi Y. Kanaan, Nazih Moubayed*

SDBC-MMC STATCOM Control Under Unbalanced Grid Conditions Based on Different Sequence Extraction Methods *Ahmed Meligy, Taoufik Qoria, Waqas Ali, Ilknur Colak*

Modeling and Testing of Single Delta Bridge Cell Modular Multilevel Converter STATCOM in FPGA Based Real-Time Simulator *Vishal K A Kushalappa, Ibrahim Elsabrouty, Waqas Ali, Ilknur Colak*

Application of Resonant Controllers for Current Harmonic Suppression and Rejection in Grid-Tied Modular Multilevel

Converters *Amandus Bach, Raúl Santiago Muñoz Aguilar, Ilknur Colak*

Analysis, Modeling, and Simulation of the Multiple Output Flyback Converter used in Various Motor Drive Applications *Oguz Tahmaz, Ali Bekir Yıldız*

Room I

T098 - TT Power Electronics & Energy Conversion

Chairs: Samir Kouro, Sertac Bayhan

A Novel Boost-Based Quasi Resonant DC-DC Converter with Low Component Count for Stand-Alone PV Applications *Pouyan Pourhadi Abkenar, Alinaghi Marzoughi, Sadegh Vaez-Zadeh, Hossein Iman-Eini, Mohammad Hamed Samimi, Jose Rodriguez*

Predictive Voltage Control for Grid-Forming Power Converters with Virtual Output Impedance *Johnny Chhor, Benedikt Lammersmann*

Multilevel Inverter with a New Modulation Method Applied to Solid-State Transformer in PV Applications *Hesamodin Abdoli, Javad Shokrollahi Moghani, Sadegh Vaez-Zadeh, Amir Babaki, Alireza Jafari Natanzi, Jose Rodriguez*

Bipolar Degradation monitoring of 4H-SiC MOSFET Power Devices by Electroluminescence Measurements *Amel Lachichi, Phil Mawby*

Performance Evaluation of Multi-Step Exhaustive Search Finite Control Set Model Predictive Control for Multi-Level Voltage Source

Converter *Benedikt Lammersmann, Johnny Chhor, Constantinos Sourkounis*

A Novel asymmetric multilevel inverter topology based on PEC9 using a hybrid PWM modulation *Mohammadali Ahmadijokani, Mohammad Sharifzadeh, Shayan Pourfarokh, Majid Mehrasa, Kamal Al-Haddad*

Room H

S281 - SS Efficient and Sustainable LED Lighting Systems

Chairs: Fernando Bento, Pascal Dupuis

Cost Efficient Power Electronic Led Headlamp for automotive *Lalit Ahuja, Anshul Tyagi, Anagha Titpude, Arti Tare*

A Single-Inductor Multiple Current Output RGB LED Driver

Architecture with Hybrid Dimming for Large-Scale Facilities *Joao Dinis, Fernando Bento, Antonio J. Marques Cardoso*

Current crowding as a major cause for InGaN LED degradation at extreme high current density *Nicola Trivellin, Matteo Buffolo, Carlo De Santi, Enrico Zanoni, Gaudenzio Meneghesso, Matteo Meneghini*

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High Efficiency Bus Provider for VLC Applications Based an Asymmetrical Half Bridge Converter with a Resonant DCX Auxiliary Output *Theyllor Oliveira, Manuel Arias, Diego Lamar, Daniel Aller, Abraham López*

Traffic Intensity Adaptive Street Lighting Control *Ansis Avotins, Olegs Tetervenoks, Leslie Robert Adrian, Aivars Severdaks*

Sensor Calibration for LED Supplemental Lighting in Horticulture *Afagh Mohagheghi, Mehrdad Moallem*

Room F

T0210 - TT Control System, Robotics and Automation

Chairs: Yunsong Xu, Okyay Kaynak

Data-driven framework to improve collaborative human-robot flexible manufacturing applications *Fiorella Sibona, Marina Indri*

A Task-based Method for Underwater Drones Waterproof Thrusters

Power Computation *Henrique Fagundes Gasparoto, Olivier Chocron, Jean-Matthieu Bourgeot, Mohamed Benbouzid, Pablo Siqueira Meirelles*

Implementation of an autonomous ROS-Based Mobile Robot with Ai depth estimation *João Faria, António Moreira*

Non-Invasive Closed-Loop System Identification of an Active Rectifier *Raoul Laribi, Darian Andreas Schaab, Yijun Lu, Alexander Sauer*

Disturbance Observer Based Fault Tolerant Control of a Quadrotor Helicopter *Yarkin Hocaoglu, Mehmet Emin Mumcuoglu, Mustafa Unel*

Robust two-degree-of freedom control optimally balancing feedforward plant inversion and feedforward closed loop inversion *Valentina Orsini, Leopoldo Jetto*

Room E

T029 - TT Control System, Robotics and Automation

Chairs: Hao Luo, Zhiwen Chen

Towards Modeling and Control of a Crane-Collaboration for the Automated Assembly of Timber Structures *Mark Burkhardt, Oliver Sawodny*

Adaptive Backstepping Control of Antilock Braking System Based on LuGre Model *Jamal El-bakkouri, Hamid Ouadi, Abdallah Saad*

An International Case Study on Control Software Development in Large-Scale Plant Manufacturing Companies of One Industrial Sector at Different Locations *Birgit Vogel-Heuser, Eva-Maria Neumann, Alois Zoitl, Antonio M. Gutierrez Fernandez, Rick Rabiser, Hafiyyan Sayyid Fadhillah*

Smooth Visual-Coverage Path Planning for Escort Missions using UAVs *Kaouther Moussa, Hilton Tnunay, Ahmad Hably, Nicolas Marchand*

Predictive control of PMSM using improved model of the drive *Ondrej Suchy, Stepan Janous, Jakub Talla, Zdenek Peroutka*

Mobile robot localization in industrial environments using a ring of cameras and ArUco markers *Sara Roos-Hoefgeest Toribio, Ignacio Álvarez García, Rafael C. González de Los Reyes*

Room M

S491 - SS Modeling, Management and Control of Energy Storage and Hybrid Energy Storage Systems for Transportation Electrification

Chairs: Mario Porru, Alexandre Ravey

Saturday, 16 October 2021

Optimization of Hybrid Energy Management for HTE Vehicles *EI Aoumari Abdelaziz, Ouadi Hamid*

Design of all-direction Misalignment tolerant magnetic interface suitable for Dynamic wireless power transfer systems *Alireza Jafari Natanzi, Sadegh Vaez-Zadeh, Amir Babaki, Sina Navaiyan-Kalat, Jose Rodriguez*

Experimental based Aging Model for Automotive Li-Ion Batteries *Lorenzo Milanese, Matthias K. Scharrer, Davide Barater*

A flexible Multi-Active Half-Bridge converter for active balancing of series-connected Li-Ion cells *Andrea Zilio, Paolo Mattavelli*

Optimal Control Strategies of Fuel cell/Battery Based Zero-Emission Ships: A Survey *Mohsen Banaei, Jalil Boudjadar, Razgar Ebrahimi, Henrik Madsen*

A Hybrid Energy Storage Sizing for a Vertical Take-off and Landing Electric Aircraft *Alfonso Damiano, Nicola Campagna, Vincenzo Castiglia, Luigi Pio Di Noia, Rosario Miceli, Antonino Oscar Di Tommaso*

Room N

S591 - SS Power Electronics and Energy Management for Renewables, Stationary Storage and Electric Transportation

Chairs: Andrei Blinov, Sertac Bayhan

Operation and Design of Series-Resonant Current-Source Full-Bridge DC-DC Converter *Ievgen Verbytskyi, Andrei Blinov, Dmitri Vinnikov, Dimosthenis Pefitsis*

Battery Charging System with Three-level ANPC Converter Operating at Variable Bipolar DC-link *Michał; Harasimczuk, Krzysztof Kalinowski, Jacek R#261;bkowski*

Energy Management Strategy for Electric Vehicle Charging Station as Flexible Power Reserve *Ali Husnain, Abdullahi Bamigbade, Hamad AlBeshr, Tareg Ghaoud*

An efficient control strategy for the hybrid wind-battery system to improve battery performance and lifetime *Mehrdad Gholami, Majid Mehraza, Reza Razi, Ahmad Hably, Seddik Bacha, Antoine Labbone*

Modelling of Voltage Distribution within Hairpin Windings *Eraldo Preci, Stefano Nuzzo, Davide Barater, Michele Degano, Giampaolo Buticchi, David Gerada, Chris Gerada*

Impact of PWM Waveforms on Partial Discharge in SiC-Based Motor Drives *Mohamed Diab, Wenzhi Zhou, Christopher Emersic, Xibo Yuan, Ian Cotton*

Room J

T133 - TT TT Renewable Energy Systems and Smart Grid

Chairs: Fernando Lezama, Mo-Yuen Chow

Imbalance Reduction by Risk Filter for Operating Flexible DER under Forecast Uncertainties *Marvin Schlageter, Juri Backes, Wolfgang Renz*

Probabilistic DAM price forecasting using a combined Quantile Regression Deep Neural Network with less-crossing quantiles *Ties van der Heijden, Peter Palensky, Edo Abraham*

Vertical Axis Wind Turbine Performance Based on Rotor Blade Radius *Edvins Mineikis, Janis Zakis, Alexander Suzdalenko*

Low-power Hybrid Energy Harvesting System Based on the Joint Operation of Glucose Biofuel Cells and Thermoelectric Generator *Daria*

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Gazizova, Aleksei Shcherbak, Pavel Gotovtsev, Yulia Parunova, Sergei Vostrikov, Andrey Somov

Fractional-Order Adaptive Fuzzy Super Twisting Sliding Mode

Controller for Permanent Magnet Synchronous Generators *Nawal Ferhat, Tarek Aounallah, Najib Essounbouli, Farid Bouchafaa, Abdelaziz Hamzaoui*

Control Algorithm for Energy Storage Integration with an Open-Winding Wind Turbine Generator *Mehanathan Pathmanathan, Peter Lehn*

Room D

INTEROP4 - IEEE 1451 Centers of Expertise (CoE)

P1451.001-2017, Gustavo Monte

P1451.002, Antonio Espirito-Santo

P1451.1.5, Jun Wu

P1451.1.6, Hiroaki Nishi

OPEN DISCUSSIONS

Chairs: Victor Huang, Kang Lee

Room B

S022 - SS Advanced Control of GridConnected Converters for Distributed Generation and Power Quality

Chairs: Hadi Y. KANAAN, Hasan KOMURCUGIL

Stability Enhancement for Single-Loop Voltage Controlled Voltage-Source Converters with LC-Filter *Ziqi Zhou, Sante Pugliese, Marco Liserre*

Single-stage PV System With Multi-Objective Predictive Control Approach *Simone Vanti, Prabhat Ranjan Bana, Mohammad Amin*

Model-Free Predictive Control of Grid Connected Converters with No System Parameters *Alireza Jabbarnejad, Sadegh Vaez-Zadeh, Jose Rodriguez*

Set Invariance Based Localization of Kalman Filter Estimation Error in Automatic Generation Control *Dorijan Leko, Mario Vašak*

Avoiding Circulating Current via Current-Limiting Control in AC Microgrids with Parallel Three-Phase Inverters *Seyfullah Dedeoglu, George C. Konstantopoulos*

A New Arm Voltage Control Scheme for a Single Phase Modular Multilevel Converter *Anthony Abdayem, Jean Sawma, Flavia Khatounian, Eric Monmasson, Ragi Ghosn*

Room A

T049 - TT Electrical Machines and Drives

Chairs: Qingsong Wang, Xing Zhao

Induction Motor Parameters Identification in Noisy Environment *Jean Sawma, Flavia Khatounian, Eric Monmasson, Ragi Ghosn*

Detection of balls bearing Incipient defect by current

analysis *Mahamad Hassan Gaditto, Vocassin Bruno, Yazidi Amine, Henao Humberto, Segard Eric*

Investigation of Resistivity Impact on AC Losses in Hairpin

Conductors *Marco Pastura, Stefano Nuzzo, Davide Barater, Giovanni Franceschini*

Sustainability Aspects of Electrical Machines For E-Mobility Applications Part I: A Design with Reduced Rare-earth

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Elements *Bharadwaj Raghuraman, Shafiqh Nategh, Nikitas Sidiropoulos, Linnea Petersson, Aldo Boglietti*
Detection of Interturn Short-Circuits of E-Bike BLDC motor *Zdenek Frank, Jan Laksar*

Room G

S112 - SS Advances in DataDriven Process Monitoring and Control for Complex Industrial Systems

Chairs: Hao Luo, Yunsong Xu

Generating Pool of Classifiers with Hyper-Parameter Optimization for Ensemble *Qiushi Wang, Hian Leng Chan*

Vibration Analysis of a Wind Turbine Gearbox for Off-cloud Health Monitoring through Neuromorphic-computing *Pouya Soltani Zarrin, Cristian Martin, Peter Langendoerfer, Christian Wenger, Manuel Diaz*

A Data-Driven Method for Paint Curing Quality Control in Automotive Industry *Gökalp Ayaz, Uğur Üresin*

Performance Evaluation of a De-oiling Process Controlled by PID, H_∞; and MPC *Stefan Jespersen, Zhenyu Yang*

Optimal robotic controller based on signals and data information with kinematic redundancy *Yair Casas, Chidentree Treesatayapun*

A Proposal to Mitigate Similarity Bias for the Paderborn Bearing Data Set *Lucio Venturim, Francisco de Assis Boldt*

Room K

S512 - SS Modular Power Converters Topologies, Control and Applications

Chairs: Deepak Ronanki, Thanga Raj Chelliah

MMCC Based Decoupled Control of PMSG for Small Scale Hydro

Power Plants *Rakesh Roy, Amit Kumar, Abhinav Kumar, Anindita Jamatia, Prabir Ranjan Kasari, Bikram Das, Abanishwar Chakrabarti*

Multilevel Inverter Topologies for Marine Propulsion Systems: A

Review *Vadher Chandrakant Pravinbhai, Deepak Ronanki, Thanga Raj Chelliah*

DC-Side Impedance Interaction Analysis in an MMC-Based Back-to-Back VSC-HVDC System *Mehrdad Nahalparvari, Mohsen Asoodar, Staffan Norrga, Hans-Peter Nee*

Combination of Backstepping and Reduced Indirect FCS-MPC for Modular Multilevel Converters *Saad Hamayoon, Morten Hovd, Jon Are Suul*

Trapezoidal operation of modular multilevel DC-DC converter for HVDC interconnections *Beeond M. Saleh, Felipe Donoso, Alessandro Costabeber, Alan J. Watson, Jon C. Clare*

Modular-Matrix-Converter-Based Smart Transformer for Hybrid

Microgrid *Lijun Zhang, Alexandre Bento, Guilherme Paraíso, Pedro Costa, Sonia Pinto, José Fernando Silva*

11:10-11:20

Room C

ICELIE 2021 Closing session

11:30-12:50

Room L

S523 - SS Multilevel Converters Topologies, Control Strategies and Protection

Chairs: Josep Pou, Satish Naik Banavath

Saturday, 16 October 2021

A Balanced and Vertically Stacked Multilevel Power Converter Topology with Linear Component Scaling *Matthew Jahnes, Bernard Steyaert, Matthias Preindl*

Modular Power Flow Enhancer for Transmission Networks under Unbalanced Power Grid Conditions *Semih Isik, Vasishta Burugula, Mohammed Alharbi, Subhashish Bhattacharya*

An Integrated Multilevel Bridge Tapped Resonant Bidirectional AC to DC Converter *Kalyan Yenduri, Sunil Kumar Dube, Ramu Nair, Pritam Das*

High Performance Predictive Control based Power Conversion for Photovoltaic Energy Harvesting *Zhanfan Yu, Yuehao Zhu, Guoyuan Li, Sally Sajadian*

An Asymmetrical Modular Multilevel Converter with Sensorless Voltage Control for High-Quality Output *Zhongxi Li, Zhonggang Li, Angel Peterchev, Stefan Goetz*

A Switched-Diode Multilevel Converter Topology *Mohammad Ali Hosseinzadeh, Maryam Sarebanzadeh, Cristian Garcia, Ebrahim Babaei, Jose Rodriguez*

Room I

T0912 - TT Power Electronics & Energy Conversion

Chairs: Bhim Singh, Saeed Arazm

PSO-Based Performance Optimization Procedure for Current-Controlled Switched Reluctance Generators in Wind Power Applications *Filipe Pinarello Scalcon, Rodrigo Padilha Vieira, Hilton Abílio Gründling*

Decoupled Power Flow Control based Phase Modulated Triple Active Bridge DC-DC Converter *Ashwin Chandwani, Ayan Mallik, Arunachala Mada Kannan*

A Comprehensive Design Procedure and Performance Evaluation of 200°C Non-Inverting Buck-Boost Converter using SiC MOSFET Bare Dies *Saikat Dey, Ayan Mallik, Neil Goldsman*

A Fuel Cell Assisted Single-Phase Multi-Port Uninterruptible Power Supply with Finite Control Set Model Predictive Controller *Sina Vahid, Armin Ebrahimian, Nathan Weise, Ayman EL-Refaie*

Static and Dynamic Characterization of 1200 V SiC MOSFETs at Room and Cryogenic Temperatures *Mahmoud Mehrabankhomartash, Shiyuan Yin, Alfonso Cruz, Lukas Graber, Maryam Saeedifard, Simon Evans, Florian Kapaun, Ivan Revel, Gerhard Steiner, Ludovic Ybanez*

A Double-Output Soft-Switched Step-Up AC/DC Bridge-Less Converter for Microwave Energy Application *Matthew Bakalian, John Lam*

Room H

TUT13 - A review and ultimate solution for inductor current estimation in power converters

Presenter
Dorin O. Neacsu
Associate Professor
Applied Electronics Department
Technical University Of Iasi, Romania

Room F

TUT11 - Advances and Trends in Cascaded H-bridge Multilevel Converters for MV Grid Applications

Presenters

Saturday, 16 October 2021

Prof. Josep Pou
Professor
Nanyang Technological University, Singapore

Dr. Frans Dijkhuizen
Hitachi ABB Power Grids, Sweden

Dr. Glen G Farivar
Post-doc
Nanyang Technological University, Singapore

Dr. Naga Brahmendra
Post-doc
Nanyang Technological University, Singapore

Room E

TUT10 - Power Conversion, Modulation and Control of Multiple Three-Phase Permanent-Magnet Motor Drive Systems

Presenters
Prof. Zheng Wang
Professor
School of Electrical Engineering, Southeast University, China

Dr. Xueqing Wang
Associate Research Fellow
Sichuan University, China

Room M

S101 - SS Advances in Component and System Modeling and Simulation of Power Systems in Transition to Converter-Dominated Systems

Chairs: Phylcia Cicilio, Reinaldo Tonkoski

Computationally Efficient Partitioned Modeling of Inverter Dynamics with Grid Support Functions *Sunil Subedi, Nischal Guruwacharya, Ujjwol Tamrakar, Phylcia Cicilio, Hossein Moradi Rekabdarkolae, Robert Fourney, Reinaldo Tonkoski, Timothy M. Hansen*

Parametric Comparative Analysis between Virtual Synchronous Generator and Droop-based Inertia for Inverter-Based Microgrids *Daniel D. Campo-Ossa, Enrique A. Sanabria-Torres, Jesus D. Vasquez-Plaza, Juan F. Patarroyo-Montenegro, Andres F. Lopez-Chavarro, Fabio Andrade Rengifo*

Design of Proportional-Resonant Controllers for Voltage-Source Converters using State-Space Model *Enrique Sanabria-Torres, Fabio Andrade Rengifo, Juan Patarroyo-Montenegro, Jesus Vasquez-Plaza, Andres Lopez-Chavarro, Daniel Campo-Ossa*

GRU and LSTM Comparison for Black-Box Modeling of Power Electronic Converters *Pouria Qashqai, Rawad Zgheib, Kamal Al-Haddad*
Design of Harmonic Compensators in PV Systems with Large Number of Micro-Inverters *Nasim Rashidirad, Mohsen Hamzeh, Keyhan Sheshyekani*

Power Converter Topologies for Electrolyzer Applications to Enable Electric Grid Services *Bang Nguyen, Mayank Panwar, Rob Hovsapien,*

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Kazunori Nagasawa, Tuyen Vu

Room N

T012 - TT Cloud Computing, Big Data and Software Engineering

Chairs: Yang Shi, Luis Ribeiro

Investigation on Optimizing Cost Function to Penalize Underestimation of Load Demand through Deep Learning

Modeling Dabeeruddin Syed, Haitham Abu-Rub, Ameema Zainab, Mahdi Houchati, Othmane Bouhali, Ali Ghayeb, Shady S. Refaat

Slicing the Past to Predict Future *K. M. George*

Using the DELPHI Method for Model for Role Assignment in the Software Industry *Daniel Varona, Luiz Fernando Capretz*

Broken Rotor Bar Detection in Induction Motors through Information Entropy Analysis on the Start-up Transient and Steady-State Current Signals *Serafin Tierrafria-Baez, Priscila M. Calderon-Lopez, Victor Cano-Valdez, Brayan K. Aviles-Diaz, Carlos Rodriguez-Donate, Eduardo Cabal-Yepez*

Frequency-Band Analysis for Acoustic Noise Characterization of an Interior Permanent Magnet Motor *Nathan Emery, Yihui Li, Berker Bilgin*

Room J

T135 - TT Renewable Energy Systems and Smart Grid

Chairs: Hani Vahedi, Abdelhamid Hamadi

Partial power differential-mode inverter for photovoltaic microinverter applications *Diana Lopez, Nicolas Muller, Hugues Renaudineau, Samir Kouro, Jose Rodriguez*

Modeling of Direct-Drive Point Absorber Wave Energy

Converters *Cesar Branco, Luiz Ribeiro, Jose Matos, Hugo Mendonça, Osvaldo Saavedra, Hércules Oliveira*

Grid Integration of Heterogeneous Energy Sources/Loads using a Multi-port MMC with Independent Power Flow *Vishnu Narayan Vipin, Venkatraman D, Ned Mohan*

Optimal Power Sharing Method in Photovoltaic Energy-Based Grid-Feeding Converters for Microgrid Applications *Agustin Tobias, Victor Cardenas, Juan Gonzalez-Rivera, Mario Gonzalez-Garcia, Fernando Quiroz-Vazquez, Carlos D. Garcia-Beltran*

Analysis of the Application of Polynomial Reference Tracking

Generalized Predictive Control in the Control of an LCL Filter *Thyago Estrabis, César Santos, Raymundo Cordero, Walter Suemitsu, Gabriel Gentil, Matheus Pelz*

Power Loss Investigation of Series-Connected Current Source Inverters *Bowen Jiang, Zijian Wang, Qiang Wei*

Room D

TUT09 - Electric Machines and Drives Fault Diagnosis/Prognosis and Fault-Resilient Control

Presenters

Mohamed Benbouzid

Professor

University of Brest, CNRS, IRDL, France

Demba Diallo

Saturday, 16 October 2021

Professor
University of Paris-Saclay, CNRS, GeePs, France

Room B

S023 - SS Advanced Control of GridConnected Converters for Distributed Generation and Power Quality

Chairs: Hadi Y. KANAAN, Hasan KOMURCUGIL

DC Stage Modelling for LVRT Capability in Photovoltaic Systems *David Javier Rincon Adarme, Maria Alejandra Mantilla Villalobos, Juan Manuel Rey Lopez, Miguel Andres Garnica Lopez*

An Equivalent Model of the Paralleled Modular ANPC Converter with a Decoupled DC Link for Real-Time Simulation *Kevin-Rafael Sorto-Ventura, Wei Li, Kamal Al-Haddad*

PV Injection System with Third Harmonic Compensation based on H-Bridge Topologies *Miguel Albornoz, Jaime Rohten, Jose Espinoza, Marcos Andreu, Alejandra Cuevas, Adrian Torres*

Power Control of a Three-phase Grid-connected Inverter using a Proportional-Resonant Control Method under Unbalanced

Conditions *Mohammad Alathamneh, Xingyu Yang, R. M. Nelms*

Power Control of a Three-phase Grid-connected Inverter using a Time-Domain Symmetrical Components Extraction Method under

Unbalanced Conditions *Mohammad Alathamneh, Xingyu Yang, R. M. Nelms, Saad Al-Gahtani*

Battery Sources Power Balancing in a Cascaded Multilevel Inverter via an Optimal Moving Horizon Predictive Control *Hassan Althuwaini, Mohammad B. Shadmand*

Room C

S092 - SS Advanced signal and image processing techniques for condition monitoring of Electric Machines and Drives

Chairs: Jose A Antonino-Daviu, Hubert Razik

Application of Stray Flux Analysis for Rotor Fault Detection in Soft-Started Induction Motors *Angela Navarro-Navarro, Vicente Biot-Monterde, Jose A. Antonino-Daviu*

A non-intrusive method for sparking assessment in brush dc-motors based on wavelet analysis *Pablo Marino Velasco Pla, Jose Antonino-Daviu*

A comparison of envelope and statistical analyses for bearing diagnosis in hot steel rolling mill lines *Kisan Sarda, Antonio Acernese, Luigi Russo, Mirko Mazzoleni*

Hilbert Marginal Spectrum for Failure Mode Diagnosis of Rotating Machines *Eoghan T. Chelmiah, Darren F. Kavanagh*

Infrared thermography image processing for the electromechanical fault detection on the kinematic chain *Alvaro I Alvarado-Hernandez, Israel Zamudio-Ramirez, Jose A Antonino-Daviu, Roque A Osornio-Rios*

A Robust Self-Commissioning Techniques for Identification of the VSI Nonlinearity Effect in IPMSM Drives *Sumedh Dhale, Babak Nahid-Mobarakeh, Ali Emadi*

Room A

S081 - SS Advanced Topologies and Control Methods

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for Multiport Power Converters

Chairs: Mokhtar Aly, Samir Kouro

Novel Dynamic Power Balancing Solution for Minimization

Overdesigning in Military Aircraft Power System Architecture *Syed Rahman, Jonathan Ghering, Irfan Khan, Mohd Tariq, Akhtar Kalam, Atif Iqbal*

General Approach to Synthesize Multi-Port Power Converters for Hybrid Energy Systems *Sina Vahid, Ayman EL-Refaie*

A Five-Level Common Grounded Boost Inverter Topology with Model Predictive Control For Grid-Tied Photovoltaic Generation *Mokhtar Aly, Samir Kouro, Emad M. Ahmed, Thierry A. Meynard, Jose Rodriguez*

Model Predictive Control-Based Three-Port Common Ground

Photovoltaic-Battery Grid-Connected Inverter *Mokhtar Aly, Eltaib Abdeen D. Ibrahim, Samir Kouro, Emad M. Ahmed, Thierry A. Meynard, Jose Rodriguez*

Integrated Multiport Bidirectional DC-DC Converter for HEV/FCV

Applications *Bang Nguyen, Honnyong Cha, Tuyen Vu, Thai-Thanh Nguyen*

Control of cross-circulating currents in a MMC with parallel connected arms in Solid State Transformers *Felipe Ruiz, Marcelo Perez, Freddy Flores-Bahamonde, Mariusz Malinowski*

Room G

TUT12 - Key Technologies and Latest Advancements of Simultaneous Wireless Power and Data Transfer

Presenters

Prof. Yijie Wang

Professor

Harbin Institute of Technology, China

Dr. Yousu Yao

Associate Professor

Harbin Institute of Technology, China

Prof. Dianguo Xu

Professor

Harbin Institute of Technology, China

Room K

S513 - SS Modular Power Converters Topologies, Control and Applications

Chairs: Deepak Ronanki, Ricardo Lizana Fuentes

Comparison between Two-level and Three-level Based Multi-port

Converter for Interconnected MVAC Microgrids *Tarek Younis, Ahmed Ibrahim, Paolo Mattavelli*

Soft-Deadbeat Control for Multivariable Three Phase VSC Under

Variable Grid Voltage *Marcos Andreu, Jaime Rohten, Jose Espinoza, Luis Moran, Miguel Albornoz, Jose Silva*

Fault Tolerant Predictive Control for Six-Phase Wind Generation

Systems using Multi-Modular Matrix Converter *Sergio Toledo, David Caballero, Edgar Maqueda, Silvia Arrúa, Marcos Gomez-Redondo, Marco Rivera, Raúl Gregor, Patrick Wheeler*

Multicarrier-based Capacitor Voltage Balancing Approach for a New

Four-Level Multilevel Converter *Hoang Le, Apparao Dekka*

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A decoupled Nearest Level Control for a Modular Multilevel Cascade Converter based on Triple Star Bridge Cells (MMCC-TSBC) *Mohammed Azharuddin Shamshuddin, David Arancibia, Felix Rojas, Javier Pereda, Ralph Kennel*

Design and Hardware Implementation of a H-Bridge Sub-module for Single-Phase 5-Level Cascaded Voltage Source Inverters *Roberto Morales Caporal, Jose Francisco Perez Cuapio, Hayde Patricia Martinez Hernandez*

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