

IECON 2022 – 48th Annual Conference of the IEEE Industrial Electronics Society

V1.2b

Monday, 17 October 2022	
08:45-10:15	Studio 204 T3 Part 1: Advanced AI/ML/IoT Techniques for Battery Management and Fast Charging Systems for Transportation Electrification and E-mobility (1.5h)
	Studio 201 T6 Part 1: Utilizing Medium Voltage SiC MOSFETs in Power Conversion Applications: State of the art, Challenges, and Future perspective
	Studio 206 T2 Part 1: Advances in Design and Control for Linear Machines and Drive Systems
08:45-18:00	Studio 211 & 212 DIGITAL HEALTH INFORMATICS WORKSHOP
	Studio 214&216 WORKSHOP ON INDUSTRIAL WIRELESS TECHNOLOGIES AND SYSTEMS
	Studio 202 INTEROP Presentations
10:15-10:30	Studio 204 Coffee Break
	Studio 201 Coffee Break
	Studio 206 Coffee Break
10:30-12:00	Studio 204 T3 Part 2: Advanced AI/ML/IoT Techniques for Battery Management and Fast Charging Systems for Transportation Electrification and E-mobility (1.5h)
	Studio 201 T6 Part 2: Utilizing Medium Voltage SiC MOSFETs in Power Conversion Applications: State of the art, Challenges, and Future perspective
	Studio 206 T2 Part 2: Advances in Design and Control for Linear Machines and Drive Systems
12:00-13:00	Studio 204 Lunch

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	<p>Studio 201 Lunch</p>
	<p>Studio 206 Lunch</p>
13:00-14:30	<p>Studio 204 T8: Hands-on Deep Learning for Industrial Applications</p>
	<p>Studio 201 T7 Part 1: Motion-based Machine Learning and Its Application to Motion Control</p>
	<p>Studio 206 T5 Part 1: Hairpin Windings: an opportunity for Next Generation E-Motors in Transportation</p>
14:30-16:00	<p>Studio 204 T10: Ethics of Artificial Intelligence and Automation for Industrial Applications</p>
	<p>Studio 201 T7 Part 2: Motion-based Machine Learning and Its Application to Motion Control</p>
	<p>Studio 206 T5 Part 2: Hairpin Windings: an opportunity for Next Generation E-Motors in Transportation</p>
16:00-16:15	<p>Studio 204 Coffee Break</p>
	<p>Studio 201 Coffee Break</p>
	<p>Studio 206 Coffee Break</p>
16:15-18:15	<p>Studio 204 T1: Electromechanical Systems Fault Diagnosis and Prognosis</p>
	<p>Studio 201 T4: Key Technologies of High Efficiency and High Power Density Converters (VIDEO-TUTORIAL)</p>
	<p>Studio 206 T9: Using IOPT-Tools for Petri nets driven controller</p>

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development.

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08:30-09:30	Copper Hall Keynote
09:30-10:00	GRAND HALL Coffee Break
10:00-12:30	<p>Studio 204</p> <p>EESS1: Electric Energy Storage Systems (ORAL SESSION)</p> <p>Coordinated Charging Strategy of Cascaded H-bridge With Bidirectional DC-DC Converter for Supercapacitor Energy Storage Applications <i>Ye Zhang, Zixin Li, Fanqiang Gao, Yaohua Li</i></p> <p>A Novel Voltage Balancing Method of Cascaded H-bridge Multilevel Converter With Supercapacitors Energy Storage System for Capacitor Voltage Ripple Reduction <i>Ziqiang Li, Fanqiang Gao, Cong Zhao, Zixin Li, Yaohua Li</i></p> <p>A unified controller framework design for Grid-tied and Grid-forming battery energy storage system <i>Mohammad Rezwana Khan, Mustapha Amine RAHMANI, Moataz EL SIED, Carlos Eduardo CARREJO GONZALEZ</i></p> <p>A Decentralized SoC Balancing Technique for Precharging Series Energy Storage Systems <i>yao li, Donghua Wu, Yang Qi, Weilin Li</i></p> <p>Peukert's Law for Supercapacitor Modules: Applicability and Physics <i>Hengzhao Yang</i></p> <p>Experimental analysis of the effects of discharge current-rates on the parameters of the electrical equivalent circuit for NMC and LCO Li-ion batteries <i>Abdelilah HAMMOU, Raffaele Petrone, Demba Diallo, Hamid Gualous</i></p> <p>Jointly Estimation Method of the SOC and SOH of Lithium-ion Battery based on Fractional Order Multi-Innovation Dual Unscented Kalman Filter <i>Wei Li, Yonglong Zhu, Xiaoheng Guo, Xibeng Zhang, Yanyu Zhang, Yi Zhou</i></p> <p>Supercapacitor based approaches for arc energy absorption in direct current circuit breakers <i>Chamara Dassanayake, Rusiru Gunathilaka, Nicoloy Gurusinghe, Nihal Kularatna</i></p> <p>Novel Multiple Parameter Optimization for Improving Accuracy of Battery Ageing Model and Lifetime Prediction <i>Huma Goyal, Akira Kikuchi, Kohei Honkura, Jun Kawaji, Suguru Ueda</i></p> <p>Techno-Economic Selection of Energy Storage Providing Multiple Services <i>Yichao Zhang, Saeed Peyghami, Amjad Anvari-Moghaddam, Menglin Zhang, Tomislav Dragić, Vito Blaabjerg</i></p> <p>Studio 312</p> <p>ISAS_1: Instrumentation, Sensors, Actuators, Systems Integration and Nano Technologies</p> <p>Measurement and analysis method of the residual moment of the spacecraft active load <i>Xu Xu, Danfeng Sun, Li Li, Guangcheng Ma, Hongwei Xia</i></p> <p>Cost-effective, Accuracy Preserving Scalar Characterization for mmWave Transceivers <i>Mohammad Salah Abdullatif, Salam Hajjar, Paul</i></p>

Tuesday, 18 October 2022*Khanna***Kinematic Modeling of Scissor-Mechanism-Based Curvilinear****Actuator** *Yilun Sun, Felix Pancheri, Tim Lueth***Circuit Modeling and Inductance Calculation for Energy Harvesting of****Dual-Coil RFID Systems** *Alireza Namadmalan, Maeve Duffy***Mixing Determination for Solid Rocket Fuel Production by Peristaltic****Mixing Pump Using Packing Method** *Sana Oshino, Iori Terayama, Rie**Nishihama, Manabu Okui, Taro Nakamura***Method and System for Measurement of Ground Impedance Under the****Shoes for Automatic Terrain Recognition: A Feasibility****Study** *Shubhanshu Sharma, Bobby George***Design, Fabrication, and Control of Micro-Heater Based on Joule****Effect for Low-Cost Medical Device** *Muhammad Tolba, Mohamed Fanni,**Gamal A. Nasser, Umezu Shinjiro, Ahmed M. R. Fath El-Bab***Disturbance and Particle Detection in LiDAR Data** *Jannis Egelhof,**Patrick Wolf, Karsten Berns***Studio 313****SS12_1-Emerging Technologies of Wireless Power Transfer for Vehicle Charging Applications (ORAL SESSION)****Reduction of Standby Current for LCC-S Compensated Inductive****Power Transfer Electric Vehicle Charger** *Yang Yang, Hai Xu, Zhenwei**Huang, Zhicong Huang***Current Balance Design for Inductive Power Transfer Systems with****Secondary Multiple Parallel Branches** *Mengna Luo, Zhenwei Huang,**Bowei Zou, Zhicong Huang***Position Sensing of Wirelessly Charged Electric Personal Transporters****on a Charging Pad Array** *Thomas Rajan P, Bobby George***Ensuring Soft Switching During Transient Operation of Wireless Power****Transfer Systems with Frequency Control** *Shuxin Chen, Jiayu Zhou,**Yaohua Li, Giuseppe Guidi, Jon Are Suul, Yi Tang***A Hysteresis ON-OFF Control Method of Inductive Power Transfer****Systems with Low Output Ripples and Fast Transient Responses** *Jiayu**Zhou, Giuseppe Guidi, Shuxin Chen, Yi Tang, Jon Are Suul***High-Performance Multistage Constant Current Charging for Wireless****Power Transfer Systems** *Chi-Fong leong, Io-Wa lam, Zhaoyi Ding, Chi-**Seng Lam***A Bivariate Control Strategy on Inductive Power Transfer Converter for****Multi-Stage Constant Current Charging** *Zhaoyi Ding, Io-Wa lam, Chi-**Fong leong, Chi-Seng Lam***An Omnidirectional WPT System Based on Three-Phase Frustum-****shaped Coils** *Chao Qi, Funing Yang, Hongyu Duan, Jiantao Zhang***Research on WPT foreign object detection method based on thermal****infrared images** *Chao Qi, wenwu wang, Tian Sun, Kai Song, Fan Yang,**Hongyu Duan***2.1 kW 3 MHz Capacitive Power Transfer with Sleeve-Type Coupler for****Rotary Applications** *Yao Wang, Hua Zhang, Fei Lu***Studio 213 & 215****PEEC_1b:Power Electronics & Energy Conversion (ORAL SESSION)****An Early Fault Diagnosis Approach for PEM Stack based on Phase****Measurement of Single-Frequency Impedance** *Zhenjie Liao, Kai Li,*

Tuesday, 18 October 2022*Jishen Cao, Yan Gao, Cong Yin, Hao Tang***Electrothermal analysis of temperature-limited loads for domestic induction heating applications** *Alberto Pascual***Level-phase-shifted pulse-width modulation for cascaded H-bridges** *Juhamatti Korhonen, Heikki Järvisalo, Janne Jäppinen, Pertti Silventoinen***An AC fault-ride-through strategy for MMC intergrated with energy dissipating resistors in offshore wind power system** *Rui Xie, Bin Lin, Xiaohe Wang, Qing Chen, Chenghao Zhang, Song Tang, Min Chen***A Single-stage Three-phase Bidirectional AC-DC IPT Converter based on SWISS-Rectifier for EV Charging Applications** *Chi Shing Wong, Ka-Hong Loo, Lingling Cao***MOSFET Modelling for a Three-Level Inverter Circuit: A Hybrid Bond Graph Approach** *Gerardo Jaimes, Gilberto Gonzalez-Avalos***Model Predictive Control for Master-Slave Inverters in****Microgrids** *Fernanda Carnielutti, Jose Rodriguez, Margarita Norambuena, Mokhtar Aly***Bidirectional Electric Vehicle Charger Control Design with Performance Improvement** *Houssein Al Attar, Mohamed Hamida, Malek Ghanes, Miassa Taleb***Optimization-based Overmodulation Strategies for Harmonic Distortion Reduction in VSIs** *Felipe Calderon, Alejandro Angulo, Andres Mora***Studio 201****CSYS1: Control Systems (ORAL SESSION)****Reward Shaping-based Double Deep Q-networks for Unmanned Surface Vessel Navigation and Obstacle Avoidance** *Zihan Gan, Jinghong Zheng, Zhenyu Jiang, Renzhi Lu***Synthesis of Decentralized Variable Gain Robust Controllers with Guaranteed L2 Gain Performance via Piecewise Lyapunov Functions for a Class of Uncertain Large-Scale Interconnected Systems** *Shunya Nagai, Hidetoshi Oya, Tomohiro Kubo, Tsuyoshi Matsuki***Comparative Study on Collision Avoidance Methods in Path Planning for Warehouse Robots Using MPC** *Shinji Ishihara, Masaki Kanai, Ryu Narikawa, Toshiyuki Ohtsuka***Robust control and energy management in a hybrid DC microgrid using second-order SMC KASSIR** *Sarah, Moustapha DOUMIATI, Mohamed MACHMOUM, Clovis Francis, Maher EL RAFEI***Comparison of Three Speed Loop Designs for a High Speed Nine-phase Permanent Magnet Synchronous Machine in More Electric Aircraft** *Mi Tang, Yuzheng Chen, Tao Yang, Mohammad Ilkhani***A nonlinear optimal control approach for the Lotka-Volterra dynamical system** *Gerasimos Rigatos, Patrice Wira, Pierluigi Siano, Masoud Abbaszadeh***Adaptivity Schemes for Model Predictive Speed Control of PMSM** *Michal Kozubík, Pavel Václavek, Inigo Garcia de Madinabeitia Merino***INSERTION OF RFID TAGS INTO PLASTIC PARTS USING ULTRASONIC****WELDING** *Sérgio Pereira, Pedro Morais, Fernando Veloso, António Moreira, Daniel Miranda, João Machado, João Martins, João Vilaça***Discrete-time Binary Controller using Variable-order Delta-Sigma Modulator** *Shuto Ota, Akihiko Yoneya***Studio 315**

Tuesday, 18 October 2022**SS7: Advanced Control of Grid Connected Converters for Distributed Generation and Power Quality (ORAL SESSION)**

A Deadbeat Current Controller for Thyristor-Controlled LC-Coupling Hybrid Active Power Filter *Wai-Kit Sou, Cheng Gong, Chi-Kong Wong, Chi-Seng Lam*

Stability Analysis and Design of Volt-VAR Controller for Grid Connected PV Systems with Consideration of the Impact of Voltage Feedforward *Amin Amanipoor, Mohammad Sadegh Golsorkhi*

Selective Harmonic Mitigation (SHM-PWM) and THD Minimization: Performance Comparison of Different Formulations *Angel Perez-Basante, Irati Ibanez-Hidalgo, Salvador Ceballos, Alain Sanchez-Ruiz, Georgios Konstantinou, Josep Pou*

High-Performance Grid Current Feedback Control for Three-Phase Voltage-Source Converter with an LCL Filter Under Distorted Grid Conditions *Ahmad Ali Nazeri, Christian Noeding, Peter Zacharias*

A Novel Switching Control Technique for a Packed E-Cell (PEC) Inverter Using Signal Builder Block *Bushra Masri, Hiba Al Sheikh, Nabil Karami, Hadi Kanaan, Nazih Moubayed*

Evaluation of SiC-Based Three Phase Power Converter for Microgrid Applications *Alfonso Damiano, Mauro Boi*

PUC9-MMC: A Reduced-Switch-Count Modular Multilevel Converter with DC Fault Current Handling Capability *SAEED ARAZM, Fadia Sebaaly, Kamal Al-Haddad*

Comparative Analysis of PV Parameter Extraction

Algorithms *Muhammad Adeel, Hadeed Sher, Ahmed Kamal Hassan, Kamal Al-Haddad*

Modeling and Control of Voltage Stress for Compact Multilevel Converters using a Predictive Approach *Mohammad Babaie, Mostafa Abarzadeh, Kamal Al-Haddad*

A New Fault Tolerant Control Method for a Three Phase Modular Multilevel Converter Under an Arm Failure. *Anthony ABDAYEM, Jean Sawma, Eric Monmasson, Flavia Khatounian, Ragi Ghosn*

Studio 210**PSSG_1: Power Systems and Smart Grid ... (ORAL SESSION)**

Research on the Stochasticity Control Strategy of Wind Farm Incorporating System Contingencies *Runsheng Zheng, Qunying Liu, Rui Xia, Zhen Guo, Xin Ge*

Model-based Approach for Differential Power Processing (DPP) Converters *Yousef Mahmoud*

Differential Power Processing (DPP) with Reduced Number of Converters *Yousef Mahmoud*

Power Loss Estimation Approach for PV Systems Operating Under Faults *Yousef Mahmoud*

Deep Learning with Recurrent Expansion for Electricity Theft Detection in Smart Grids *Tarek Berghout, Mohamed Benbouzid, Mohamed Amine Ferrag*

Large Size Optimization Problem for Power Management in a Fuel Cell Electric Race Car Using Combinatorial Approach *Essolizam PLANTE, Eric BIDEAUX, Mylène DELHOMMAIS, Mathias GERARD*

Optimal sizing and real-time EMS for low carbon emissions of a hybrid islanded microgrid *Fouad Boutros, Moustapha Doumiati, Jean-Christophe*

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Olivier, Imad Mougharbel, Hadi Kanaan

Electric bus smart charging under a bi-level optimisation model to set dynamic tariffs *Jônatas Augusto Manzolli, Carlos Henggeler Antunes, João Pedro Trovão*

Bearing Faults Detection Using Statistical Feature Extraction and Probability Based Distance: A Comparative Study *Junjie YANG, Claude DELPHA*

Active Synchronization of Islanded Microgrid using Droop-controlled Grid-forming Inverters *Soham Chakraborty, Mohammed Tuhin Rana, Murti V. Salapaka*

Studio 316

SS14_1:Machine Vision, Control and Navigation (ORAL SESSION)

UAV Embedded Real-Time Object Detection by a DCNN Model Trained on Synthetic Dataset *Ricardo Maroquio Bernardo, Luis Claudio Batista da Silva, Paulo Fernando Ferreira Rosa*

Evaluation of ORB-SLAM based Stereo Vision for the Aircraft Landing Status Detection *Chao-Chung Peng, Rong He, Chin-Sheng Chuang*

Vision-based targeting system for automatic fire fighting: concept and evaluation *Fabian Stoller, Marvin Höhner, Felix Kümmerlen, Alexander Fay*

Enhanced V-SLAM combining SVO and ORB-SLAM2, with reduced computational complexity, to improve autonomous indoor mini-drone navigation under varying conditions *Amin Basiri, Valerio Mariani, Luigi Glielmo*

Confidence Estimator Design for Dynamic Feature Point Removal in Robot Visual-Inertial Odometry *Niraj Reginald, Omar al-Buraiki, Baris Fidan, Ehsan Hashemi*

Social Aware Navigation Based on Proxemic Interaction *Giovane Moreira, Yudith Cardinale, Marcelo Sampaio, Anderson Leite, Érika Correia, Adriel Souza, João Pedro Vilasboas, José Díaz Amado, João Marques*

Evaluation of Feature Detection Algorithms and Epipolar Geometry Based Camera Pose Estimation *Sharu Susan Jacob, Sreeja S, Nisha S Dathan*

The Arc

ICELIE CONFERENCE -TOOLS AND PLATFORMS - HYBRID LEARNING (ORAL SESSION)

Studio 211 & 212

PEEC_1a:Power Electronics & Energy Conversion (ORAL SESSION)

Magnetic Integrated Superbuck with Low Current Ripple using Linear-nonlinear Coordinated Control *Yu Gu, Zhenqi Wang, Liying Zhu, Yanjun Xing, Zhenqi Wang, Anshou Li*

A Regulated 24V-to-1V Series-Capacitor Buck Converter with Coupled-Inductor for Point-of-Load Applications in Data Centers *Zhenxin Wu, Yueshi Guan, Chang Liu, Jing Ou, Yijie Wang, Dianguo Xu*

Influence of PWM techniques on the DC-Link capacitor power losses of multiphase VSIs *Ander de Marcos, Unai Ugalde, Jon Andreu, Markel Fernandez, Endika Robles*

650 V CoolSiCTM hybrid discretized in the bridgeless totem-pole PFC *Jae-eul Yeon, Syeda Quratulain Akbar*

A DCX-LLC Resonant Converter with High Input-Output Voltage Ratio

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Based on an Integrated Matrix Transformer *Yuyang Jiang, Xinbo Ruan, Renxi Dong, Ye Xu*

Frequency Predistortion Strategy Based Digital Phase Locked Loop for PFC Converter *Baining Fu, Gaolin Wang, Binxing Li, Guoqiang Zhang, Wensheng Luo, Shijie Li, Dianguo Xu*

A Novel Converter-level Online Junction Temperature Estimating Method for SiC MOSFETs Based on the Current Oscillation of DC and AC sides in a Single Phase Inverter *Qinghao Zhang, Pinjia Zhang*

Robust Control of Grid-Connected Inverter Based on ;Synthesis and Genetic Algorithm *Yu Zhang, Tianzhi Fang*

Impact of Operational Factors on the Lifetime of Power Semiconductor Devices in Electric Vehicles *Abhinav Arya, Abhishek Chanekar, Naveen Kumar Endla, Amit Verma, Sandeep Anand*

Power Control of Grid-Forming Converters Based on Full-State Feedback *Meng Chen, Dao Zhou, Frede Blaabjerg*

Studio 216

INTEROP Demos

Hall 300

EMD_1:Electrical Machines and Drives (ORAL SESSION)

Scalar Stator Voltage Control of Induction Machine Drives without Current Sensors *Michael Bierhoff, Johannes Büsch*

Adaptive Stability Control Strategy for Electrolytic Capacitor-less Permanent Magnet Motor Drives *Weixin Yue, Dawei Ding, Zekun Ren, Gaolin Wang, Dianguo Xu*

Pseudo-Random Frequency Pulse Voltage Injection for Sensorless IPMSM Drives at Low Speeds *Lianghong Zhu, Binxing Li, Guoqiang Zhang, Runhua Xiang, Hongpeng Zhang, Gaolin Wang, Dianguo Xu*

Thrust Ripple Suppression of PMLSM Drives Based on Fourier Transform Compensator Cascaded Improved ESO *Heng Zhang, Guoqiang Zhang, Xinru Zhao, Dawei Ding, Gaolin Wang, Dianguo Xu*

A High Power-Factor Permanent Magnet Vernier Machine with Hybrid Concentrated-Winding *Shuangchun XIE, Shun Cai, Yuefei Zuo, Libing Cao, Fawen Shen, Boon Siew Han, Chi Cuong Hoang, Christopher H.T. Lee*

A Variable-Period Inertia Identification Strategy Based on Landau Adaptive Method for PMSM Drives Under Low-Acceleration Conditions *Yuanming Huang, Qiwei Wang, Zhaobin Huang, Bin Hu, Guangdong Bi, Guoqiang Zhang, Gaolin Wang, Dianguo Xu*

Local demagnetization fault detection in PMASynRM based on finite element modeling and characterisation *Jérémy CREUX, Najla Haje Obeid, Thierry BOILEAU, Farid Meibody-Tabar*

Characterisation of Compressed Windings via High Resolution X-ray Computed Tomography and Semi-Automatic Segmentation *Joshua Hoole, Ria Mitchell, Dominic North, Nick Simpson, Philip Mellor*

Current-Based Analytical Model for Fault Detection and Diagnosis in 7-phase Machines *Claude DELPHA, Lu ZHANG, Demba DIALLO*

Mitigation of AC Winding Losses for Aircraft Propulsion Motors *Ahmed Hebala, Stefano Nuzzo, Peter Connor, Giuseppe Volpe, Michael Galea, Chris Gerada*

Studio 314

SS3_1: Distributed Control and Optimization in

Tuesday, 18 October 2022**Networked Systems and their Applications (ORAL SESSION)**

Secure Event-Triggered Distributed Cooperative Control of High-Speed Trains Under DoS attacks *Shunyuan Xiao, Xiaohua Ge, Qing-Long Han, Zhenwei CAO*

Load Distribution and Voltage Adjustment of Microgrid Based on Reference Voltage Compensation Strategy *Kaijian Tian, Xinying Lei, Shangpeng Zhong, Zibao Lu, Youhong Feng*

Security Platoon Control of Connected Vehicle Systems under DoS Attacks and Dynamic Uncertainty *Rongzhen Wang, Bing Zhang, Wen Shixi, Yuan Zhao*

Velocity-Free Distributed Robust Nash Equilibrium Seeking By An Uncertainty and Disturbance Estimator Based Algorithm *Zhen Xiang, Danhu Li, Guobiao Jia, Maojiao Ye*

Transmission Loss-Aware Peer-to-Peer Energy Trading in Networked Microgrids *Hailing Zhu, Khmaies Ouahada, Adnan Abu-Mahfouz*

Joint Design of Control and Transmission for Industrial CPS under Time Sensitive Networking *xuanzhao Lu, Qimin Xu, jinglong zhang, cailian chen*

Leader-Follower Multiagent Systems Containment with Prescribed Instant *Jiyuan Kuang, Bo Zhang, Yabin Gao, Shuxian Fang, Shichang Guo, Zhenhuan Wang, Xiaoning Shen, Jianxing Liu*

Simulation Environment for Modular Automation Systems *Björn Leander, Tijana Markovic, Aida Causevic, Tomas Lindström, Hans Hansson, Sasikumar Punnekkat*

Studio 311**SS35_1: DC-DC Conversion- Power Circuits and Applications (ORAL SESSION)**

Frequency Characteristics of Buck Converter Control Systems with Second-order Sliding Mode *Wenyi Wu, Hanqing Zhang, Guangxin Duan, Yanmin Wang, Zhihua Dong*

Behavior Consideration of 1200 V SiC Half-Bridge Power Module under Various Dead-Time during Hard-Switching *Ahmad Ali Nazeri, Mahmoud Saeidi, Marwan Aldayea, Peter Zacharias*

A New Adaptive Damping Control for Load-side Converters to Mitigate Instability in DC Microgrids for Constant Power Loads *Rohit Kumar Rastogi, Manoj Tripathy*

Half-Bridge-Active-Clamp Converter with High Step-down Capabilities for More Electric Aircraft Applications *Yiren Zhu, Xingyu Yan, Zhenyu Wang, Tao Yang, Serhiy Bozhko, Patrick Wheeler*

Studio 202**MCRM1: Motion Control, Robotics and Mechatronics (ORAL SESSION)**

A Pragmatic Framework for Mobile Redundant Manipulator Performing Sequential Tasks *Olivier RAYMOND, Adel OLABI, Richard BEAREE*

Experimental Analysis of Robot Hybrid Calibration Based on Geometrical Identification and Artificial Neural Network *Maxime Selingue, Adel Olabi, Stéphane Thiery, Richard Béarée*

High-Performance Admittance Control of An Industrial Robot Via Disturbance Observer *Kangwagye Samuel, Kevin Haninger, Sehoon Oh*
Linear Temporal Logic-based Mixed-Integer Linear Problem Planning with the Koopman Operator *Shumpei Tokuda, Masaki Yamakita, Hiroyuki*

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	<p><i>Oyama, Rin Takano</i> Flatness-based control in successive loops for industrial and mobile robots <i>Gerasimos Rigatos, Patrice Wira, Masoud Abbaszadeh, Jorge Pomares</i></p> <p>Challenges for Motion Systems in automated Production Systems – an Industrial Field Study <i>Eva-Maria Neumann, Birgit Vogel-Heuser, Juliane Fischer</i></p> <p>Robust Decentralized Multi Robot Navigation using Tube based Model Predictive Control and Optimal Reciprocal Collision Avoidance <i>Xiang Chen, Steven Liu</i></p> <p>Calibration methodology for multirobot assembly cell <i>Floriane Mazzoni, Adel Olabi, Richard Bearee, Jean-Baptiste Ernst-Desmulier</i></p>
	<p>Studio 206</p> <p>SS26_1: Advanced Control Techniques for Power Electronics Converters (ORAL SESSION)</p> <p>Stability Analysis of Sliding Mode Controlled Buck Converters with Hysteresis Modulation <i>Zhihua Dong, Shibo Yuan, Guangxin Duan, Yanmin Wang, Wenyi Wu</i></p> <p>Analysis and Design of An Improved Model Predictive Control for Single-Phase LC-Coupling Hybrid Active Power Filter <i>Pak-Ian Chan, Wai-Kit Sou, Chi-Seng Lam</i></p> <p>A T-Type converter-based Electric Vehicle Charger with Active Power Filter Functionality <i>Sertac Bayhan, Hasan Komurcugil</i></p> <p>Optimized Minimum-Loss Hybrid Multiple Phase Shift Modulation Technique for Dual Active Bridge Converters for MEA Applications <i>Jiaqi Yuan, Niloufar Keshmiri, Mohamed Ibrahim, Rachit Pradhan, Ali Emadi</i></p> <p>A New Control Strategy with Simplified Model and Kalman Filter Estimator for Grid-Tied Inverter with Asymmetric LCL Filter <i>Weimin Wu, Chunxiao Gao, Eftichis Koutroulis Eftichis Koutroulis, jianming chen, gang lu, Frede Blaabjerg Frede Blaabjerg</i></p> <p>Online Self-Tuning Current-Controller for Three-Phase Three-Level T-type Rectifier <i>Ali Sharida, Sertac Bayhan, Haitham Abu-Rub</i></p> <p>An Improved DBC-MPC Strategy for LCL-Filtered Grid-connected Inverters <i>Bingtao Zhang, Weimin Wu, Ning Gao, Eftichios Koutroulis, Henry Shu-Hung Chung, Frede Blaabjerg</i></p> <p>An Optimized GaN-Based DAB Converter for More Electric Aircraft <i>Niloufar Keshmiri, Rachit Pradhan, Mohamed Ibrahim, Ali Emadi</i></p> <p>Model Predictive Nearest Level Control (MP-NLC) Method for 9-Level Converter With LC Filter <i>Armin Ebrahimian, Pouya Zolfi, Iman Hosseini, Waqar Khan, Nathan Weise, Ayman EL-Refaie</i></p>
	<p>Studio 214</p> <p>INTEROP Presentations/WG Meetings</p>
10:00-18:00	<p>Studio 214&216</p> <p>NOT AVAILABLE</p>
	<p>Studio 310 (Circle)</p> <p>BRIEFING ROOM - ORGANIZERS & SECRETARIAT</p>
12:30-14:30	<p>GRAND HALL</p>

Tuesday, 18 October 2022

	Lunch
13:00-14:30	Copper Hall Industry Forum
14:30-16:00	<p>Studio 204</p> <p>EESS3: Electric Energy Storage Systems (ORAL SESSION)</p> <p>Degradation behavior analysis of High Energy Hybrid Lithium-ion capacitors in stand-alone PV applications <i>Tarek Mahmoud Samy Mostafa Kamal Ibrahim, Tamas Kerekes, Dezso Sera, Daniel-Ioan Stroe</i></p> <p>Comparison of high-power energy storage devices for frequency regulation application (Performance, cost, size, and lifetime) <i>Mahdi Soltani, Tarek Ibrahim, Ana-Irina Stroe, Daniel-Ioan Stroe</i></p> <p>Distributed Co-simulation for Smart Homes Energy Management in the Presence of Electrical Thermal Storage <i>Juan Dominguez, Nilson Henao, Kodjo Agbossou, Luis Rueda, Javier Campillo</i></p> <p>Sizing and Management of Fuel Cell Based Powertrains for City Ferry Applications <i>Qian Xun, Yujing Liu, Hengzhao Yang, Mario Celegin</i></p> <p>Performance Evaluation of Retired Lithium-ion Batteries for Echelon Utilization <i>Seyedreza Azizighalehsari, Prasanth Venugopal, Deepak Pratap Singh, Gert Rietveld</i></p> <p>Development of a Characterization Tool for Innovative Batteries for Aerospace Applications <i>Giuseppe Bossi, Mario Porru, Andrea Salimbeni, Alfonso Damiano</i></p> <hr/> <p>Studio 312</p> <p>ISAS_3: Instrumentation, Sensors, Actuators, Systems Integration and Nano Technologies (ORAL SESSION)</p> <p>Design and Implementation of Smart Flowmeter for Urban Water Metering <i>Junaid Ahmed Memon, Abdul Rehman Soomro, Ahsan Ali, Sarwan Shah, Hassaan Furqan Khan</i></p> <p>A Simple Software-based Resolver To Digital Conversion System <i>Claudio Nevoloso, Antonino Oscar Di Tommaso, Rosario Miceli, Gioacchino Scaglione, Giuseppe Schettino, Carlo Cecati, Concettina Buccella</i></p> <p>Micro Heater Design Procedure with Backside Etching for Medical Applications <i>Muhammad Tolba, Mohamed Fanni, Gamal A. Nasser, Shinjiro Umezue, Ahmed M. R. Fath El-Bab</i></p> <p>Challenges in UAS Platform design for Transmission Line monitoring and Inspections <i>Amr Mostafa, Yao Wang, Gennady Friedman, Hua Zhang, Fei Lu</i></p> <p>Wire fault classification based on multi-frequency time domain transmission <i>Xuan Wang, Bin Zhang</i></p> <p>Development of anisotropic short-fiber oriented rubber and its application to elongation actuators <i>Hiromasa Kunisada, Kiichi Fujitani, Fumio Ito, Manabu Okui, Taro Nakamura</i></p> <hr/> <p>Studio 313</p> <p>SS12_3-Emerging Technologies of Wireless Power Transfer for Vehicle Charging Applications (ORAL SESSION)</p> <p>Identification of Coupling Coefficient and Load Resistance for Control</p>

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of Wireless Power Transfer Systems *Ali Zakerian Rekabdarkolaei, Prasad Jayathurathnage, Tomi Roinila, Paavo Rasilo*
Development of Wireless Power Transfer Workbench for Undergraduate Education *Yao Wang, Amr Mostafa, Hua Zhang, Fei Lu*

Studio 213 & 215

PEEC_3b: Power Electronics & Energy Conversion (ORAL SESSION)

Series Buck-Boost Partial Power Converter based on the Push-Pull converter *Omar Abdel-Rahim, Dmitri Vinnikov, Andrii Chub, Andrei Blinov*
Investigation of Harmonic and Global Loss of Three-Phase Transformer based on a Permeance Capacitance Analogy *Model Zhaoqing Zhang, Gerd Griepentrog, Michael Owzareck, Malte Heuermann*
Model-Free Predictive Control of Multilevel DC–DC Converters for Energy Storage Applications *Fernando Bento, Antonio J. Marques Cardoso*
Real-Time Simulation of a Fast Charger Using a Low-Cost FPGA Platform *Karim Meddah, Hossein Chalangar, Tarek Ould-Bachir*
Using Dynamic Phasors to Model a Single-Phase Active Rectifier Based on Lyapunov Current Control *Udoka Nwaneto, Andrew Knight*

Studio 201

CSYS3: Control Systems (ORAL SESSION)

Ontology for Rating Dependability Attributes *Thomas Frühwirth, Thomas Preindl, Wolfgang Kastner*
Synthesis of Adaptive Gain Robust Controllers for Polytopic Uncertain Systems with Multiple Unknown Dead-Zone Inputs *Satoshi Hayakawa, Takuya Nakagawa, Hidetoshi Oya, Yoshikatsu Hoshi*
A Model Predictive Control based Power Sharing Control of Dual Active Bridge Converter with Parameters Estimation *Yuan Li, Subham Sahoo, Tomislav Dragičić, Miao Zhang, Frede Blaabjerg*
Model-Based Super-Twisting Controller for a Tensioned-Leg-Platform Floating Offshore Wind Turbine *Hedi BASBAS, Hussein OBEID, Salah LAGHROUCHE, Mickaël HILAIRET, Franck PLESTAN*
Model-Free Predictive Current Control based on ARX Representation of a Seven-Level Inverter *Catalina González Castaño, Margarita Norambuena, Freddy Flores, Hector Young, Rasool Heydari, José Rodríguez*
Attack Detection for LPV Model Formulated Cyber-Physical System with Limited Communication *Li Zhang, Zheng Du, Duanjin Zhang*

Studio 210

PSSG_3: Power Systems and Smart Grid ... (ORAL SESSION)

Polynomial Lyapunov control for DC MicroGrid robustness and stability *Imen IBEN AMMAR, Moustapha Doumiati, Sarah Kassir, Mohamed Machmoum, Mohamed CHAABANE*
Transient Stability Analysis and Enhancement for VSG with Virtual Impedance based Current Limitation *Cong Luo, Yandong Chen, Yuancan Xu, Zili Wang, Qianyuan Li*
A Novel Power-Hardware-in-the-Loop Interface Method for Grid-Forming Inverter Systems *Soham Chakraborty, Jaesang Park, Govind Saraswat, Jing Wang, Soumya Tiwari, Atif Maqsood, Apurva Somani, Murti*

Tuesday, 18 October 2022

V. Salapaka

Accuracy Assessment of Reduced- and Full-Order Virtual Synchronous Generator Models Under Different Grid Strength

Cases *Yun Yu, Sanjay K Chaudhary, Jose Matas, Luona Xu, Gibran David Agundis Tinajero, Juan C. Vasquez, Josep M. Guerrero*

Fault-Tolerant Control of a Grid-connected Bipolar DC Microgrid with High Penetration of Intermittent Renewable Energy

Jagath Sri Lal Senanayaka, Khang Huynh, Anton Rassölkin, Toomas Vaimann, J. Z. Zhang, Raimondas Pomarnacki

Environmental Dispatch Strategies for Onshore Power Systems *NUR NAJIHAH ABU BAKAR, Najmeh Bazmohammadi, Yun Yu, Juan C. Vasquez, Josep M. Guerrero*

Studio 316

SS14_3:Machine Vision, Control and Navigation (ORAL SESSION)

The Arc

ICELIE CONFERENCE - ONLINE LEARNING (ORAL SESSION)

Studio 211 & 212

PEEC_3a:Power Electronics & Energy Conversion (ORAL SESSION)

Characteristics Analysis of a Novel Air-Core High Frequency Transformer Based Dual Active Bridge Series Resonant

Converter *Hang Zhang, Cong Zhao, Baiyan Sun, Zixin Li, Fanqiang Gao, Fei Xu, Yaohua Li*

Nonlinear PID DC-link Voltage Control for Hybrid Power Filter Based on Robust Exact Differentiator with Improved Transient

Response *Cheng Gong, Wai-Kit Sou, Chi-Seng Lam, Hasan Komurcugil*

Passivity Based Control of Four-Switch Buck-Boost DC-DC Converter without Operation Mode Detection *Hasan Komurcugil, Sertac Bayhan, Naki Guler, Ramon Guzman*

A Hardware-Enabled Tool for Nonlinear Analysis of Digitally Controlled High-Freq. DC-DC Converters *Santanu Kapat, Amit Singha, Arnab Acharya*

Clock Shift and Sampling Delay Effects on Stability in Digitally Controlled Cascaded DC-DC Converters *Santanu Kapat, Anirban Nanda*

Studio 216

INTEROP Demos

Hall 300

EMD_3:Electrical Machines and Drives (ORAL SESSION)

Fast Computation of Self-Sensing Capability of Synchronous Machines *Alice Maimeri, Luigi Alberti*

An Optimization-based Torque Ripple Minimization Control Strategy for Switched Reluctance Machines *Andrés Carvajal, Alejandro Angulo, Jorge Juliet*

Standstill Identification of the Rotor Flux in Salient-Pole

PMSMs *Mohamad Koteich, Pascal Combes, Rashad Ghassani*

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Improved Minimal Harmonic Injection PWM Strategy for Dual-Three-Phase Permanent Magnet Synchronous Motors in the Overmodulation Region *Liu Zhibo, Wentao Zhang, Shaoshan Jin, Yongxiang Xu, Jibin Zou*
Real-Time Modelling of Segmented Multiphase Linear Motor Switched by Thyristor *Fei Xu, Yaohua Li, Liming Shi, Zixin Li*
An Experimental Assessment of Modulation Methods for Drive Trains Used In Electric Vehicles *Eleftherios Kontodinas, Andreas Kraemer, Hans-Dieter Endres, Sebastian Wendel, Petros Karamanakos, Joao Bonifacio*

Studio 314

SS3_2: Distributed Control and Optimization in Networked Systems and their Applications (ORAL SESSION)

Distributed Resilient Frequency Control Based on Estimation of Sensor and Actuator Attacks in AC Microgrids *Kai Ma, Yufei Dong, Peng Zhao, Jie Yang*

Studio 311

SS35_3: DC-DC Conversion- Power Circuits and Applications (ORAL SESSION)

A Fully Soft-Switched Resonant Based DC-DC Converter using Adder Architecture for Fast EV Battery Charging Applications *Shibaji Basu, Praveen Jain*

DC Bias Elimination and Soft Switching in Transient State of Dual-Active-Bridge DC-DC Converter *Zhe Wang, Chi Li, Jiye Liu, Zedong Zheng*

LQR and SMC control design of a DC-DC converter based on Kalman filter observer for a nanosatellite's EPS: A comparative study *Amina DAGHOURI, Ilyas EL WAFI, Soumia ELHANI, Mohamed HALOUA, Zouhair GUENNOUN*

Effective Controller Design of Non-Ideal Sheppard-Taylor DC-DC Converter *sally sajadian*

An Improved Bidirectional Hybrid Switched Capacitor Converter *Dan-Cornel Hulea, Mihail Constantin Giread, Octavian Cornea, Nicolae Muntean*

Studio 202

MCRM3: Motion Control, Robotics and Mechatronics (ORAL SESSION)

Adaptive Sliding Mode Control with RBF Neural Network-Based Tuning Method for Parallel Robot *Ningyu Zhu, Wenfang Xie, Henghua Shen*

Analysis and Testing of a Four Coil Magnetic Levitation Configuration *Peter Berkelman, Nagahiro Ohashi*

Ice-drilling and Gripping Experiments in Actual Conditions for Developing Earthworm-type Ice-drilling Robot for Extensive Under-sea-ice Surveys *Ryosuke Tokoi, Chikage Fujikawa, Wataru Toyama, Manabu Okui, Hiroshi Yoshida, Taro Nakamura*

Performance Comparison of Fixed-Speed and DFIM-based Speed-Elastic Shredder Drive Concepts *Florian Bendrat, Constantinos Sourkounis*

Time-Suboptimal Trajectories for Vibration-Free Positioning of Undamped Flexible Systems *Tasuku Hoshino, Daisuke Fujiwara*

Sliding Mode Event-Triggered Tracking Control for Robot Manipulators With State Constraints *Ankit SACHAN, Sandeep Soni, Siyaun Wang,*

Tuesday, 18 October 2022

Driss Boutat, Sunil Kumar

Studio 206

SS26_3: Advanced Control Techniques for Power Electronics Converters (ORAL SESSION)

An Approach in Selective Harmonic Mitigation Technique for Reduction of Multiple Harmonics with Only Two Switchings Per Quarter *PRATIK KALKAL, A. V. Ravi Teja*

State and Disturbance Observer based Current Sensor-less Control of Mismatched Buck Converter *Sangmesh Malge, Sanjaykumar Patil, Amruta Deshpande, Rajaram Ugale*

IGBT and GaN Hybrid Half-Bridge Applications Based on Multi-Sampling Technology Considering Cost, Efficiency and Transient Performance *Guihua Mao, Guohua Zhou, Yuan Gao, Zhixing Yan, Faheem Ahmad, Stig Munk-Nielsen, Hongbo Zhao*

Circulating Current Control and Energy Balancing of a Modular Multilevel Converter using Model Predictive Control for HVDC Application *Julia Kowalewski, Andreas Lorenz, Alexander Lomakin, Rodrigo Alvarez Valenzuela, Knut Graichen*

Chipped PWM Strategy with SMPS for Noise Mitigation in PSDM-based Systems *Ruichi Wang, Zhengyu Lin, Yang Xiao, Jinghui Chen, Jiande Wu*

Advanced Power Synchronization Control of Modular Multilevel Converter in Stiff Grid *Wentao Liu, Remus Teodorescu, Tamas Kerekes, Tomislav Dragicevic*

Studio 214

INTEROP Presentations/WG Meetings

14:30-18:00

Studio 315

Conference Training Day

16:00-16:30

GRAND HALL

Coffee Break

16:30-18:00

Studio 204

EESS4: Electric Energy Storage Systems (ORAL SESSION)

State of Health Estimation of Lithium-Ion Batteries for Dynamic Driving Profiles Based on Feature Extraction from Battery Relaxation Time Using Machine Learning *Nitika Ghosh, Akhil Garg, Alexander Warnecke, Bijaya Ketan Panigrahi*

Voltage and Resistance Estimation of Battery Integrated Cascaded Converter *Nima Tashakor, Farshid Naseri, Jingyang Fang, Stefan Goetz*
On-line Capacity Estimation of Li-ion battery Using Semi-parametric Transfer Learning *ARPITA MONDAL, Aurobinda Routray, Sreeraj Puravankara*

An Accurate Practical Technique for Real-Time State-of-Charge Estimation of Li-Ion Batteries Using Neural Networks *Nima Tashakor, Bita Arabsalmanabadi, Shahab Afrasiabi, Mohamed Mohamed, Stefan Goetz*

Navigation line extraction based on machine vision for weeding robot *HAO ZHENG, QIANG WANG, JINMING JI*

Studio 312

Tuesday, 18 October 2022**ISAS_4: Instrumentation, Sensors, Actuators, Systems Integration and Nano Technologies (ORAL SESSION)**

Antislip Anchoring Mechanism for Peristaltic Pipe Inspection Robots Traveling in Low-Friction Environments *Kosuke Uchiyama, Hiroto Sato, Fumio Ito, Taro Nakamura*

Design and Implementation of a Laser Scanner Featuring Flexible Printed Circuit Boards *TSUNG-TUN LIN, Cheng-Lung Chen, Shao-Kang Hung*

Mr. Quentin Quevy, Abdellah Touhafi, Esther Pérez, Gianluca Cornetta

Studio 313**SS12_4-Emerging Technologies of Wireless Power Transfer for Vehicle Charging Applications (ORAL SESSION)****Studio 213 & 215****PEEC_4b: Power Electronics & Energy Conversion (ORAL SESSION)**

Voltage Regulation Controller in DC Microgrid: Implementation Challenges and Solutions *A B Shyam, Soumya Ranjan Sahoo, Sandeep Anand*

A Hybrid Solid State Transformer (HSST) based on Two-Stage Medium Voltage SST *Sanjay Rajendran, Zhicheng Guo, Alex Huang*

Tunnel Magnetoresistance-Based Short-circuit Protection for SiC MOSFET in HybridPACK™ Drive Package *Jiakun Du, Yuxin Feng, Qian Chen, Shuai Shao*

A Current Sensorless Computationally Efficient Model Predictive Control for Matrix Converters *Ali Sarajian, Quanxue Guan, Patrick Wheeler, Davod Arab Khaburi, Ralph Kennel, Jose Rodriguez*

A Hybrid Si/GaN-Based Quasi-Single-Stage Converter for Microgrid Applications with Simplified Space-Vector Modulation *Mingxuan Li, Dehong Zhou, Jianxiao Zou, zewei shen, Lijie Liu, Xiaoming Fu*

Artificial Neural Networks Approach for Reduced RMS Currents in Triple Active Bridge Converters *Ahmed Ibrahim, Andrea Zilio, Tarek Younis, Davide Biadene, Tommaso Caldognetto, Paolo Mattavelli*

Studio 201**CSYS4: Control Systems (ORAL SESSION)**

Normalised hybrid flux weakening strategy for automotive asymmetrical dual three-phase IPMSMs *Adriano Navarro, Edorta Ibarra, Iñigo Kortabarria, Andrés Sierra, Borja Prieto, Ibon Elosegui*

Synchronous reluctance motor flux linkage saturation modeling based on stationary identification and neural networks *Chong Bao, Haodong Chen, Chenyi Yang, Jixi Zhong, Haotian Gao, Shoujun Song*

A novel rotor position estimation method of permanent magnet synchronous motor based on DC compensation and cascade filter *Haodong Liu*

Direct-axis Dead-time Effect Compensation Strategy Based on Adaptive Linear Neuron Method for PMSM Drives *Shaoshan Jin, Wentao Zhang, Zhibo Liu, Fayuan Xie, Yongxiang Xu, Jibin Zou*

Interturn short circuit modelling in dual three-phase PMSM *Matus Kozovsky, Ludek Buchta, Petr Blaha*

Simultaneous Radial Force and Torque Control for Switched

Tuesday, 18 October 2022

Reluctance Motors Based on Optimized Quadratic Sharing Function Method *Gaoliang Fang, Filipe P. Scalcon, Dianxun Xiao, Babak Nahid-Mobarakeh, Ali Emadi*

Studio 210**PSSG_4: Power Systems and Smart Grid ... (ORAL SESSION)**

Smart charging analysis for a service provider in mini parking lots by considering the V2V protocol *Reza RAZI, Khaled HAJAR, Majid Mehrasa, Antoine Labonne, Ahmad Hably, Seddik Bacha*

Energy Management System for a Low Voltage Direct Current Microgrid: Modeling and experimental validation *Yanandlall Gopee*

Data-driven Based PEMFC EIS Modeling with Nyquist Plot *Haochuan Zhang, jianfeng lv, Jiyuan Kuang, Imad Matraji, Patrick Muhl, Jianxing Liu*

Synchronization Stability of 3-phase Grid Connected Inverters in Weak Grids *Sugoto Maulik, Vinod John*

Development of MEMS Flow Path for Miniature Waste Heat Utilization Generator *Minami Kaneko, Yuya Niki, Kenji Takeda, Megumi Aibara, Fumio Uchikoba*

Studio 316**SS37- Advances in Data Driven Process Monitoring and Control for Complex Industrial Systems (ORAL SESSION)**

The explainable uncertainty in degradation process: a discovery from non-accelerated batteries degradation experiment *Dongzhen Lyu, Bin Zhang, Enrico Zio, Tao Yang*

Classification of Mechanical Faults in Rotating Machines Using SMOTE Method and Deep Neural Networks *Maher Sadok Messaoudi, Shady Khalil*

Voltage Sag Source Classification using Multivariate Time Series and Soft Dynamic Time Warping *Maria VEIZAGA, Claude DELPHA, Demba DIALLO, Sophie BERCU, Ludovic BERTIN*

An improved multi-objective optimization algorithm for flexible job shop dynamic scheduling problem *Hongcheng wang, Hao Wang, Hao Luo*

An Fault-tolerant Control approach for Event-triggered Consensus of Multiple Robotic Manipulators with Switching Topologies *Yunji Li, Hao Luo, Hao Wang*

The Arc**ICELIE CONFERENCE - SS1 NEW TOOLS AND METHODS FOR ELECTRIC MACHINES AND DRIVES AND POWER ELECTRONICS EDUCATION (ORAL PRESENTATIONS)****Studio 211 & 212****PEEC_4a: Power Electronics & Energy Conversion (ORAL SESSION)**

Optimized real-time simulation setup for Interaction study between VSC-HVDC and SVC on the French Network *Boris Bruned, Sébastien Dennetière, Yannick Vernay, Hani Saad, Vinicius Oiring De Castro Cezar*
Accurate Analytical Calculation of the DC-link Capacitor Current for

Tuesday, 18 October 2022

Three-phase Motor Drive under the Full Working Range *Xiaoming Fu, zewei shen, dehong zhou, jianxiao zou*

State Feedback Design Approach for Fast Recovery Digitally Current Mode Controlled Boost Converters *Mrinmay Bhowmik, Dipayan Chatterjee, K Hariharan, Santanu Kapat, Anandaroop Bhattacharya*

Review of Different Current Control Strategies for LC-coupling Hybrid Active Power Filter *Qian-Rong Hong, Wai-Kit Sou, Pak-Ian Chan, Cheng Gong, Chi-Seng Lam*

A novel simple GMPPT method based on probability distribution of global maximum power point under partial shading conditions *Kha Bao Khanh CAO, Vincent BOITIER*

Enhanced Stability with Fast Transient Performance in Digitally Current Mode Controlled Multi-phase Buck Converters using Event-based Sampling *Teja Golla, Ritam Talukder, Santanu Kapat*

Studio 216

INTEROP Demos

Hall 300

EMD_4:Electrical Machines and Drives (ORAL SESSION)

Net-Zero Through Small Modular Reactors - Cybersecurity Considerations *Brian Aamoth, William E. Lee, Hafiz Ahmed*

A Digital Hybrid Fuzzy-PID Controller for Single Inductor Dual Output DC-DC Converters with Fast Transient Response *Zhengyu Zhang, Nan Chen, Tingcun Wei*

Investigation on Metal Oxide Varistors in DC Circuit Breakers *Reza Kheirollahi, Charlie Dang, Shuyan Zhao, Hua Zhang, Fei Lu*

AI for Energy: A Blockchain-based Trading Market *Ameni Boumaiza*

Diffusion of Innovation, Renewable Energy Technologies, Renewable Energy Adoption, Agent-Based Modeling, Social Network Analysis *Ameni Boumaiza*

Integration of Energy Storage Systems within Modular Multilevel Converters for Medium-Voltage Distribution Networks *Paolo Meloni, Alessandro Serpi*

Studio 311

SS35_1: DC-DC Conversion- Power Circuits and Applications (ORAL SESSION)

Studio 202

MCRM4:Motion Control, Robotics and Mechatronics (ORAL SESSION)

Parametric Identification using Kernel-based Frequency Response Model with Model Order Selection based on Robust Stability *Hanul Jung, Taejung Kong, JAEGU KANG, Sehoon Oh*

Development and Control of a Flexible Actuation-Based Delta Robot *Yasiru Fernando, Manukid Parnichkun*

ROS2 as an Interface for a Motorcycle Simulator *Luís Capa, Adriano Carvalho, Rui Gomes, Nelson Costa, Paulo Cardoso*

Energy Optimized Path Planning and Decision Making for Multiple Robots in Rescue Operations *Dileep Sivaraman, Branesh M Pillai, Jackrit Suthakorn, Songpol Ongwattanakul*

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	<p>Accurate Pose Tracking of Mobile Robot Using Entropy-based TrimICP in Dynamic Environment <i>Haodong Sun, Shuting Wang, Jie Meng, Yuanlong Xie, Yu Liu</i></p> <p>Improved Local Path Planning for Mobile Robot Using Modified Dynamic Window Approach <i>qingchen Fu, Shuting Wang, Liquan Jiang, Yiming Yan, Yuanlong Xie</i></p>
	<p>Studio 206</p> <p>SS26_4: Advanced Control Techniques for Power Electronics Converters (ORAL SESSION)</p> <p>Small-Signal Model and Controller Design of Interleaved Isolated Boost Converter for PV Application <i>Ubaid Ahmad, Roberto Giral, Carlos Olalla</i></p> <p>A Graphical Approach in Selective Harmonic Elimination for Simultaneous Reduction of Multiple Harmonics and Overall THD <i>Ayush kumar, PRATIK KALKAL, A. V. Ravi Teja</i></p>
	<p>Studio 214</p> <p>INTEROP Presentations/WG Meetings</p>
18:30-21:00	<p>GRAND HALL</p> <p>Welcome Reception</p>

Wednesday, 19 October 2022

08:00-10:30	<p>Studio 204</p> <p>EESS5: Electric Energy Storage Systems (ORAL SESSION)</p> <p>Spatial Transformer Network with Transfer Learning for Small-scale Fine-grained Skeleton-based Tai Chi Action Recognition <i>Lin Yuan, Zhen HE, Qiang Wang, Leiyang Xu, Xiang Ma</i></p> <p>Analysis of Bidirectional Wireless Power Transfer for EV applications <i>Marcelo Perez, Ivan Choque, Johan Guzman</i></p> <p>A Supercapacitor and Fuzzy-PID Controller-based Active Charge Balancing Scheme for Lithium-ion Batteries <i>Akash Samanta, Mohit Sharma, Sheldon Williamson</i></p> <p>Feasibility of efficiency improvement in a fuel cell system powered by a metal hydride tank <i>Santiago Hernán SUAREZ, Djafar Chabane, Abdoul N'Diaye, Youcef Ait-Amirat, Abdesslem DJERDIR</i></p> <p>Data-driven Adaptive Observer-based Predictive Control for an Inverter with Output LC Filter <i>Xiaoyi Xu, Sergio Vazquez, Hao Luo, Leopoldo Garcia Franquelo, Eduardo Zafra</i></p> <p>Edge of LSTM-TL over G-LSTM in the application of Battery Surface Temperature Prediction for EVs <i>Pradeep Kumar, Shanu Kumar, Luis Rueda</i></p> <p>Maximizing energy availability for a Dynamic Regulation Frequency Response Service for Battery Energy Storage Systems <i>Abdulkarim Ahmouda, Daniel Gladwin</i></p> <p>An Insight into the Dynamics of a Dual Active Bridge <i>Ezekiel Arogunjo, Joseph Ojo</i></p> <p>A multi-objective optimization-based EMS for residential microgrids considering battery SoH <i>Giuseppe La Tona, Masimiliano Luna, Maria Carmela Di Piazza</i></p>
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Wednesday, 19 October 2022

Studio 312

INDI_1: Industrial Informatics-Cloudcomputing, Big Data, AI, Informatics and Software Engineering (ORAL SESSION)

An Online Segmental Ageing Detection Method for Underground Power Cables Based on Common-Mode Leakage Current

Measurements Yang Wu, Ziyu Wei, Yanyong Yang, Dayong Zheng, Pinjia Zhang

Integrating Smart Contracts in Manufacturing for Automated Assessment of Production Quality *Sebastiano Gaiardelli, Stefano Spellini, Michele Pasqua, Mariano Ceccato, Franco Fummi*

Defects Location for DC Submarine Cables in Burn-in Period Using Admittance Spectrum Characteristics *Ziyu Wei, Yang Wu, Pinjia Zhang*
Experiences with on-premise open source cloud infrastructure with network performance validation *Steffen Thielemans, Ruben De Smet, Priscilla Benedetti, Gianluca Reali, An Braeken, Kris Steenhaut*

Open-source firewalls for industrial applications: a laboratory study of Linux IPFire behavior *Manuel Cheminod, Ivan Cibrario Bertolotti, Luca Durante, Lucia Seno, Adriano Valenzano*

An Online System of Detecting Anomalies and Estimating Cycle Times for Production Lines *Tsuyoshi Ishizone, Tomoyuki Higuchi, Kosuke Okusa, Kazuyuki Nakamura*

Stakeholders' Transparency Requirements in the software engineering process *PAULINUS OFEM, Basseyy Isong, Francis Lugayizi*

Comparison between Docker and Kubernetes based Edge Architectures for Enabling Remote Model Predictive Control for Aerial Robots *Achilleas Santi Seisa, Sumeet Gajanan Satpute, George Nikolakopoulos*

Implementation of IEEE P1451.0 and P1451.1.6 Standards-based Sensor Networks *Hiroaki Nishi, Kang Lee*

AI-Based Assistant for Determining the Required Performance Level for a Safety Function *Padma Iyengar, Yuxia Hu, Michael Kieviet, Elke Pulvermueller, Juergen Wuebbelmann*

Studio 313

INFA_1: Intelligent Factory Automation (ORAL SESSION)

Mixing Offline and Online Electrical Decisions in Data Centers Powered by Renewable Sources *Igor Fontana de Nardin, Stephane Caux, Patricia Stolf*

Dynamic Setpoint Optimization Using Metaheuristic Algorithms for Wastewater Treatment Plants *Rodrigo Salles, Jérôme Mendes, Carlos Henggeler, Pedro Moura, Joana Dias*

A multi-cloud service mesh approach applied to Internet of Things *Luca Gattobigio, Steffen Thielemans, Priscilla Benedetti, Gianluca Reali, An Braeken, Kris Steenhaut*

Energy Efficient Protocols for LLNs – Metrics and Measurements *Philipp Raich, Wolfgang Kastner, Stefan Adelman*
Controller-Aware Dynamic Network Management for Industry 4.0 *Efe Balta, Mohammad H. Mamduhi, John Lygeros, Alisa Rupenyan*

Exact schedulability analysis for single-rate periodic cyclic executives for a refined system model *Reinder J. Bril*

Security by Design Integration Mechanisms for Industrial Control Systems *Sarah Fluchs, Emre Taş, Martin Mertens, Alexander Horch,*

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Rainer Drath, Alexander Fay

A Flow Graph based Approach for controlled Generation of AAS Digital Twin Instances for the Verification of Compliance Check

Tools Björn Otto, Tobias Kleinert

Self-configuration of a Robotic Platform to support a self-organized Manufacturing Process *Luis Alberto Jimenez, David Sanderson, Jack C. Chaplin, Jose Barata*

Studio 213 & 215

PEEC_5b: Power Electronics & Energy Conversion (ORAL SESSION)

A Novel Flying Inductor based Grid-Connected Inverter with Buck-Boost Ability *Naser Vosoughi Kurdkandi, Oleksandr Husev, Saeed Rahimpour, Carlos Roncero-Clemente, Oleksandr Matiushkin, Dmitri Vinnikov*

Compensating measurement delays in decoupling blocks of dq control technique for multiple active bridge converter *Anna Shubnaya, Federico Ibanez, Pedro Rodriguez*

Integrated Magnetics-Based Flux-Rate Controlled Single-Phase Inverter Topology *Ruman Kalyan Mahapatra, L. Umanand, Gopakumar K An Active Clamping Current-Fed Three Port Converter for Fuel Cell/ Supercapacitor Hybrid Energy Storage Systems* *Fanli Hu, Hengzhao Yang, Haoyu Wang, Minfan Fu*

Definition and Implementation of an EMI Figure of Merit for Switching Pattern in Power Converters *Daniel Sting Martinez Padron, Nicolas Patin, Eric Monmasson*

Closed-loop Control of High Frequency AC PWM Inverter for Space Application *Surjakanta Mazumder, Sayan Paul, Jagadeesh Egala, Utsab Kundu, Pradeep Peter, Kaushik Basu*

Effect of Material Resistivity and Temperature on Leakage Inductance of Medium Frequency Transformers Made of Al and Cu Foils *Priya Gajanand, Annoy Kumar Das, Sandeep Anand, Baylon G. Fernandes*

Current-Type Power Hardware-in-the-Loop Interface for Black-Start Testing of Grid-Forming Converter *Zhiwang Feng, Abdulrahman Alassi, Mazheruddin Syed, Rafael Pena-Alzola, Khaled Ahmed, Graeme Burt*

An Adaptable Feedback Clamped Optimal Battery Charger Using Fourth-Order Minimum-Phase Bidirectional DC-DC Converter *Soumya Ranjan Meher, Rajeev Kumar Singh, Vivek Nandan Lal*

Current Control for the Dual Boost Inverter with Bypass Switches for PV Microinverter Applications *Diana Lopez, Nicolas Muller, Hugues Renaudineau, Freddy Flores-Bahamonde, Samir Kouro*

Studio 201

CSYS5: Control Systems (ORAL SESSION)

Flexible Control and Dynamics Estimation of Grid-forming Converters Considering Grid Frequency Variation *weiyi zhang, zijian li, Hang Yin, youming wang*

Attitude Control of a 2-DOF Helicopter System with Input Quantization and Delay *Siri Marte Schlanbusch, Ole Morten Aamo, Jing Zhou*

State observer for water-based hybrid PV/T system with unknown input *Zain Ul Abdin, Ahmed Rachid*

Attacks Detection and Security Control Against False Data Injection Attacks Based on Interval Type-2 Fuzzy System *Yuhang Chen, Yue Long, Tieshan Li*

Wednesday, 19 October 2022

Model predictive control energy management strategy of fuel cell hybrid electric vehicle *Walid TOUIL, Zhongliang LI, Rachid OUTBIB, Daniel HISSEL, Samir JEMEI*

Decoupled Discontinuous Modulation for Cascaded H-Bridge StatCom with Star Configuration *Qingxiang Liu, Ezequiel Rodriguez, Glen Ghias Farivar, Josep Pou, Christopher Townsend, Ramon Leyva*

SVM2PC with Dead-Time compensation for Grid-tied Inverters *Dimas Schuetz, Humberto Pinheiro, Fernanda Carnielutti, Vinicius Montagner, Daniel Lima, Caio Osorio, Luiz Maccari*

Improved Aerodynamic Coefficient Identification Using Non-Conservative Robust Kalman Smoother *Jieun Han, Han-Sung Lee, Won-Sang Ra*

Compensator-based current sensorless control for PWM-based DC-DC buck converter systems with uncertain voltage measurement *Shiqi Nan, Chunjiang Qian, Shuaipeng He*

Data Integrity Analysis of Water Quality Sensors and Water Quality Assessment *Mimoun LAMRINI, Quentin Quevy, Mohamed Yassin Chkouri, Abdellah Touhafi*

Studio 315

SS1 - Advanced signal and image processing techniques for condition monitoring of Electric Machines and Drives (ORAL SESSION)

Topological Data Analysis for Electric Motor Eccentricity Fault Detection *Bingnan Wang, Chungwei Lin, Hiroshi Inoue, Makoto Kanemaru*

Real-Time Identification of Periodic Signals using the Recursive Variable Projection Algorithm *Johannes Handler, Dimitar Ninevski, Mathias Rollett, Paul O'Leary*

Detection of corrosion in ball bearings through the computation of statistical indicators of stray-flux signals *Israel Zamudio-Ramirez, Vicente Biot-Monterde, Angela Navarro-Navarro, Jose Antonino Daviu, Roque Osornio-Rios, Petri Mäki-Ontto, Lauri Salmia, Tomas Fajt*

CNC lathe tool wear analysis using image processing and stray flux *Geovanni Diaz-Saldaña, Roque Osornio-Rios, Irving A Cruz-Albarran, Miguel Trejo-Hernandez, Jose Antonino Daviu*

Infrared thermographic image processing for identification of gradual damage to the outer race of bearings in induction motors *Alvaro I Alvarado-Hernandez, Roque Osornio-Rios, Jose Antonino Daviu*

Fault Diagnosis of Inter-turn Short Circuit in Permanent Magnet Synchronous Motors with Current Signal Imaging and Semi-Supervised Learning *Wonho Jung, SungHyun Yun, Yoon-Seop Lim, Sungjin Cheong, Jaewoong Bae, Yong-Hwa Park*

Mutual Dimensionless Indices and ROC Analysis in Bearing Fault Occurrence Detection *Hongbin ZHU, Claude DELPHA, Weichao Xu, Yanguang Wang*

Fault Diagnosis of Ball Bearing Using Dynamic Convolutional Neural Networks Under Varying Speed Condition *Seong-Hu Kim, Wonho Jung, Daegeun Lim, Yong-Hwa Park*

Permanent Magnet Synchronous Motor Fault Detection System Based on Transfer Learning Method *Maciej Skowron, Czesław Kowalski*

Studio 210

PSSG_5: Power Systems and Smart Grid ... (ORAL SESSION)

Wednesday, 19 October 2022

Impact Analysis of Electric Vehicle Charging Stations on the Medium Voltage Distribution Network *Harshavardhan Palahalli Mallikarjun, CESAR EDUARDO DIAZ LONDONO, Paolo Maffezzoni, Giambattista Gruosso*

Finite Control Set Model Predictive Control of a Photovoltaic Differential Power Processing System *Thibaut Harzig, Brandon Grainger*

Joint Optimization of Battery Swapping Station Revenue and Electric Vehicle Owners' Benefits by Introducing Tiered Pricing Incentives *Wei Wang, Hengzhao Yang*

Feasibility of adopting bilateral co-phase traction network in single phase 25 kV AC traction system *Nipun Pande, Takafumi Koseki, Wataru Ohnishi*

Digital Twin Approach for Remote Monitoring of Microgrids *Mohd Aqib, Suryanarayana Doolla, Mukul C. Chandorkar*

Fault Current Bypass and Transient Commutation Current Injection Based Soft Turn-Off DC SSCBs *Shuyan Zhao, Reza Kheirollahi, Yao Wang, Hua Zhang, Fei Lu*

A Distributed Stabilizing Economic Dispatch Control for Energy Storage Unit based Autonomous Microgrid *Sidlawendé OUOBA, Azeddine Houari, Mohamed Machmoum*

Studio 316

SS10:Advanced Propulsion and Charging Technologies for Electrified Transportation Tools (ORAL SESSION)

Connecting Second-order and Higher Order Compensated Capacitive Power Transfer Converters *Ying LIU, Xiaolu Li, Chi K. Tse, Chunbo Zhu*

Implementation of Various Neural-Network-Based Adaptive Speed PI Controllers for Dual-Three-Phase PMSM *Zhenxiao Yin, Hang ZHAO*

A Three-phase AC-AC Wireless Power Transfer System with Power Factor Correction and Soft Switching *Xiaosheng Wang, Chaoqiang Jiang, Tianlu Ma, jingchun Xiang*

A Comparison of Advanced IPT Systems with Nanocrystalline and Ferrite Cores for Wireless EV Charging *jingchun Xiang, Chaoqiang Jiang, Tianlu Ma, Xiaosheng Wang, Bo Luo, Li Fang*

Comparison of Modulation Strategies for a DAB Partial Power DC-DC Converter in EV Powertrains *Carolina Beckmann, Christian Rojas, Samir Kouro, Hector Young, Raul Opazo*

Copper Hall

Young Professionals

Studio 211 & 212

PEEC_5a:Power Electronics & Energy Conversion (ORAL SESSION)

Three-phase Voltage Source Converters Based on Series-Connected Power devices for Medium Voltage Variable Speed Drives *Jinshuai Wang, Shuai Shao, Yineng Shi, Qian Chen, Junming Zhang*

Characteristic Analysis and Comparison of the Modulation Schemes for Three-phase Open Winding Motor Drive *siyi lin, zewei shen, Dehong Zhou, Jianxiao Zou*

Estimation of Electrical Parameters of the Double-Cage Model of Induction Motors Using Manufacturer Data and Genetic Algorithm *Matheus Perin, Luís Pereira, Gabriel da Silveira, Sérgio Haffner*

Wednesday, 19 October 2022

Accuracy Analysis and Comparisons of Impedance Behavior of Transcranial Magnetic Stimulator Coils *Fabian Neukirchinger, Anton Kersten, Manuel Kuder, Benjamin Lohse, Florian Schwitzgebel, Thomas Weyh*

12-pulse Rectifier with DC-Side Buck Converter for Electric Vehicle Fast Charging *Dun Lan, Yang Wu, Thiago Soeiro, Pierpaolo Granello, Zian Qin, Pavol Bauer*

Impact of Loss Model Selection on Power Semiconductor Lifetime Prediction in Electric Vehicles *Hongjian Xia, Yi Zhang, Dao Zhou, Minyou Chen, Yunhai Wei, Huai Wang*

Modeling and Optimization of BOOST Inductor Used Multi-Material Powder Core *Yun Zhang, Zedong Zheng, Chi Li*

Modeling of the Isolated Modular Multilevel DC-DC Converter by Considering the Magnetizing Inductance of the High-frequency Transformer *Mahmoud Mehrabankhomartash, Shiyuan Yin, Hossein Saeedifard, Amirnaser Yazdani, Rajendra Prasad Kandula, Deepak Divan, Maryam Saeedifard*

MPC for Grid Forming Converters with Current Limiting *Jean-Michel De Paris, Humberto Pinheiro, Fernanda Carnielutti, Vinícius Foletto Montagner, Daniel Martins Lima*

Studio 216

INTEROP Demos

Hall 300

EMD_5:Electrical Machines and Drives (ORAL SESSION)

Modelling and Control of Three Phase Induction Machine Under Open Phase Fault *k gopikrishnan, Sumit Pramanick*

Expansion Technique of the Current Reconstruction Areas for Two-Phase Three-Leg Inverters *Hye-In Jeong, Sang-Hoon Kim*

Design and Realization of a Synchronous Reluctance Motor with Printed Rotor *Daniele Michieletto, Luigi Alberti*

Computationally Efficient Model Predictive Torque Control of Switched Reluctance Motor Drives *Kishan Jayasawal, Ashwani Kumar Rana, A. V. Ravi Teja*

Fault Detection in Variable Phase-Pole Machines based on Harmonic Plane Decomposition *Yixuan Wu, Gustaf Falk Olson, Luca Peretti*

Online Discrete Optimization of Weighting Factor in Model Predictive Torque and Flux Control of Induction Motor *Alireza Davari, Vahab Nekoukar, Shirin Azadi, Freddy Flores-Bahamonde, Cristian Garcia, Jose Rodriguez*

Analytic Guided Magnetic-Thermal Kriging Surrogate Model and Multi-Objective Optimization of Synchronous Generator *Ruiye Li, Peng Cheng, Hai Lan, Yingyi Hong, Yige Ren*

Analysis of a Vernier Machine with Spoke-V Array Permanent Magnets *Fawen Shen, Yuming Yan, Benjamin Cheong, Chandana Gajanayake, Shuai Wang, Christopher H. T. Lee*

Current Sharing Method for Dual-Redundancy PMSM with Fuzzy-based Sliding Mode Control *Jiacheng Yang, Hao Yan*

Impact Actuator for Increased Dynamics *Alexander Schulte, Armin Lechler, Alexander Verl*

Studio 314

Wednesday, 19 October 2022

SS25_1: Advanced Multilevel Converters with DC Capacitors: Topology, Modulation, Voltage Balancing, and Control Strategies (ORAL SESSION)

A Dense Multilevel 24-sided Polygonal Voltage Space Vector Structure for IM Drive with Open-end Winding Configuration *Prashant Surana, Mriganka ghosh Majumder, Gopakumar K, Umanand Loganathan, Leopoldo G. Franquelo*

DC-link Capacitors Voltage Control using a Multi-phase Induction Motor Load Driven by a Multilevel Inverter *Tutan Debnath, Gopakumar K, Loganathan Umanand*

Hardware Prototype for the Quasi-Two-Level Operation of a Three-Phase Flying Capacitor Converter for Medium Voltage

Applications Stefan Mersche, Calvin Laeske, Marc Hiller

Simplified Cluster Balance Control of Cascaded H-Bridge STATCOM under Unbalanced Grid *Surendra Babu N N V*

The Manhattan Configuration: a Differential Power Converter with Linear Scaling to N-levels *Matthew Jahnes, Matthias Preindl*

Three-Phase ZPUC-MMC Grid Connected Converter *Sandy Atanalian, Fadia Sebaaly, SAEED ARAZM, Rawad Zgheib, Kamal Al-Haddad, Hadi Kanaan*

Auto-Tuned Two-Step Horizon FCS-MPC for a Grid-Connected CSC Inverter-based PV System *Alamera Nouran Alquennah, Mohamed Trabelsi, Hani Vahedi*

Design of Transformerless Microinverter using a High Gain DC-DC Converter and PUC Inverter *Ahmad Abu Humaid, Lazhar Ben-Brahim, Adel Gastli, Mohamed DJEMAI*

Level Enhancement in Switched Capacitors based Multilevel Inverter Using Level Doubling Network *Ritika Agarwal, Anekant Jain, Krishna Kumar Gupta, Shakti Singh*

Capacitor Sizing of High Resolution Converter for Induction Machine Driven Fan Load *Neha Tak, Sumit Chattopadhyay, Chandan Chakraborty*

Studio 311

NTET_1: New Technologies for Electric Transportation (ORAL SESSION)

Switching Current Impact Reduction Method for Segmented Power Supply Linear Motor *Chengtang Deng, Fei Xu, Cong Zhao, Zixin Li, Liming Shi, Yaohua Li*

A Strategy for Selection of Optimal Parameters and Configuration for Segmented Dynamic Wireless Charger System *Kukkala Satya Prakash, P.C. Sekhar*

Electric Vehicle Heating Management Techniques utilizing Drivetrain-Loss-Heating of Refrigerant *Anton Kersten, Andreas Andersson, Branko Ban, Marcus Roden, Alireza Norouzzadeh, Stefan Ryden*

Feedback Control Design for Drive Shaft Vibration Suppression Based on Frequency Domain Analysis of Two-Input-Two-Output Motor Drive System *Guangzhi Yu, Hiroyuki Fuse, Hiroshi Fujimoto, Kaoru Sawase, Naoki Takahashi, Ryota Takahashi, Yutaro Okamura, Ryosuke Koga*

HIL simulation of a self-stabilizing monorail vehicle *Martin Griese, Seyed Davood Mousavi, Thomas Schulte*

A Novel Approach of Electric Powertrain Co-Simulation with High Fidelity Vehicle Model *Bowen Jiang, Nimananda Sharma, Yujing Liu, Chuan Li, Xiaoliang Huang*

Multi-Objective Design Optimization of a Dual-Sided Permanent

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Magnet Linear Motor for High Speed Electric Trains *siavash sadeghi*
A Novel Single Stage Three Phase Isolated AC/DC EV Charger for 400V and 800V Operation *Sanjay Rajendran, Alex Huang*
Experimental Comparison of an Active Gate Driver and a dv/dt Filter to Reduce the Output dv/dt of a SiC EV Drive Inverter *Julius Wiesemann, Axel Mertens*
Analysis of GPS-based High Resolution Vehicle Mobility Data towards the Electrification of Transportation in Qatar *Usman Zafar, I Safak Bayram, Sertac Bayhan, Raka Jovanovic*

Studio 202

MCRM5: Motion Control, Robotics and Mechatronics (ORAL SESSION)

EFC/H'Based Dual-mode Switching Global Control of the First-order Parallel Rotating Double Inverted Pendulum System *yu zhenbao, Liu Lipeng, Yu Junhao, Zhang Xiaohua, Guo Yuanbo, Wang Shiyuan*
Waiting-Time-Optimized Path Planning of Multiple Automatic Guided Vehicles Using Augmented Topology Map *Yuanlong Xie, Tianhao Wu*
Motion-Prediction-Based Obstacle Avoidance Method for Mobile Robots via Deep Reinforcement Learning *Yuanlong Xie, Yiming Hu*
Collision Avoidance Pathfinding of Multiple AGVs Considering Motion Uncertainties *Yuanlong Xie, Mingxiao Chen*
Evolving Fuzzy and Tensor Product-based Models for Tower Crane Systems *Radu-Emil Precup, Elena-Lorena Hedrea, Raul-Cristian ROMAN, Emil M. Petriu, Claudia-Adina Bojan-Dragos, Alexandra-Iulia Szedlak-Stinean, Ciprian Hedrea*
Learning Cooperative Multi-Agent Policies with Multi-Channel Reward Curriculum Based Q-Learning *Jayant Singh, Jing Zhou, Baltasar Beferull-Lozano, Ilya Tyapin*
Design and Hybrid Impedance Control of a Compliant and Balanced Wrist Rehabilitation Device *Mwayi Yellewa, Abdelfatah Mohamed, Hiroyuki Ishii, Samy Assal*
How to improve human-robot collaborative applications through operation recognition based on human 2D motion *Fiorella Sibona, Pangcheng David Cen Cheng, Marina Indri*
Robust Sliding Mode Based Finite-time Bilateral Shared Teleoperation System with Unsymmetrical Time Varying Delay *Shafiqul Islam*
An Evaluation of Direct Image Based Visual Tracking System for Autonomous Manipulation *Shafiqul Islam*

Studio 206

SIPCI_1: Signal and Image Processing and Computational Intelligence

Urban road users detection and velocity estimation from top-view fish-eye imagery under low light conditions *masoomah ansarnia, etienne tisserand, alain tremeau, patrick schweitzer*
Anomalous Sound Detection, Extraction, and Localization for Refrigerator Units Using a Microphone Array *Akihito Nishikawa, Kazuhiro Hattori, Motomasa Tanaka, Hiroaki Muranami, Hiroaki Nishi*
Development of A New Recognition System Based on Support Vector Machines for Shockable ECGs and Its Performance Analysis *Takayuki Okai, Hidetoshi Oya, Kazushi Nakano, Hiroshi Miyauchi*
SO3-CNN: Learning Rigid Displacement using Depth Images and

Wednesday, 19 October 2022

	<p>Orthogonal Dual Tensors <i>Teodor Sauciuc, Adrian Burlacu, Lavinia Ferariu, Paul Botezatu</i></p> <p>Transferring Run-Time-Data Between Distinct FPGA Designs - Solutions in the Context of an ANC-Application <i>Marcel Eckert, Alexander Klemm, Bernd Klauer, Johannes Timmermann, Delf Sachau</i></p> <p>Histogram-Based Corner Detection and Description for 2D Lidar Systems <i>Lukas Pröhl, Harald Aschemann, Hans Henning Erle</i></p> <p>FPGA accelerators HLS-based design of hyper complex LMS filters <i>Alin Tisan, Eric Monmasson, Clive Cheong Took</i></p> <p>View Selection for Industrial Object Recognition <i>Kewei XU, Nicolas Ragot, Johan DUPUIS</i></p> <p>Depth Estimation Using Deep Learning Guided By Ontology Reasoning-Based Monocular Cues <i>Fatima Ezzahra Benkirane, Nathan Crombez, Vincent Hilaire, Yassine Ruichek</i></p>
	<p>Studio 214</p> <p>INTEROP Presentations/WG Meetings</p>
08:00-12:30	<p>The Arc</p> <p>Associate Editor Training Day</p>
08:00-18:00	<p>Studio 214&216</p> <p>NOT AVIALABLE</p>
	<p>Studio 310 (Circle)</p> <p>BRIEFING ROOM - ORGANIZERS & SECRETARIAT</p>
10:30-11:00	<p>GRAND HALL</p> <p>Coffee Break</p>
11:00-12:30	<p>Studio 312</p> <p>INDI_2: Industrial Informatics-Cloudcomputing, Big Data, AI, Informatics and Software Engineering (ORAL SESSION)</p> <p>Implementation of an Advanced Operation Control for AI-based Wind Farm Power Maximization Using Wake Redirection and Artificial Neural Networks <i>Philip Krajinski, Constantinos Sourkounis</i></p> <p>Actor-Oriented Scalable Domain-Specific Cluster Architecture for Cloud-Applications <i>David Bauer, Juho Mäkiö</i></p> <p>Towards Interoperability Mismatch Identification. An Expert System Approach <i>Cristina Paniagua, Fernando Labra-caso</i></p> <p>Design of a Validator for Module Type Packages <i>Santonu Sarkar, Katharina Stark, Mario Hoernicke</i></p> <p>A dataflow execution engine for automatic visual inspection of production lines <i>Daniel Silva, Ana Lopes, Daniel Costa, José Cabral, Carlos A. Silva, Sérgio Lopes</i></p> <p>A Machine Learning-Based Digital Twin Model for Pressure Prediction in the Fuel Injection System <i>Edwin Duarte, Eduardo Viegas, Altair Santin</i></p>
	<p>Studio 313</p> <p>INFA_2: Intelligent Factory Automation (ORAL SESSION)</p>

Wednesday, 19 October 2022

Using simulation to evaluate a concept drift detector for condition based maintenance *Afonso Lourenço, Marta Fernandes, Goreti Marreiros, Juan Manuel Corchado*

Interoperability of OPC UA PubSub with Existing Message Broker Integration Architectures *David Hästbacka, Petri Kannisto, Antti Kätkytniemi*

Attack Tree Refinements Analysis and Verification by applying Coloured Petri Nets *Shabnam Pasandideh, Pedro Pereira, Luis Gomes*

Integration of PLC for synchronization of plant segments with Asset Administration Shell *Dirk Schöttke, Stephan Schäfer, Thomas Kämpfe, Oliver Lachmann, Aaron Zielstorff, Bernd Tauber*

Automated usage control for secure data sharing based on Ricardian contracts *Eric Naim Chiquito Garcia, Alex Chiquito, Ulf Bodin, Kåre Synness*

Creating Virtual Knowledge Graphs from Software-Internal Data *Maximilian Weigand, Alexander Fay*

Studio 213 & 215

PEEC_6b: Power Electronics & Energy Conversion (ORAL SESSION)

Design Optimization of Power Electronic Converters in More Electric Aircraft *Mohamed Ibrahim, Omar Zayed, Niloufar Keshmiri, Ali Emadi, Mehdi Narimani*

A new discretization method of model equations for predictive power converter control applications based on input-state linearization *Felipe Villarroel, Jose Espinoza, Marcelo Perez, Daniel Sbarbaro, Roberto Ramirez, Carlos Baier*

Reconfigurable Partial Power Converter for Power Optimizers in PV Systems *Nicolas Muller, Freddy Flores-Bahamonde, Daniel Pesantez, Hugues Renaudineau, Diana Lopez, Samir Kouro*

A dual multilevel adaptive converter for microgrid applications *KAMBIZ TEHRANI, Ignace Rasoanarivo, Babak Nahid-Mobarakeh*

Current Sensorless Model Predictive Control of Matrix Converter With Zero Common-Mode Voltage *Ali Sarajian, Quanxue Guan, Patrick Wheeler, Davod Arab Khaburi, Ralph Kennel, Jose Rodriguez*

Photogeneration losses from interface trap density in Passivated Ultrathin CIGS Solar Cell *Nour El I. Boukourt, Alamera Nouran Alquennah, Amal M. AlAmri, Salvatore Patanè, Trupti Ranjan Lenka, Rabin Paul*

Studio 201

CSYS6: Control Systems (ORAL SESSION)

Lyapunov Function Construction using Constrained Least Square Optimization *Muhammad wasim, DESINENI NAIDUU*

Cybersecurity in Industrial Control Systems: An integration of information technology and operational technology *Montri Wiboonrat*

H'Model Reduction for Takagi–Sugeno Fuzzy Systems via Space Projection *Hua Zheng, Yuanyuan Zou, Shaoyuan Li*

Priority Based Ethernet Handling in Real-Time End System with Ethernet Controller Filtering *Bjarne Johansson, Alessandro Papadopoulos, Thomas Nolte, Mats Rågberger*

On the Predefined, Prescribed and Arbitrary Time Convergence *Anil Pal, Shyam Kamal, Bijnan Bandopadhyay, Leonid Fridman*

Predefined Upper Bound of Settling Time based Convergent Gradient Flow Systems *PARIJAT PRASUN, Sunidhi Pandey, Shyam Kamal, Sandip Ghosh, Devender Singh, Debdas Ghosh*

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Studio 210

PSSG 6: Power Systems and Smart Grid ... (ORAL SESSION)

A Dynamic Frequency-and-Voltage Power Flow Simulation Tool for Hybrid AC/DC Power Systems based on Simulink *Julen Paniagua, Haiz Gezala, Eneko Unamuno, Markel Zubiaga, Jon Andoni Barrena*

Fault Behavior of Inverter-based Resources: A Comparative Study for Grid-forming and Grid-following Control Paradigms *Nathan Baeckeland, D Venkatramanan, Michael Kleemann, Sairaj Dhople*

Transient mode of parallel inverters connected to a hybrid microgrid: evaluation of dynamic performance considering a virtual impedance droop controller *wajdi Bu dahab, Kamal Al-Haddad, Mahmoud Hamouda*

Statistical Analysis of Varistor Capacitance under Slow-Front Overvoltages *Lutendo Muremi, Pitshou Bokoro, Wesley Doorsamy*

An Assessment of Failure Rate of Pole-Mounted Transformers Using Probabilistic Risk Evaluation of Lightning Arresters *Ntaoleng Koalane, Pitshou Bokoro, Lutendo Muremi*

Studio 316

SS10: Advanced Propulsion and Charging Technologies for Electrified Transportation Tools (ORAL SESSION)

Robustness Improvement for Deadbeat-Direct Torque and Flux Control of PMSM Using Active Disturbance Rejection Control *Chenhao Zhao, Huanzhi Wang, Yuefei Zuo, Christopher H. T. Lee*

Investigation of the Influence of Full-Pitch and Short-Pitch Windings on Torque and Power Factor of Permanent-Magnet Vernier Machines *Libing Cao, Yuefei Zuo, Shuangchun XIE, Chi Cuong Hoang, Boon Siew Han, Christopher H. T. Lee*

High-order NESO Based Enhanced ADRC for PMSM Drives Considering Uncertainty and Measurement Noise

Suppression *Qiankang Hou, Yuefei Zuo, Huanzhi Wang, Youyi Wang, Christopher H. T. Lee, Shihong Ding*

Power Dense High-Speed Motor-Generator System for Powering Futuristic Unmanned Aircraft System (UAS) *Rahman Syed, Shima Hasanpour, Irfan Khan, Hamid Toliyat*

On the Feasibility of SiC-based Multiphase Traction Inverters for EV Applications: A Case Study *Wesam Taha, Anandajith Jinesh, Ali Emadi*

Copper Hall

Young Professionals

Studio 211 & 212

PEEC 6a: Power Electronics & Energy Conversion (ORAL SESSION)

Two Variations of Five-Level Hybrid-Clamped Converters and Their Voltage Balancing Control Using Three Degrees of Freedom *Wei Xu, Jun Wang, Xibo Yuan, Wenzhi Zhou*

Switching Permutations and State-Space Modeling of the Dual Active Half Bridge Converter *Youssef Fahmy, Matthias Preindl*

Hardware-In-the-Loop Simulation of a High Frequency Interleaved Converter based on a Low-Cost FPGA Platform *Téo Robert, Romain Monthéard, Valentin Combet, Mathieu Gavelle*

Wednesday, 19 October 2022

Control of Cascaded H-bridge Converters for Power Line Communication *Ioannis Mandourarakis, Eftichios Koutroulis, George Karystinos*

An Integrated Testbed with Single DC Source for Delivering Symmetrical Square-Wave Excitation Voltage in the Triple Pulse Test *William Black, Jun Wang, Xibo Yuan*

Electromagnetic Compatibility Study of a GaN-based converter for fuel cell electric vehicle *Elissa Cresenta ANAK JUSTIN, Béatrice BOURIOT, Frédéric GUSTIN, Arnaud Gaillard, Daniel HISSEL*

Studio 216

INTEROP Demos

Hall 300

EMD_6: Electrical Machines and Drives (ORAL SESSION)

Hysteresis Synchronous Optimal PWM with Continuous Switching Angles for PMSMs *Battur Batkhishig, Dianxun Xiao, Aathira Karuvaril Vijayan, Alan Dorneles Callegaro, Rohit Baranwal, Ali Emadi*

Drive Cycle Modeling of a Hybrid Bus with Fuel Cell *Martin Novak, Jan Gruber*

A New Discrete Based High-Frequency Signal Injection Model for Low-Speed Sensorless IPMSM Drives *Cesar José Volpato Filho, Rodrigo Padilha Vieira, Filipe Pinarello Scalcon, Babak Nahid*

Dividing Repulsion Permanent Magnets for Enhancing Suspension Force Characteristics in a 1-axis Active Control Type Magnetic Levitation Pump *KOKI TERADA, Masatsugu Takemoto, Ren Tsunata, Jun Imai*

A PWM Fixed-Gain Super-Twisting Sliding Mode Current Controller for Switched Reluctance Motors *Filipe Pinarello Scalcon, Gaoliang Fang, Cesar José Volpato Filho, Hilton Abílio Gründling, Rodrigo Padilha Vieira, Babak Nahid-Mobarakeh*

One Active State Excitation for Saliency-based Encoderless Control of Dual Motors Supplied by a Single Inverter *Eduardo Rodriguez Montero, Markus Vogelsberger, Thomas Wolbank*

Studio 314

SS25_2: Advanced Multilevel Converters with DC Capacitors: Topology, Modulation, Voltage Balancing, and Control Strategies (ORAL SESSION)

A New Five-Level Grid-Connected PV Inverter Topology Controlled by Model Predictive *Mohammad Ali Hosseinzadeh, Maryam Sarebanzadeh, Cristian Garcia, Ebrahim Babaei, Alireza Jolfaei, Jose Rodriguez, Ralph Kennel*

A New Multisource Inverter Topology for Electrical Vehicle Applications Controlled by Model Predictive *Mohammad Ali Hosseinzadeh, Maryam Sarebanzadeh, Cristian Garcia, Ebrahim Babaei, Alireza Jolfaei, Jose Rodriguez, Ralph Kennel*

Modular Multilevel Converters—Part II: Control Based on Decoupled Equivalent Circuit Model *Yi-Hsun Hsieh, Fred C. Lee*

Modular Multilevel Converters—Part I: Modeling Based on State-Plane Analysis *Yi-Hsun Hsieh, Fred C. Lee*

Hybrid Energy Storage System based on Modular Multilevel Series Parallel Converter *Ricardo Lizana, Sebastian Rivera, Matias Correa*

Wednesday, 19 October 2022

	<p>Low-Capacitance Modular Multilevel Converters Under Average Capacitor Voltage Reduction Control <i>Qiang Yu, Fujin Deng, Yi Tang</i></p> <p>Studio 206</p> <p>SIPCI_2:Signal and Image Processing and Computational Intelligence (ORAL SESSION)</p> <p>A non-invasive learning-based method for pipeline overhaul on fertilizer production plants <i>Jovania Menezes Dias, Paulo Jefferson Dias de Oliveira Evald, Rafael Tavares Guthes, Paulo Lilles Jorge Drews Junior, Silvia Silva da Costa Botelho</i></p> <p>A neural network for segmentation of fertilizer grain with multiple sizes and without background <i>Nelson de de Traversi, Silvia Silva da Costa Botelho, Paulo Jefferson Dias de Oliveira Evald, Douglas Alves Goulart, Paulo Lilles Jorge Drews Junior</i></p> <p>Fast and Parallel Semblance Algorithm for Detecting Faults in Large Seismic Volumes <i>Ratul Kishore Saha, Tiash Ghosh, Sanjai Kumar Singh, Mamata Jenamani, Aurobinda Routray</i></p> <p>Enhancing Object Localization Accuracy by using Multiple Camera Viewpoints for Disassembly Systems <i>Muhammad Talha Bilal, Ilya Tyapin, Martin Marie Hubert Choux</i></p> <p>Identification of Thin Layer via Source Wave-field Dictionary Learning <i>Supriyo Chakraborty, Aurobinda Routray</i></p> <p>Real-time pothole detection system on vehicle using improved YOLOv5 in Malaysia <i>Yang Her Au, Weng Kean Yew, Jia yew Pang, Melissa Chong Jia Ying</i></p> <p>Studio 214</p> <p>INTEROP Presentations/WG Meeting</p>
11:00-12:45	<p>Studio 202</p> <p>MCRM6: Motion Control, Robotics and Mechatronics (ORAL SESSION)</p> <p>Control of single-stroke movement of a drum-playing robot by reinforcement learning using a realistic artificial muscle-driven robot <i>Manabu Okui, Shiori Nakamura, Seigo Kimura, Ryuji Suzuki, Rie Nishihama, Taro Nakamura</i></p> <p>Motor-Side Angle Estimation based on Extended Kalman Filter for Two-Mass System with Lode-Side Encoder <i>Yoshiyuki Hatta, Kazuaki Ito</i></p> <p>Iterative Learning-based Trajectory Generation of Robot Manipulator to Reproduce Force Response of Teaching Device <i>Asato Washizu, Yoshiyuki Hatta, Kazuaki Ito, Junya Sato, Takayoshi Yamada</i></p> <p>Extended-State-Observer-Based Sliding Mode Control for a Compliant Grinding Device With Unknown Backlash-Like Hysteresis <i>Haoqi Tang, Zhuoqing Liu, Qingxiang Wu, Lei Sun, Ning Sun</i></p> <p>HIGHER ORDER INTEGRAL SLIDING MODE CONTROLLER FOR A ROBOTIC MANIPULATOR <i>ASWATHI RAJEEVAN, Lal Priya P S</i></p> <p>Energy Based Modeling and Power Consumption of Unconventional Quadrotor <i>Amina Belmouhoub, Yasser Bouzid, Slimane Medjmadj, Saddam Hocine Derrouaoui</i></p> <p>RFID reader multidirecional system <i>Sérgio Pereira, Tiago Barros, Demétrio Matos, Miguel Terroso, João Machado, João Martins, Pedro Morais, João Vilaça</i></p>
11:00-13:00	<p>Studio 204</p>

Wednesday, 19 October 2022**SS13_1:Advanced Design and Control of Modular Active Front-End Converters ... (ORAL SESSION)**

An Interoperable EMS for the Provision of Grid Services with Hybrid Energy Storage Systems *Eneko Unamuno, Hakan Polat, David Cabezuelo, Josu Galarza, Adolfo Anta, Etienne Toutain, Thomas Geury, Omar Hegazy*

Effects of modularity on the performance and reliability of SiC MOSFET-based active front-end rectifiers in EV charging application *Assel Zhaksylyk, Mohammed Mahedi Hasan, Sajib Chakraborty, Thomas Geury, Omar Hegazy*

Active Thermal Control of a SiC-based AC-DC Converter Using Dynamic Gate-drive for Lifetime Improvement *Farzad Hosseinabadi, Hakan Polat, Gamze Egin Martin, Sachin Kumar Bhoi, Sajib Chakraborty, Thomas Geury, Mohamed El Baghdadi, Omar Hegazy*

Multilevel Bipolar Back-to-Back HVDC Transmission System Based on the Dual Inverter Converter Structure with Model Predictive

Control *Joaquim Monteiro, Vitor Pires, J. Fernando Silva, Sonia Pinto*
Non-linear Controllers for Power Quality Improvement using Solid State Transformers in smart grids *Guilherme Paraiso, Sonia Pinto, Shahram Javadi, Fernando Silva*

Multi-Objective Optimization of Bi-directional On-Board Chargers Based on 650V GaN Power Transistors *olcay bay, Farzad Hosseinabadi, sajib chakraborty, mohamed el baghdadi, Omar Hegazy*

Comparative Performance Assessment of Predictive Torque Control Strategy for Motor Drive Applications *Shahid Jaman, Assel Zhaksylyk, Sajib Chakraborty, Dai-Duong Tran, Mohamed-El Baghdadi, Thomas Geury, Omar Hegazy*

Studio 311**NTET_2:New Technologies for Electric Transportation (ORAL SESSION)**

A Quadrant Approach of Camera Calibration Method for Depth Estimation Using a Stereo Vision System *Oscar Real-Moreno, Julio Rodriguez, Oleg Sergiyenko, Wendy Flores-Fuentes, Moises J. Castro-Toscano, Jesus Miranda-Vega, Paolo Mercorelli, Jorge Alejandro Valdez-Rodríguez, Gabriel Trujillo-Hernández, Jonathan J. Sanchez-Castro*

Guided Visual Attention Model Based on Interactions Between Top-down and Bottom-up Prediction for Robot Pose Prediction *Hyogo Hiruma, Hiroki Mori, Hiroshi Ito, Tetsuya Ogata*

A Hardware Architecture of Feature Extraction for Real-Time Visual SLAM *Jialin Li, Liangji Zhang, Xuewei Shen, Yifan Gong, Ying Lei, Yang Chen, Li Geng*

Analysis of the construction of an autonomous robot to improve its energy efficiency when traveling through irregular terrain *Mauricio A. Rojas-Casas, Jesus O. Santos-Sanchez, Oleg Sergiyenko, Julio C. Rodriguez-Quiñonez, Wendy Flores-Fuentes, Cesar Sepulveda-Valdez, Ruben Alaniz-Plata, Vera Tyrsa, Paolo Mercorelli*

An Image-Based Path Planning Algorithm Using a UAV Equipped with Stereo Vision *Selim Iz, Mustafa Unel*

Distortion Correction using Virtual PCG Pattern for Precise Stereo-based Large-scale 3D Measurement *Jeongmin Kim, Jaeduck Lee, Zoonwan Hah, Yong-Hwa Park*

12:30-14:30

GRAND HALL**Lunch**

Wednesday, 19 October 2022

13:00-14:30	<p>The Arc (FNAC) Fellow Nomination Advisory Committee</p> <hr/> <p>Copper Hall Industry Forum</p>
14:30-16:00	<p>Studio 204 SS28_1: Hybrid Strategies for Smart Energy Management and Storage (ORAL SESSION) DC Link Voltage Regulation of an Electric Vehicle Charger with Pulse Current Charging <i>Ritesh Keshri, Anadi Deshkar, Hiralal Murlidhar Suryawanshi, Padmanabham Jayan, Giuseppe Buja</i> Exploring various Topology using DC-DC Converter in Hybrid Energy Storage System for Electric Vehicles <i>Vima Mali, Brijesh Tripathi, Kundan Kumar, Sanjeet Dwivedi, Ranjan Behera</i> Design of a Single Current Sensor based BLDC Motor Controller for Solar-Mounted E-Rickshaw <i>Olive Ray, Raushan Kumar</i> A Full Range Soft-Switching Operated Modified DC-DC Converter for EV Applications with Low Voltage Spikes <i>Manaswi Srivastava, Tanu Wadhera, Arun Kumar Verma, G K NAVEEN KUMAR</i> A Novel Buck-Boost Derived PFC Converter for EV Charging <i>G K NAVEEN KUMAR, Kirti Mathuria, Arun Kumar Verma</i> Modified Single Phase Shift Control of DAB Converter for Fast Dynamic Response Under Various Disturbances <i>Piyali Pal, Ranjan Kumar Behera</i></p> <hr/> <p>Studio 312 INDI_3: Industrial Informatics-Cloudcomputing, Big Data, AI, Informatics and Software Engineering (ORAL SESSION) Low Computational Vehicle Re-Identification for Unlabeled Drone Flight Images <i>Youlkyeong Lee, Qing Tang, Choi Jehwan, Kanghyun Jo</i> An automated demand-supply matching (DSM) ranking model for the circular economy <i>Edgar Fernandez, Kåre Synnes, Ulf Bodin</i> Learning-on-learning approach for modeling <i>Maide Bucolo, Arturo Buscarino, Luigi Fortuna, Gabriele Puglisi</i> CLARA: Transpiler for Cloud built Machine Learning Models into Resource-Scarce Embedded Systems <i>Sérgio Branco, Jorge Cabral, Carlos Ferreira, João Carvalho, Bruno Gaspar</i> A transformation framework for semantic interoperability in Industry 4.0 <i>Erdem Tepe, Axel Busboom, Michael Müller</i></p> <hr/> <p>Studio 213 & 215 PEEC_7b: Power Electronics & Energy Conversion (ORAL SESSION) Comprehensive Design and Experimental Verification of Shunt Active Power Filter <i>Hikmat Basnet, Mohammad Pichan, Hossien Hafezi, Tomi Roinila</i> Impacts of Grid Impedance on Power Quality of Converters in Distribution Networks <i>Amir Taghvaie Gelekholaee, Firuz Zare, Rahul Sharma, Dinesh Kumar</i> A Comparative Study of Loss Measurement Techniques for SiC</p>

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MOSFET Based PE Converters *Debi Prasad Nayak, Ravi Kumar Yakala, Sumit Pramanick*
New approach for comparing Modular Multilevel Converter submodule losses considering IGBT and SiC MOSFET devices *Pablo Guicharrousse, Md. Rishad Ahmed, Pat Wheeler, Pericle Zanchetta*
Comparison of Si SJMOS and SiC MOSFET for Single Phase PFC Application *Manish Mandal, Shamibrota Kishore Roy, Kaushik Basu*

Studio 201

CSYS7: Control Systems (ORAL SESSION)

Affine Formation Control of Multiple Quadcopters *Zipeng Huang, Robert Bauer, Yajun Pan*
A Passivity based Approach to Synchronize Multi-agent Systems in Predefined Time *Eram Taslima, Bhawana Singh, Shyam Kamal, Thach Ngoc Dinh, R.K. Saket, Vinay Pandey*
Non-Singular and Continuous Back-Stepping Predefined-Time Attitude Tracking Control for Rigid Spacecraft with Predefined Bound *Xiaolun Yang, Yvlong Yang, Dong Ye, Zhaowei Sun, Yan Xiao*
Model Predictive Control with Model Error Compensation by Koopman Approach *Masaki Kanai, Masaki Yamakita*
Fractional Order Control of a Two Tank System with Iso-damping Robustness to Large Flow Regime Changes *Saddam GHARAB, Vicente Feliu Batlle, Robin De Keyser, Clara Mihaela Ionescu*
Neural Network Based Adaptive Robust Control of a Single-Axis Hydraulic Shaking Table *Jiabao Wen, Chengcheng Zhao, Zhiguo Shi*

Studio 210

PSSG_7: Power Systems and Smart Grid ... (ORAL SESSION)

Studio 316

SS39: Industrial 5G/WiFi Technology and Standards for the Harmonization of 5G/WiFi and IIoT (ORAL SESSION)

MLR: An Efficient Denoising Model for Highly Corrupted Images *Zhigao Zheng, Shihong Yao, Tao Wang, Yi Liu, Kim Fung Tsang*
Towards Building a Secure NB-IoT Environment on 5G Networks: A User and Device Access Control System Review *Motsamai Mlongeni, Adnan Abu-Mahfouz, Gerhard Hancke*
Broadband Over-the-Air Computation for Federated Learning in Industrial IoT *Deyou Zhang, Ming Xiao, Zhibo Pang, Lihui Wang*
Enhanced Resource Allocation Scheme for the LoRaWAN Harmonization *Zhifu ZHANG, Yang Wei, Hao Wang, Kim Fung Tsang*
Hardware-in-the-Loop Simulation for Evaluating Communication Impacts on the Wireless-Network-Controlled Robots *Honghao Lv, Zhibo Pang, Geng Yang*
AI for Energy: A Blockchain-based Trading Market *Ameni Boumaiza*

Studio 211 & 212

PEEC_7a: Power Electronics & Energy Conversion (ORAL SESSION)

A non-invasive Fault Location Method for Modular Multilevel Converters under Light Load Conditions *Yaqian Zhang, Yi Zhang, Frede*

Wednesday, 19 October 2022

Blaabjerg

Inspection of the Loss Reduction Effect of Three-Phase Inverter by Using a New Single-Phase PWM Control Method *Utena Yasuda, Masakazu Michihira*

Performance Evaluation of an Si+SiC based Hybrid VSI using a Modified Space Vector Switching Pattern in a Grid Connected Inverter Application *Raghava Ram Bharadwaj Vemparala, Jose Titus*

A New Topology of Symmetric and Asymmetric Fault Tolerant Multilevel Converter With Model Predictive Nearest Level Control Method *Pouya Zolfi, Armin Ebrahimian, Seyed Iman Hosseini Sabzevari, Nathan Weise, Ayman EL-Refaie*

Performance Analysis of Three-Phase Synchronization Algorithms Under Voltage Sags *David Rincon, Zhixue ZHENG, Juan M. Rey, Maria Alejandra Mantilla, Wilmar Sotelo*

A Method Monitoring Healthy State of Bond Wires in IGBT Based on $dVCE/diC$ *Shuaihu Liu, Chunming Tu, Liu Long, Haoling Xu, Biao Xiao, Zixian Zhu*

Studio 216

INTEROP Demos

Hall 300

EMD 7: Electrical Machines and Drives (ORAL SESSION)

Examination of the Characteristics of a Hybrid Excitation Motor with Field Winding on a Rotor for Electric Vehicle and Hybrid Vehicle Traction *Ryusyo Nakazawa, Masatsugu Takemoto, Satoshi Ogasawara, Ren Tsunata, Koji Orikawa*

A Carrier-comparison-based Implementation Strategy of A 24-sector-based SVPWM Technique in Overmodulation Region *Sayan Paul, Kaushik Basu*

Output Voltage Overshoot Suppression Control for Multilevel Inverter Architectures *Fabio Bernardi, Filippo Savi, Emilio Lorenzani, Stefano Nuzzo, DAVIDE BARATER*

Modelling and Fault-Tolerant Control of Triple Three-Phase PMSM under Open-Phase Fault with Minimum Stator Power Losses *Simone Tedeschini, Carlo Cecati, Sobhan Mohamadian*

dv/dt filter design incorporating machine impedance and voltage slew rate for WBG-based electric drives *Karthik Debbadi, Yoann Pascal, Marco Liserre*

Experimental Assessment of Weighting-Factorless Predictive Current Control for Asymmetrical Six-Phase Induction Motor *Mohamed Mamdouh, Ayman Abdel-Khalik, Mohamed Abido*

Studio 314

SS2: Artificial Intelligence Techniques for Cyber-Physical Microgrids: Applications, Challenges and Trends (ORAL SESSION)

Operation Optimization of Integrated Energy System Based on Carbon Trading - Green Certificate Trading Mechanism *Lidong Qin, Hengrui Ma, Gangfei Wang, Bowen Ren, Shidong Wu, Cunqiang Huang, Jinliang Mi, Xue Zhao*

Consensus-based distributed control for harmonic power sharing considering nonlinear loads in islanded microgrids *Tao Yang, Yigang*

Wednesday, 19 October 2022

He, Shikuan Sun

Design and optimization of low frequency high power transducer *zhen Zeng, Ming Zhang*

Consensus on Directed Networks: Optimization for the Convergence Rate *Jing-Wen Yi, Wen-Kang Ji*

Distributed Finite-time Economical Dispatch under an AC Microgrid-Like EV Parking Architectures *Yu Chang*

Data-driven cyber-attack detection in community microgrid using ML techniques *Rohit Trivedi, Sandipan Patra, Shafi Khadem*

Studio 311

NTET_3: New Technologies for Electric Transportation (ORAL SESSION)

A Real-Time Simulation Framework to Evaluate the Scheduling of V2G in Distribution Networks *Chuan Li, Daniele Carta, Andrea Benigni*

Adaptive Power Allocation with Real-Time Monitoring and Optimization for Fuel Cell/Supercapacitor Hybrid Energy Storage Systems *Qiuyu Li, Hengzhao Yang, Qian Xun*

Regenerative Braking Efficiency Enhancement using Pole-Changing Induction Motor *Shubham Dabral, Saptarshi Basak, Chandan Chakraborty*

The Effect of Coil Geometry and Winding Method on the Electromagnetic Launcher Performance *Mohamed Abdo*

7.2 kW Multifunctional and Integrated On-board Electric Vehicle Charger *Nagamalleswararao Kamarajugadda, Baylon G Fernandes, Kishore Chatterjee*

Analysis of PM Vernier machine prototypes aimed at a direct drive operating of EV *Walid guendouz, Abdelmounaim Tounzi, TOUFIK REKIOUA*

Studio 202

MCRM7: Motion Control, Robotics and Mechatronics (ORAL SESSION)

Machine Learning-Based Agoraphilic Navigation Algorithm *Hasitha Hewawasam, Yousef Ibrahim, Gayan Kahandawa*

Design of a Torsion Torque Estimator that Includes a Backlash Model for a Load-Side Angle Control System that Consists of a Motor, a Reduction Gear, a Spring, and Motor/Load-Side Encoders *Yuto Ikeda, Daisuke Yashiro, Kazuhiro Yubai, Satoshi Komada*

A Fast Online Estimator of the Main Vibration Mode of Mechanisms from a Biased Slightly Damped Signal *Selma Ben Ftima*

Position Control of a Two-Degree-of-Freedom Parallel Robot Including Torsion Springs and Motor/Load-Side Encoders *Tsubasa Takahashi, Daisuke Yashiro, Kazuhiro Yubai, Satoshi Komada*

Human-Robot Interaction Force based Power Assistive Algorithm of Upper Limb Exoskeleton Robots Driven by a Series Elastic Actuator *Deokjin Lee, Choi KiYoung, wonbum yun, Sehoon Oh*

Obstacle Based Fast Marching Tree for Global Motion Planning *Jiale Hou, Zhitao Liu, Hongye Su*

Studio 206

SIPCI_3: Signal and Image Processing and Computational Intelligence (ORAL SESSION)

Real-time road accident reporting system with location detection

Wednesday, 19 October 2022

	<p>using cloud-based data analytics <i>Melissa Jia Ying Chong, Weng Kean Yew, Jia yew Pang, Yang Her Au</i></p> <p>Fake News Detection using a Decentralized Deep Learning Model and Federated Learning <i>Nirosh Chathuranga, Malka Halgamuge, Azeem Mohammad</i></p> <p>Robust Real-time Junction Detection Under Various Conditions Using Dark Channel Maps <i>Hyung-Joon Jeon, Jae Jeon</i></p> <p>Camera-wise Training for Enhanced Omni-directional 2D Object Detection <i>Hyung-Joon Jeon, Duong Nguyen-Ngoc Tran, Long Hoang Pham, Huy-Hung Nguyen, Tai Huu-Phuong Tran, Jae Jeon</i></p> <p>Design and Evaluation of Guided Wave Signal Generation for System-On-Chip Platform on FPGA <i>Veit Wiese</i></p>
14:30-16:30	<p>Studio 214</p> <p>INTEROP Presentations/WG Meetings</p> <hr/> <p>Studio 313</p> <p>INFA_3: Intelligent Factory Automation (ORAL SESSION)</p> <p>A Hybrid Communication Framework Based Remote Management Architecture with OPC UA Information Model Construction <i>Yuchao Chen, Jinglong Zhang, Qimin Xu, Cailian Chen</i></p> <p>TSN-compatible Industrial Wired/Wireless Multi-protocol Conversion Mechanism and Module <i>Yingxiu Chen, Qimin Xu, Jinglong Zhang, Lei Xu, Lingzhi Li, Cailian Chen</i></p> <p>Operational Impacts of IEEE 802.1Qbv Scheduling on a Collaborative Robotic Scenario <i>Richard Candell, Karl Montgomery, Mohamed Kashef, Susruth Sudhakaran, Justin Albrecht, Dave Cavalcanti</i></p> <p>Smart Adapter System Architecture for Seamless and Scalable Integration of Industry and Smart Home IoT <i>Salman Javed, Cristina Paniagua, Sandeep Patil, Jan van Deventer, Jerker Delsing</i></p> <p>Integration of openSAFETY in OMNeT++ <i>Armin Hadžiaganovi rAaheeb Muzaffar, Hans-Peter Bernhard, Andreas Springer</i></p> <p>Optimized Implementation of Segmentation CNNs in GPU SoC Devices <i>Elena Rodriguez Lois, Roberto Fernandez Molanes, Carlos Gonzalez-Val, Juan J. Rodriguez-Andina, Jose Farina</i></p> <p>Towards Standardized Manufacturing as a Service through Asset Administration Shell and International Data Spaces Connectors <i>Felix Larrinaga, Michel A. Iñigo, Jon Legaristi, Alain Perez, Javier Cuenca, Blanca Kremer, Elena Montejo, Alain Porto</i></p> <p>An OSGi-based production process monitoring system for SMEs <i>Andrea Bonci, Alessandro Di Biase, Maria Cristina Giannini, Marina Indri, Andrea Monteriù, Mariorosario Prist</i></p>
14:30-18:00	<p>The Arc</p> <p>Women in Engineering (INVITED SPEAKERS+ DEMO SESSION)</p> <p>Active lower limb exoskeleton for walking and stand up <i>Dunai Larisa</i></p> <p>Optimum On-Line DC-Link Voltage Regulation for Efficiency Improvement of Motor Drives <i>wang Kai Wei, Yen-Shin Lai</i></p> <p>Wireless networked control system: A practical application <i>Mercedes Chacón Vásquez</i></p> <p>Advances in Inkjet-Printed Antenna and Textile Antenna Design at the Antennas and Propagation Lab <i>Eva Antonino-Daviu, Marta Cabedo-</i></p>

Wednesday, 19 October 2022

	<p><i>Fabres, Miguel Ferrando-Bataller</i></p> <p>CDA: IoT Digital and Intelligent Management Buildings for the Smart Campus project <i>M^a Cristina Rodríguez-Sánchez, Pablo Villoria, Javier Orellana, Julio Ramiro, Gabriel Morales, Juan A. Melero</i></p> <p>Electrical Machines NVH Improvements Using Harmonic Shaping Functions. A Multiphysical Approach <i>Maria Raluca Raia, Claudia Martis</i></p> <p>Application of the Double Smoothing and ARIMAX Methods for the Prediction of Polycrystalline Photovoltaic Generation <i>Imene YAHYAOUI, Irene Mariñas-Collado, Ana Elizabeth Simón de Blas, Clara Simón de Blas, M^a Cristina Rodríguez-Sánchez</i></p> <p>EFFECTIVE POWER REDUCTION TECHNIQUES FOR THE FULL ADDER CIRCUIT BY USING ADIABATIC LOGIC <i>S Shyam Sundar, Yeshwanth Reddy Jakka, Nikitha Tandur, Sarapu Nithish Chary, Rohith Kumar Reddy</i></p>
16:00-16:30	<p>GRAND HALL</p> <p>Coffee Break</p>
16:30-18:00	<p>Studio 204</p> <p>SS28_2: Hybrid Strategies for Smart Energy Management and Storage (ORAL SESSION)</p> <p>A Non-Invasive Current Estimator for Integrated Dual-DC Boost Converter Topology <i>Kausik Biswas, Ritam Chakraborty, Olive Ray</i></p> <p>Fuzzy Rule Value Reinforcement Learning based Energy Management Strategy for Fuel Cell Hybrid Electric Vehicles <i>Liang GUO, Zhongliang LI, Rachid OUTBIB</i></p> <p>Rapid Thermal Modeling and Discharge Characterization for Accurate Lithium-ion Battery Core Temperature Estimation <i>Akash Samanta, Alvin Huynh, Emmanuel Rutovic, Sheldon S. Williamson</i></p>
	<p>Studio 312</p> <p>INDI_4: Industrial Informatics-Cloudcomputing, Big Data, AI, Informatics and Software Engineering (ORAL SESSION)</p> <p>In-Circuit Debugger for Wireless Real-Time Monitoring and Diagnosis of FPGA Applications <i>Veit Wiese</i></p> <p>Performance Analysis of KVM Hypervisor Using a Self-Driving Developer Kit <i>Thilo Mueller, Hadi Askaripoor, Alois Knoll</i></p> <p>Studio4Education: Model Driven Graphical Programming of IoT applications for Education <i>Sébastien Canet, Fadwa REKIK, saadia dhouib, marcello coppola</i></p> <p>NaviSaf: A safe navigation system for road anomalies detection <i>Oussama MAZARI ABDESSAMEUD, Walid CHERIFI, Mouhssin Abd El Illah KRIBI, Ahmed DAHMANI</i></p>
	<p>Studio 213 & 215</p> <p>PEEC_8b: Power Electronics & Energy Conversion (ORAL SESSION)</p> <p>Transmitter-Side Controlled Series-Series Compensated Wireless Charging System without Wireless Communication for Electric Vehicles <i>VASANTTHI MADRAS PONNUSWAMY, Sreenivasappa B Veeranna</i></p> <p>Modeling and Control of Bridgeless Single-Switch Non-Inverting AC-</p>

Wednesday, 19 October 2022

DC Cuk Converter in DCM *Alberto Reatti, Humam Al-Baidhani, Marian Kazimierczuk*

Asymmetrical Modular Multilevel Converter with Sensorless Voltage Control for High-Quality Output *Stefan Goetz*

Generalized Approach for Small Signal Modelling & Loss Analysis in 3-Phase PFC Vienna Rectifiers *Lotfi Beghou*

Forecast of photovoltaic generation in isolated rural areas of Ecuador using Holt-Winters and seasonal variation methods *Mauricio Rodriguez, Hugo Cisneros, Diego Arcos-Aviles, Wilmar Martinez*

Autonomous Optimal Voltage Support Scheme of Two-Stage PV System for Grid Fault Ride Through *Juncheng Wang*

Studio 201

CSYS8: Control Systems (ORAL SESSION)

Robust Uncooperative Ground Target Surveillance using Vision-Based Sliding Mode Control of Quadrotor UAV *HAMZA BOUZERZOUR, Mohamed Guiatni*

A Comprehensive Framework to Determine Lyapunov Functions for a Set of Continuous Time Stability Problems *Benjamin Bocquillon, Philippe Feyel, Guillaume Sandou, Pedro Rodriguez-Ayerbe*

Fault Classification in Transmission Lines with Generalization Competence *Leandro Ensina, Luiz Eduardo Soares de Oliveira, Eduardo Cunha de Almeida, Signie Laureano França Santos, Leandro Silva Bernardino*

Studio 210

PSSG_8: Power Systems and Smart Grid ... (ORAL SESSION)

Studio 316

SS41: Smart Cities Interoperability and Connectivity (ORAL SESSION)

Personal Data Access and Distribution Management Extension to FIWARE *Yohei Namba, Hiroaki Nishi*

A Simple Model for Sharing Knowledge Among Heterogeneous Sensor Data *Gustavo Monte, Damian Marasco, Ruben Bufanio, Norberto Scarone, Ariel Agnello, Pablo Liscovsky*

Traffic Enforcement at Intersections Monitored by A Single Fisheye Camera Containing Noisy Detection and Tracking Data *Morteza Adl, Maryam Alizadeh, Saeid Habibi, Carlos Vidal, Ali Emadi*

An Online Unsupervised Machine Learning Approach to Detect Driving Related Events *Marianne Silva, Thommas Flores, Pedro Andrade, Jordão Silva, Ivanovitch Silva, Daniel G. Costa*

Studio 211 & 212

PEEC_8a: Power Electronics & Energy Conversion (ORAL SESSION)

Transformerless Partial Power AC-Link Converter for PV Integration to DC Microgrid *Eduardo Richard, Hugues Renaudineau, Ana M. Llor, Rodrigo A. Bugueño, Christian A. Rojas*

Transformerless HERIC Inverter with Modified Unipolar PWM to Decrease Grid-Injected Current's THD *Sobhan Mohamadian, Concettina Buccella, Carlo Cecati*

Wednesday, 19 October 2022

Comprehensive Study on Dynamic on-resistance Evaluation Circuit for Power GaN HEMTs Devices *Rustam Kumar, Suvendu Samanta, Tian-Li Wu*

Design of Digital-controlled Two-stage AC/DC Converter Based on GaN HEMT *hou yinling, Xu Junqing, Wang Shiyuan, Li Diang, Guo Yuanbo, Zhang Xiaohua*

Investigation of Thermal Deformation Characteristics in IGBT Modules Under Bonding Wire Cracking Condition *Cong Chen, Libing Bai, Jun Luo, Jiahao Wang, Quan Zhou, Jie Zhang, Lulu Tian, Wei Huang, Yuhua Cheng*

Modeling and Stability Analysis of Grid Inverters Using Double Synchronous Reference Frame Current Control *Yi Zhang, Zhixiang Zou, Jian Tang, Xingqi Liu, Ruokai Xu*

Studio 216

INTEROP Demos

Hall 300

EMD_8:Electrical Machines and Drives (ORAL SESSION)

An Experimental Investigation of Hybrid Cooling Solution for High Performance Traction Motor *Viktor Josefsson, Andreas Carlsson, Shafiqh Nategh, David Ekholm*

A Novel Stator Faults Indicator in Three-Phase Induction Motors, Based on Voltage and Impedance Symmetrical Components *Khaled Laadjal, SAHRAOUI MOHAMED, Abdeldjalil Alloui, Antonio J. Marques Cardoso*

Adaptive Operating Strategy for Induction Motors Under Changing Electrical-Thermal Conditions *Marius Stender, Marius Becker, Oliver Wallscheid, Joachim Böcker*

WBG-based Drive Control Implementation and Experimental Validation *Maitane Carrasco, Amaia Lopez-de-Heredia, Irma Villar*

Unsymmetrical Pole Design vs Skewing for improving NVH Characteristics and Performance of High Speed PMSM Electric Machines *Tommaso Bertoncetto, Giovanni Franceschini, Bharadwaj Raghuraman, Anton Lidbeck, Michela Diana*

An MRAS-based Sensorless Control Algorithm for Permanent Magnet Brushless AC Machines *Gabriele Pitzalis, Andrea Floris, Alessandro Serpi*

Studio 314

SS19: Edge Based Network Automation for Industrial IoT (ORAL SESSION)

logiccloud: Programmable Logic Controller (PLC) as a Smart Service from the Cloud *Reinhard Langmann, Bernhard Boehrer, Michael Boehrer, Sebastian Negomireanu*

Multi-Objective Distributed On-Demand Small Cell Resource Allocation for eHealth *Hao Ran Chi, Kim Fung Tsang, Ayman Radwan*

Experimental Evaluation of High-Precision System Clock Synchronization with BeiDou for Wide-Area Industrial Internet-of-Things *Fan Yang, Jinsong Wang, Yuemin Ding, Lantao Xing*

Blood glucose data analysis based LTSM *Junjian Liang, Bingo Ling, Yiting Wei, Weiren Zhao, Qing Liu*

Optimum Configuration of Edge Computing Protocols for Industrial Internet-of-Thing Applications *Mohammad Bakhtiari, Yang Wei, Hiroaki*

Wednesday, 19 October 2022

Nishi, Kim Fung Tsang, Nasser Aljuhaishi, Mahmoud Alahmad
Enhancement of spinal health by developing a low cost IoT-based Smart Chair System *Chi Chung Lee, Ming Long Michael Tse, Ka Fun Chan, Hiu Ting Lee, Junru Mai, Siu Man Yiu, Wai Fun Tang, Chi Ho Li, Chi Keung Yeung*

Studio 311

NTET_4:New Technologies for Electric Transportation (ORAL SESSION)

Endurance Driven Energy Management System for All-Electric Marine Autonomous Surface Vehicle *Taimur Zaman, Graeme Burt, Ali Wahoud, Gianfranco Gobbo, Garrt Millard, Stefano Malagodi, Mazheruddin Syed*

Charging Scheduling Algorithm for Wireless-Powered Communication Networks *Nga Dinh, Øystein Haugen*

Validation of Fault-Tolerant Control of Converters under Open-Switch Faults on Connected Test Benches *Urs Pecha, Kai Wolter, Moritz Wäschle, Nejila Parspour, Katharina Bause*

Modeling a Digital Twin to Predict Battery Deterioration with Lower Prediction Error in Smart Devices: From the Internet of Things Sensor Devices to Self-Driving Cars *Thushara Bandara, Malka Halgamuge*

Energy Management Systems for Electric Vehicle Charging Stations: A Review *Anindita Golder, Sheldon Williamson*

Studio 202

MCRM8: Motion Control, Robotics and Mechatronics (ORAL SESSION)

Studio 206

SIPCI_4:Signal and Image Processing and Computational Intelligence (ORAL SESSION)

Voltage Sag Classification Based on Multi-task Parallel Convolutional Neural Network *youli dong, Xiaojun Ding, Hao He, Weizhe Zhao, Jia Li*

GA-based Parameter Optimization of Image Processing for Contamination Inspection of Nonwoven Fabrics *Nobuhiko Kumazawa, Sota Miyazaki, Yoshiyuki Hatta, Junya Sato, Kazuaki Ito, Yukio Otsuka, Ryota Kitagawa, Kenji Iwata, Hidekazu Hirayu*

Temporal-spatial Feature Fusion for Few-shot Skeleton-based Action Recognition *Leiyang Xu, Qiang Wang, Xiaotian Lin, Lin Yuan, Xiang Ma*

ATGP based Change Detection in Hyperspectral Images *Parasuram Yadav Palla, Nikhil Bobate, Amba Shetty, Raghavendra B. S., Narasimhadhan A. V.*

Studio 214

INTEROP Presentations/WG Meetings

18:30-21:00

GRAND HALL

Gala Dinner + IES Award Ceremony

Thursday, 20 October 2022

08:00-09:15

Studio 204

SS15_1:New Emerging Technologies in Disturbance Estimation and Rejection (ORAL SESSION)

Thursday, 20 October 2022

The state feedback control for a class of singular Markovian jump systems subject to input saturation and time delay *Junjie Zhao, Bo Li*

Finite-Time Robust Guaranteed Cost Control for Continuous-Time Singular Systems with Nonlinear Perturbation *Xuejing Ren, Bo Li, Junjie Zhao, Songlin Wo*

Stability analysis of systems with two additive time-varying delay components via the zero-valued equations *Meng Liu, Yong HE, Lin Jiang*

Data-driven-based Control Performance Degradation Online Recovery for Voltage Source Inverter A PnP strategy *shufeng zhang, Changan Liu, Yuntao Shi, Xiang Yin*

Improving Disturbance-Rejection Performance Using Combination of Sliding-Mode Control and Equivalent-Input-Disturbance Approach *Zewen Wang, Jinhua She, Daiki Sato*

Studio 312

SS36: Power Electronics and Energy Storage Strategies for DC Microgrid

Optimal Energy Management Scheme for Wave-HESS DC Microgrid *Peiwen Tan, Lei Huang, Minshuo Chen, Yang Li, Ruiyang Ma, Jianlong Yang*

Analysis of the Bipolar Voltage Bus Balancing of a DC Microgrid with Bidirectional Converters *Mateus Pinheiro Dias, Debora Damasceno, João Inácio Yutaka Ota, Jose Antenor Pomilio*

Nonlinear model predictive control of a microgrid with a variable efficiency battery storage system *Mateja Car, Mario Vašak, Mojtaba Hajihosseini, Vinko Lešič*

A Comparative Study Based on MPPTs for Nano-Satellite Microgrid Applications under Spinning Flight Scenarios *Mohammad Yaqoob, Hussein Abubakr, Jose Matas Alcalá, Abderezak Lashab, Josep M. Guerrero, Juan C. Vasquez*

Model Predictive Control of Two-Tier Converter for Maximum Power Extraction from Photovoltaic System *Mahmoud F. Elmorshedy, Badr S. Algadair, Dhafer Almakhlis*

Studio 313

SS17_1: Optical Wireless Communication for Industrial Applications

Real-time hardware G.hn LiFi infrastructure with D-MIMO and WDM over POF Fronthaul *Thiago Elias Bitencourt Cunha, Carina Ribeiro Barbio Corrêa, Jean-Paul Linnartz, Eduward Tangdionga, Frans Huijskens*

LiFi Positioning and Optimization in an Indoor Factory Environment *Ziyan Ma, Sepideh Mohammadi Kouhini, Christoph Kottke, Ronald Freund, Volker Jungnickel, Marcel Müller, Daniel Behnke*

LED Modelling for Efficient LiFi Modulator Design to Accelerate OOK *Jean-Paul Linnartz, Kumar Arulandu, Diego Vargas*

Low Power Control Access System based on VLC for Industrial Applications *Julio Rufo, Victor Guerra, Martin Luna, James Farmer, Dominic O'Brien*

Reducing Overhead for Low-Power Optical Wireless Communications *Malte Hinrichs, Benjamin Poddig, Peter Hellwig, Volker Jungnickel*

Studio 201

CSYS9-Control Systems (ORAL)

Thursday, 20 October 2022

Environmental Modeling for Motion-Copying System Using Element Description Method *Ryotaro Kobayashi, Seiichiro Katsura*
A Direct Synthesis based Sliding Mode Control of a Nonlinear Continuous Stirred Tank Reactor *Mohammad Atif Siddiqui, Mohammad Nishat Anwar, Ahmad Faiz Minai, Akhlaque Ahmad Khan, Mohammad Naseem, Abdul Jabbar*
Multi-layer Observers Design for Force Control with Robot Finger Pad by Using Element Description Method *Kosuke Egawa, Seiichiro Katsura*
Reflected Wave Control for Generating Impact Motion Using a Flexible Manipulator *Kosuke Shikata, Seiichiro Katsura*

Studio 315

SS6_1: Intelligent Sensing Applications for Human Assistive Systems (ORAL SESSION)

Load-Side Acceleration Control for Geared Motors with Unknown Backlash and Nonlinear Friction *Juan Padron, Yuki Yokokura, Kiyoshi Ohishi, Toshimasa Miyazaki, Yusuke Kawai*
Local Path Planning Based on Velocity Obstacle Considering Collision Probability and Kinematic Constraint for Mobile Robot *Yosuke Ueda, Naoki Motoi*
The Influence of Avatar Representation on Haptic Interaction in Virtual Environment *Genki Sasaki, Hiroshi Igarashi*
Validation of a Property Estimation Method Based on Sequential and Posteriori Estimation *Tomoya Kitamura, Atsumi Saito, Keisuke Yamazaki, Yuki Saito, Hiroshi Asai, Kouhei Ohnishi*
2-DOF Haptic Feedback Control Stick for Remote Rover Navigation *Tomonori Yamazaki, Sota Shimizu, Rikuta Mazaki, Hokuto Kurihara, Naoki Motoi, Roberto Oboe, Nobuyuki Hasebe, Tomoyuki Miyashita*

Studio 316

SS31_1: Future-Proof Power Electronic Systems and Control for Residential Microgrids

3L-T-type qZSI as Grid-Forming Unit in ac Microgrid *Javier Gutiérrez-Escalona, Carlos Roncero-Clemente, Oleksandr Husev, Vitor Pires, María Isabel Milanés-Montero, Eva González-Romera*
Interlink Converter for Hybrid AC to Bipolar DC Microgrid or to Two DC Microgrids *Vitor Pires, Daniel Foito, Armando Cordeiro, Carlos Roncero, Joao Martins, Armando Pires*
Use of Resonant Terms in a 2DOF Control Scheme for the Current Control of an Active Power Filter *Francisco Javier López-Alcolea, Emilio J. Molina-Martínez, Javier Vázquez, Pedro Roncero-Sánchez, Alfonso Parreño Torres, Ismael Payo*
Multi-port Smart Transformer Integration in Residential Buildings *Enrique Romero-cadaval, Fermin Mendoza-Azores, Joaquin Carbonell-Cuellar, Javier Rodriguez-Barrero*
Black Start and Fault Tolerant Operation of Isolated Matrix Converter for dc Microgrids *Pietro Emiliani, Andrii Chub, Giovanni De Carne, Dmitri Vinnikov, Andrei Blinov*

The Arc

SS20_1: Predictive Analytics Architectures and Applications for Industrial Systems

Condition Monitoring on Renewable Energy Production with

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Application to Wind Generation *Betül Sena Çağrı, Burak Ketmen, Barış Bulut*

IoT Architecture and Solutions for Predictive Maintenance of Mobile Machinery *Jani Hietala, Kalle Raunio, Tero Jokinen, Petri Kaarmila*

On Suitability of the Customized Measuring Device for Electric Motor *Rok Hribar, Gašper Petelin, Margarita Antoniou, Anton Biasizzo, Stanko Ciglari, Gregor Papa*

An AI-based Architecture Framework for Improving End-of-line Reliability Tests of Electric Motors *Mujdat Soyturk, Kutalmış Övünür, İzzet İzmitlioglu, Borahan Tümer, Deniz Güneş, İnan Saraçoğlu, Barış Bulut, Hasan Burak Ketmen, Ömer Hanedanar, Taşkın Özoğuz, Aray Aydın*

Improved Domain Adaptation Approach for Bearing Fault Diagnosis *Sertac Kilickaya, Turker Ince, Levent Eren, Serkan Kiranyaz, Moncef Gabbouj, Ozer Can Devencioglu*

Studio 211 & 212

PEEC_9a: Power Electronics & Energy Conversion (ORAL SESSION)

Adaptive Variable Switching Frequency Control for SiC-based PMSM Drive Systems *Suleman Yunus, Wenlong Ming, Carlos E. Ugalde-Loo*

Droop Control Strategy For Input-Parallel Output-Series LCL Grid-Connected Inverter System *Peng Wang, Tianzhi Fang, Husheng Qian*

Research on Linear Active Disturbance Rejection and Super-twisting Algorithm in Vienna Rectifier *Jiawei Chen, Hongpeng Liu, Zhenlan Dou, Wei Zhang, Xianliang Tong*

Development of numerical analysis techniques for supercapacitor assisted surge absorber (SCASA) technique to validate experimental and simulated results *Savin Thusara Kokuhennadige, Nihal Kularatna, Ye Chow Kuang, Alistair steyn-ross*

High Performance Simulation Framework of Three-Phase Battery Modular Multilevel Management Converter System *Dominic Karnehm, Nina Sorokina, Sebastian Pohlmann, Martin Ackermann, Manuel Kuder, Antje Gieraths*

Studio 216

INTEROP DEMO

Hall 300

EMD_9: Electrical Machines and Drives (ORAL SESSION)

A Study on Insulation Components of High Voltage Electrical Machines Used in Electric Vehicles *Martino Bailoni, Shafiqh Nategh, Benjamin Gaussens, Olga Shtyka*

A Simplified Space Vector Overmodulation Strategy for PMSM Drive System *Zisui Zhang, Babak Nahid-Mobarakeh, Ali Emadi*

Enhanced Adaptive Higher Order Sliding Mode Observer based Sensorless Control *Ying Zuo, Chunyan Lai, K. Lakshmi Varaha Iyer*

Online Interturn Short Circuits Fault Monitoring for Permanent Magnet Synchronous Machines *Ying Zuo, Ahmad Darabi, Chunyan Lai, K. Lakshmi Varaha Iyer*

Concept and Control of a 48V Integrated Multi-Three-Phase PMSM Drive using Separate H-Bridge Inverters on Concentrated Tooth-Windings *Felix Gliese, Christoph Cheshire, Tobias Röser, Ulrich Ammann*

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Studio 314

SS22_1: Recent Advances in Sliding Mode Control for AC Motor Systems

High Order Terminal Sliding-mode Control of Permanent Magnet Synchronous Motor *Cai William, Wang Jinguo, Zhou Minghao, Wu Xingguo*

A Hybrid Three-Coil IPT Topology with High Tolerance to Pad Misalignment for Battery Charging Applications *Youzheng Wang, Hongchen Liu, Qikun Zhou, Chunyang Jiang, Xinsheng Zhang, Chaochao Li*

A Novel SVPWM Control Strategy for High-Frequency Link Dual Matrix-Type Inverter *Pan Jiang, Zhe Cai, Hongchen Liu, Chaochao Li*

An Improved Model Predictive Current Control for Permanent Magnet Linear Generator of Direct-Drive Wave Energy Converters *Lai Wei, Lei Huang, Jianlong Yang, Xiaoyu Zhang, Ruiyang Ma, Yang Li*

Studio 202

SS30_1: Advances in Human-Mechatronic Systems (ORAL SESSION)

Proposal of posture guidance method using air jetting with table tennis racket type device *Rin Suzuki, Manabu Okui, Ryunosuke Sawahashi, Rie Nishihama, Taro Nakamura*

Autonomous Mobile Robot Navigation for Complicated Environments by Switching Multiple Control Policies *Kanako Amano, Yuka Kato*

Development of Semi-active Force Feedback Shoes with MR Brake Rendering a Falling Sensation and Descent Acceleration

Measurement *Ryunosuke Sawahashi, Toshinari Tanaka, Taiki Masuda, Manabu Okui, Rie Nishihama, Taro Nakamura*

Prototype of an exoskeletal lower limb force-feedback device for moving extensively in VR space *Taiki Masuda, Ryunosuke Sawahashi, Jonah Komatsu, Manabu Okui, Rie Nishihama, Taro Nakamura*

Development of cart with constant steerability regardless of loading weight or position *Shunya Aoki, Sho Yokota, Akihiro Matsumoto, Daisuke Chugo, Satoshi Muramatsu, Hiroshi Hashimoto*

Studio 206

HCICT_1: Human Centric ICT (ORAL SESSION)

Detection of Respiratory Emergency Situation of Rescue Patients with Machine Learning Algorithms *Abu Shad Ahammed, Sampada Reddy Donthireddy, Roman Obermaisser*

Quasi-Resonant DC-DC Converter Single-Switch for Single-Input Bipolar-Output Applications *Cristian Díaz Martín, Eladio Durán Aranda, Salvador Pérez Litrán, Jorge Semião*

Effect of the Transimpedance Amplifier Topology on the Photoplethysmography Signal *Angel Solé Morillo, Joan Lambert Cause, Bruno Da Silva Gomes, Juan Carlos García Naranjo, Johan Stiens*

Studio 214

ONLINE1: Online-Video Paper Presentations

An improved normalized PLL-based high-order SMO for Sensorless Control of PMSM *Bowen Zheng, Jiaxin Qian, Mingyu Gao, Zhiwei He, Huipin Lin*

Study of Inverter Control Strategies on the Stability of Low-Inertia

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	<p>Microgrid Systems <i>Jing Wang, Govind Saraswat</i> A Novel Switching Table Direct Power Control for PWM Rectifier Based on Virtual Flux <i>Xuliang Yao, He Ma, Jingfang Wang</i> Study of Inverter Control Strategies on the Stability of Microgrids Toward 100% Renewable Penetration <i>Jing Wang</i> Two Rank Sorting for Successive Cancellation List Decoding of Polar Codes <i>Dafa Wen, Zhan Ming, Chenchang Gao, Zhong Tang, Lan Xiao, Jian Li</i></p>
08:00-09:30	<p>Studio 311 ICTAI_3:ICT and AI enabling smart cities, buildings, agriculture, energy efficiency and sustainability Building Occupancy Detection using Machine Learning-based Approaches: Evaluation and Comparison <i>Chinmayi Kanthila, Abhinandana Boodi, Karim Beddiar, Yassine Amirat, Mohamed Benbouzid</i> Feasibility of Conversion from Diesel Engine to Natural Gas Power Plants <i>Moses Kabeyi</i> Explainable Artificial Intelligence for Evaluation of Liquor giz giz Greenhouse Heat Map Generation with Deep Neural Network Using Limited Number of Temperature Sensors <i>Ayu Sonoda, Yuki Takayama, Ayaki Sugawara, Hiroaki Nishi</i> Anomaly Detection in Critical-Infrastructures using Autoencoders: A Survey <i>Harindra Sandun Mavikumbure, Chathurika S. Wickramasinghe, Daniel L. Marino, Milos Manic</i> Hybrid Indoor Localization System Combining Multilateration and Fingerprinting <i>Leonardo Sestrem de Oliveira, Ohara Kerusauskas Rayel, Paulo Leitao</i></p>
08:00-18:00	<p>Studio 210 NOT AVAILABLE</p>
	<p>Studio 214&216 NOT AVAILABLE</p>
	<p>Studio 310 (Circle) BRIEFING ROOM - ORGANIZERS & SECRETARIAT</p>
09:30-10:30	<p>Copper Hall Keynote</p>
10:30-11:00	<p>GRAND HALL Coffee Break</p>
11:00-12:30	<p>Studio 204 SS15_2:New Emerging Technologies in Disturbance Estimation and Rejection (ORAL SESSION) an Interval Multiple Models Approach for Uncertain Nonlinear Systems Estimation <i>Souad BEZZAOUCHA REBAI</i> Position Tracking and Disturbance Rejection for Motion Control System Using Equivalent Input Disturbance Approach and Feedforward Control <i>Youwu Du, Xiaoxin Han, Erlin Zhu, Naibao He, Mingxing Fang, Jinhua She</i></p>

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Improving habitability for wind-induced structural vibration by equivalent-input-disturbance approach *Kou Miyamoto, Naoto Yoshida, Yuta Tomiyoshi, Jinhua She, Satoshi Nakano*

Stable Control and Disturbance Rejection Strategy for Planar 2R Underactuated Robot via Intelligent Algorithm *Zixin Huang, Xiao Wan, Yaosheng Zhou, Lejun Wang*

Adaptive Update Tracking Algorithm for Fast Motion Object *Haozheng Qian, Mingxing Fang, Jinhua She, Lijun Zhao, Youwu Du, Xiao Liang*

Optimal Controllers Design for Microgrid Inverter Based on Disturbance Rejection Approach *Jiajun Fu, Caixue Chen, Yonghong Lan*

Studio 312

SS36: Power Electronics and Energy Storage Strategies for DC Microgrid

AC Grid-interface Bidirectional Buck-Type Converters for DC microgrids: Comparative Study *Ahmed Yahia Farag Abdelfattah, Paolo Mattavelli, Davide Biadene, Tarek Younis*

Dual-active-bridge converter modeling for real-time signal processor implementation *Jiaqin SUN, Giampaolo Buticchi, Jing Li, He Zhang, Sandro Guenter, Jiajun Yang*

Cases of Soft Switching in a Series Resonant Balancing Converter for Bipolar DC Grids *Sachin Yadav, Zian Qin, Pavol Bauer*

Studio 313

SS17_2: Optical Wireless Communication for Industrial Applications

The IEEE 802.15.13 Standard for Optical Wireless Communications in Industry 4.0 *Kai Lennert Bober, Eric Ackermann, Sang-Kyu Lim, Tuncer Baykas, Ronald Freund, Volker Jungnickel*

Software-defined LiFi - RF network for Industry 4.0 applications *Anagnostis Paraskevopoulos, michael schlosser, warunee pluemakarapunya, dominic schulz, peter hellwig, julian hohmann, mathias bohge, thomas menzel, hagen woessner, Volker Jungnickel*

Techno-Economics of LiFi compared to Wi-Fi in Industrial IoT applications *Carmen Mas Machuca, Madeleine Kaufmann, Maximilian Riegel, Dominic Schulz, Pieter Stobbelaar, Marcel Müller, Daniel Bahnke*

Orthogonal Time Frequency Space Modulation in Wideband Doppler Channel *Gao ziqiang, Xiong Deng, xihua zou, Hongyu Meng, peixuan li, chen chen, Thiago Elias Bitencourt Cunha, lianshan yan*

Studio 316

SS31_2: Future-Proof Power Electronic Systems and Control for Residential Microgrids

Analysis of Holdup Time for DC Grid-Forming Isolated Active Front-End Converters *Edivan Carvalho, Andrei Blinov, Andrii Chub, Dmitri Vinnikov*

Digital Control of PFC Rectifier with Combined Feedforward and PI Regulator *Ievgen Verbytskyi, Pietro Emiliani, Andrei Blinov*

A Three-Phase On-Board Integrated Battery Charger for EVs using a Driver Based on Triple Inverters *Armando Cordeiro, Vitor Pires, Daniel Foito, José Fernando Silva*

Bidirectional DC-DC Converter for Battery Storage Systems with Support for Mitigation of Voltage Imbalance in Bipolar DC Microgrids *Vitor Pires, Daniel Foito, Armando Cordeiro, Carlos*

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Roncero_Clemente, José Silva

The Arc

SS20_2: Predictive Analytics Architectures and Applications for Industrial Systems

Improved Detection of Broken Rotor Bars by 1-D Self-ONNs *Levent Eren, Turker Ince, Murat Askar, Ozer Devencioglu*

Investigation of Potting Compounds on Thermal-Fatigue properties of Solder Interconnects *Leiming Du, Xiujuan Zhao, Piet Watte, Rene Poelma, Guoqi Zhang, Willem Driel*

An IoT Cloud and Big Data Architecture for the Maintenance of Home Appliances *Luis Ferreira, Tiago Fonseca, Orlando Sousa*

Data-Centric Model Development to Improve the CNN Classification of Defect Density SEM Images *Corinna Kofler, Claudia Anna Dohr, Judith Dohr, Anja Zernig*

Fault Detection on Sensors of the Quadrotor System Using Bayesian Network and Two Stage Kalman Filter *Tolga Bodrumlu, Fikret Çal _kan*

Studio 211 & 212

PEEC_10a: Power Electronics & Energy Conversion (ORAL SESSION)

Single-Current Feedback Control Strategy for Input-Parallel Output-Series LCL Grid-Connected Inverter System *Peng Wang, Tianzhi Fang, Husheng Qian*

Single Core and Modular Transformer Solutions: a Trade-Off Analysis of Volume, Losses and Temperature Rise *Asier Arruti, Jon Anzola, Iosu Aizpuru, Mikel Mazuela*

Power Inter Cell Transformer Modelling for ASV Application *Guillaume Pellecuer, Thierry MARTIRÉ, Loïc DARIDON*

Resonant current estimation and phase-locked loop control system for inductorless step-up single piezo element-based (SUPRC) DC-DC converter *Jack Forrester, Martin Foster, Jonathan Davidson*

Novel Carrier-reassignment PWM Techniques for Sub-Module Power Balancing in CHB Converters *Abhijit Kshirsagar, Little Pradhan, Renuka Varma, D Venkatramanan, Prince Kumar, Ned Mohan*

Application of DC/DC partial power conversion to concentrator photovoltaics *Philippe Camail, Christian Martin, Bruno ALLARD, Maxime Darnon, Charles Joubert, João Trovão*

Studio 216

INTEROP DEMO

Hall 300

EMD_10: Electrical Machines and Drives (ORAL SESSION)

Design and Fault Analysis of Discrete Halbach Magnetic Screws *Doha Mustafa, Hussain Hussain, Hamid Toliyat*

Design of Electromagnet Rotor based Switched Reluctance Machine (ESRM) for Electric Vehicle Applications *Syam Sundar Satheesan Nair, Prathap Reddy B, Subhabrata Basak, Umanand L, Gopakumar K*

Thermal Models of Various PMSM Rotor Topologies *Martin Skalicky, Roman Pechanek, Lukas Sobotka, Lukas Veg*

Trajectory Linearisation-based Offset-free MPC for Synchronous

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Electric Motor Drives with Nonlinear Magnetic Characteristic *Ismaele Diego De Martin, Fabio Tinazzi, Mauro Zigliotto*
System Parameter-free Continuous Control-set Predictive Current Control of Synchronous Motors *Ismaele Diego De Martin, Fabio Tinazzi, Mauro Zigliotto, Christoph Hackl*

Studio 314

SS22_2: Recent Advances in Sliding Mode Control for AC Motor Systems

Virtual synchronous control based on DC-link dynamics for PV inverter in weak grid *xuemei zheng*

Three-level microgrid inverter optimization algorithm based on model prediction control *xuemei zheng*

State of Charge Estimation for Electric Vehicle Battery Using Fuzzy Sliding Mode Observer *Yong Feng, Yingjie Shi, Chen Xue, Fengling Han*

Short-term probability forecasting of wind power based on D-Vine quantile regression *Wei Zhang, Jiayu Wang, Senwen Li, Tengzhou Wang, Sipeng Hao*

Studio 202

SS30_2: Advances in Human-Mechatronic Systems (ORAL SESSION)

Analysis of Crowd Simulation for Autonomous Mobile Robot Navigation *Midori Tanaka, Yuka Kato*

Mobile robot's navigation based on road segmentation and route evaluation *Shinji Tanimoto, Satoshi Muramatsu, Katsuhiko Inagaki, Daisuke Chugo, Sho Yokota, Hiroshi Hashimoto*

Studio 206

HCICT_2: Human Centric ICT (ORAL SESSION)

The human role in Human-centric Industry *Sepideh Kalateh, Luis A. Estrada-Jimenez, Terrin Pulikottil, Sanaz Nikghadam Hojjati, Jose Barata*

Power Saving Techniques for Wearable Devices in Medical Applications *Workineh Gudisa, Bruno da Silva, Worku Jimma, Johan Stiens*

Optimum Design of a Wire-Driven Redundant Spherical Parallel Manipulator for Foot Drop Rehabilitation System *Ahmed Gamal, Abdelfatah Mohamed, Hiroyasu Iwata, Samy Assal*

Modeling of control delay in human-robot collaboration *Adriano Scibilia, Nicola Pedrocchi, Luigi Fortuna*

Comparison of Filtering Methods in Measuring Human ZMP Using Kinect Sensor *Toshiyuki Nagasawa, Yuta Tawaki, Toshiyuki Murakami*

An Integrated Force Feedback System for a Prosthetic Hand *Christian von Brockdorff, Yesenia Aquilina, Rachel Cauchi, Michael Saliba, Kenneth Camilleri, Jesmond Attard*

Studio 214

ONLINE2: Online-Video Paper Presentations

Are Realistic Training Data Necessary for Depth-from-Defocus Networks? *ZHUOFENG WU, Yusuke Monno, Masatoshi Okutomi*

Optimal Configuration of Wind/Solar/Diesel /Storage Microgrid Capacity Based on PSO-GWO Algorithm *Qiang Zhang, Xiuxian Xu, Tianzheng Wang, Haotian Sun, Chen Yang, Hailang Pan*

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A Hybrid Control Strategy for Sensorless PMSM with a Super-Twisting Sliding Mode Observer and a Two-stage Filter Based on Fuzzy Rules *kaiqi zhao, Yang Liu*

Integration of a Next Generation SiC Switch-based Voltage Multiplier in Multi-stage Converters for Increased Voltage Step-up Capability *Nino Ramos*

Accurate Power Loop Design of a Single-Phase Grid-Forming Power Converter Via Linearization of SOGI-Based Power Calculation *Jinyi Su, Jia Liu, Jinjun Liu*

Vision-based Inspection of Flare Stacks Operation Using a Visual Servoing Controlled Autonomous Unmanned Aerial Vehicle (UAV) *Muaz Al Radi, Hamad Karki, Naoufel Werghi, Sajid Javed, Jorge Dias*

11:00-13:00

Studio 315**SS6_2: Intelligent Sensing Applications for Human Assistive Systems (ORAL SESSION)**

Gaze Preference Decision Making Predictor Using RNN Classifier *Shumpei Sato, Sota Shimizu, Koh Hamada*

Sidewinder: Snake Robot's Stereo Vision System for Rescue in Collapsed Debris at Disaster Sites *Rikuto Nakamoto, Sota Shimizu, Tomoki Takamura, Alessandro Calfi, Fulvio Mastrogiovanni*

Tornado: 2-DOF Power Assist Suit to Assist Twisting Motion of Lower Back *Motoki Hirose, Sota Shimizu, Rikuta Mazaki*

Effects of Leader-Follower Information Asymmetry on Brain Activity During Human-Human Cooperative Transport Work *shunsuke satake, Toru Tsumugiwa, Ryuichi Yokogawa*

GAN-based Radar Micro-Doppler Augmentation for High Accuracy Fall Detection System *RITESH CHANDRA TEWARI, Patitapaban Palo, Jhareswar Maiti, Aurobinda Routray*

Amyloid- β Clearance and its Evaluation by Auditory Stimulation in a Mouse Model of Alzheimer's Disease *Maika Ogawa, Yasue Mitsukura, Yoichiro Abe, Masato Yasui*

Evaluation of Mathematical Models for Postural Sway Based on Reproducibility of SDA Parameters *Katsuto Sakae, Yuta Tawaki, Toshiyuki Murakami*

Home hospitalization system for the remotely and continuous monitoring of chronic patients *Javier Aguilar Torán, Jaime Punter-Villagrasa, Xavier Muñoz, Pere Miribel-Catala*

Studio 311**ICTAI_1: ICT and AI enabling smart cities, buildings, agriculture, energy efficiency and sustainability**

Effective Information Selection Method on Spatiotemporal Information Infrastructure with Photogrammetry *Ayaki Sugawara, Ayu Sonoda, Hiroaki Nishi*

Emergency situations in public buildings: How to know where persons are to be rescued *Jan Haase*

Spatio-temporal Tensor Multi-Task Learning for Precision Fertilisation with Real-world Agricultural Data *Yu Zhang, Tong Liu, Yang Li, Ruijing Wang, He Huang, Po Yang*

Occupancy Detection for General Households by Bidirectional LSTM with Attention *Hisashi Oshima, Tsuyoshi Ishizone, Kazuyuki Nakamura, Tomoyuki Higuchi*

Wildfire Spread Prediction Model Calibration Using Metaheuristic

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	<p>Algorithms <i>Jorge Pereira, Jérôme Mendes, Jorge S. S. Júnior, Carlos Viegas, João Ruivo Paulo</i></p> <p>Frequency Evaluation of the Xilinx DPU Towards Energy Efficiency <i>Jurgen Vandendriessche, Bruno da Silva, Abdellah Touhafi</i></p> <p>A Building Block for Internet of Things Prototyping <i>Roald Van Glabbeek, Eden Hunde Teshome, Diana Deac, Towfik Jemal Ali, Jacques Thiberghien, Kris Steenhaut</i></p> <p>An MQTT Gateway for HIL Testing of Energy Systems <i>Diran Liu, Daniele Carta, Andre Xhonneux, Dirk Müller, Andrea Benigni</i></p>
12:30-14:30	<p>GRAND HALL</p> <p>Lunch</p>
13:00-14:30	<p>The Arc</p> <p>Industry Forum</p>
14:30-15:30	<p>The Arc</p> <p>keynote</p>
15:30-16:00	<p>GRAND HALL</p> <p>Coffee Break</p>
16:00-17:30	<p>Studio 311</p> <p>ICTAI_4:ICT and AI enabling smart cities, buildings, agriculture, energy efficiency and sustainability (ORAL SESSION)</p>
16:00-17:45	<p>Hall 300</p> <p>EMD_11:Electrical Machines and Drives (ORAL SESSION)</p> <p>Surrogate Modelling of Dynamic Phasor Simulations of Electrical Drives <i>Nasrulloh Loka, Sriram Gurusurthy, Bernard Amevor, Antonello Monti, Tom Dhaene, Ivo Couckuyt</i></p> <p>Neural Network-Based Classification of Current Sensor Failures in Fault-Tolerant Control Induction Motor Drive <i>Maciej Skowron</i></p> <p>A New Neural Network based Method for Online Parameters Identification of the Interior Permanent Magnet Synchronous Machines <i>Minh Bui</i></p>
16:00-18:00	<p>Studio 204</p> <p>SS15_3:New Emerging Technologies in Disturbance Estimation and Rejection (ORAL SESSION)</p> <p>Novel Explicit Model Predictive Control Strategy For Boost Converters Based on State-space Averaging Method <i>zhaohong wang, ke xu, yonghong lan, xiaofan yang</i></p>
	<p>Studio 313</p> <p>SS4: Advances in Multi-port Power Converters: Applications in Energy Systems (ORAL SESSION)</p> <p>Topology and Operation Analysis of Isolated DC/DC Converters with Bidirectional Asymmetric Power Flow <i>Siyu Wu, Kangan Wang, Yixian Qu, Rongwu Zhu, Wei Tan, Weimin Wu, Marco Liserre</i></p>

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Decentralized Power Management for Multi-active Bridge Converter *Hongwei Zhao, Yang Qi, Weilin Li*

Novel High Gain Multiport Isolated DC-DC Converter with Bipolar Symmetric Outputs *Immanuel Ninma Jiya, Khang Huynh, Rade Ciric, Nand Kishor*

Multi-port Energy Router-based Battery Pack Active Balance Control System *Xueqing Qi, Zhikang Li, haojun qin, Ming Liu, Chengbin Ma*

Integrated Multiport Back-to-Back Power Converter for Type-4 Wind Turbine Generator with Hybrid Energy Storage System *Bang Nguyen, Thai-Thanh Nguyen, Van-Long Pham, Tuyen Vu, Mayank Panwar, Rob Hovsapien*

On Cognate Multiport Converters through Graph-based Generalized Duality *Pasan Gunawardena, Yuzhuo Li, Yunwei (Ryan) Li*

Studio 213 & 215**PEEC_11b: Power Electronics & Energy Conversion (ORAL SESSION)**

analysis of the influence of train operation diagram adjustment on the working state and life of IGBT module of traction converter *LIU BAOCHENG, Liu Yixin, Sun Hu, Yang Zhongping, Huang Xianjin*

Performance of Active Power Synchronization Control under Unbalanced Condition *Ao Liu, Chuanchuan Hou, Miao ZHU, Xu Cai*

Model of a 9-level transformerless RV Topology Grid-Tied-Inverter for PV applications *Muhammad Salman, Chiara Boccaletti, Najeeb Ullah, Najeeb Ullah*

Design and Optimization of Three-Phase LLC Charger with 99% ~~99%~~ Dinding Configuration *Abdulsamed Lordoglu, Mehmet Onur Gulbahce, Derya Ahmet Kocabas, Serkan Dusmez*

Studio 201**SS11-Artificial Intelligence Methods for the Control of Power Electronics Converters (ORAL SESSION)**

An ANN-Assisted Control for the Power Decoupling of a Multiple Active Bridge DC-DC Converter *Giampaolo Buticchi, Amin Farjudian, Juyoung Oh, Luca Tarisciotti*

Droop Coefficient Design and Optimization Using Genetic Algorithm- A Case Study of the More Electric Aircraft DC Microgrid *Habibu Hussaini, Tao Yang, Yuan Gao, Cheng Wang, Ge Bai, Serhiy Bozhko*

Flexibility Prediction in Wastewater-Energy Nexus using Machine Learning *Wybren Oppedijk, Niels Tiben, Daniel Gebbran Cons Bacilla Ferreira, Tomislav Dragi, v6P0 0*

Comparative Assessment of Supervised Learning ANN Controllers for Grid-Connected VSC System *Prabhat Ranjan Bana, Mohammad Amin*

Design of Neural Network for Adaptive Current Control with Different Short-Circuit Ratios *Li Cheng, Xiongfei Wang, Huoming Yang, Lars Nordström*

Robust Artificial NN-based Tracking Control Implementation of Grid-Connected AC-DC Rectifier for DC Microgrids Performance Enhancement *Ahmed Soliman, Mahmoud Amin, Fayez El-Sousy, Osama Mohammed*

Intelligent Primary Control of Voltage Source Converters in AC Microgrids *Abd Alelah Derbas, Arman Oshnoei, Morteza Kheradmandi, Frede Blaabjerg*

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Studio 315

SS27: Distributed Control, Optimization and Networked Game and Their Industrial Applications

Distributed Online Algorithm with Inertia for Seeking Generalized Nash Equilibria *Haomin Bai, Hongmiao Zhang, Wenying Xu, Wangli He*

Resilient refinery planning based on two-stage adaptive robust optimization under uncertainty *Meicheng Zuo, Liang Zhao, Wangli He, Feng Qian*

Tracking control of nonholonomic mobile robots with dynamic event-triggered strategy *Wangli He, Peilin Liu, Feng Qian*

Distributed Event-Triggered Impulsive Consensus Control of Nonlinear Multi-Agent Systems Under Malicious Attacks *Jiaying Zhu, Wangli He, Xiaohua Ge*

Optimal Bipartite Consensus Control for Unknown Coopetition Multi-agent Systems with Time-delay via Reinforcement Learning

Method *Jing Zhang, Yang Chen, Jiangjun Hu, Xiudong Gao, Lina Ou, Huan Xiao*

Distributed Adaptive Control for Second-order Leader-following Multi-agent Systems *Xuegang Tan*

Multi-Agent Reinforcement Learning Based Electric Vehicle Charging Control for Grid-Level Services *Md Golam Dastgir, Xiang Huo, Mingxi Liu*

Studio 316

SS40: Sliding Mode-Based Fixed-Time Intelligent Control and its applications in aerospace unmanned Systems (ORAL SESSION)

A New Input-Parallel-Output-Series Three-Phase Hybrid Rectifier for Heavy-Duty Electric Vehicle Chargers *Rui Qiang, Yang Wu, Thiago Soeiro, Pierpaolo Granello, Zian Qin, Pavol Bauer*

Cooperative orbital control for satellite swarms with nonsingular terminal sliding mode and finite-time extended state observer *lixiang wang, Ming Liu*

Deep Learning with Fractional Order Operators Lagrangian Method for Space Robot based on Sliding Mode-based Fixed-time Control *Tongyu Zhao, Guanghui Sun, Xiangyu Shao, Biqing Qi, Dong Zhou*

Fractional-order Non-singular Terminal Sliding Mode Control for Bilateral Teleoperation System *Xiaolong Duan, Zhiqiang Ma, Zhengxiong Liu, Yu Liu*

Fixed-time nonsingular terminal sliding mode control for the post-capture tethered space robot system *Ganghui Shen, Xu Jia, Xiaolei Li*

Distributed impedance control for cellular space robot in spacecraft takeover control *Haitao Chang, Xiyao Liu, Tong Wang, Zhenyu Lu*

Studio 211 & 212

PEEC_11a: Power Electronics & Energy Conversion (ORAL SESSION)

Optimized Power Conversion System for Mobile Air Radiation Monitoring System *Sung-Ho LEE, Min-Jae Kim*

A New Voltage Clamp Method for PV Maximum Power Tracking Under Shading Conditions *Ahmed Cheriti*

Critical design criterion for inductorless H-bridge driven piezoelectric-transformer-based power supplies *Zijiang Yang, Jack Forrester, Jonathan*

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Multi-objective optimization of high order input filters for grid connected converters using Genetic Algorithms *Pedro Costa, Sonia Pinto, J. Fernando Silva*

Three-Phase Voltage Boosting Inverter using Single Switched Capacitor *SAJNEEK SINGH, Manik Abrol, Krishna Kumar Gupta, Sanjay K. Jain*

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SS9:Conductive and Wireless Powering and Charging Technologies for Electric Mobility (ORAL SESSION)

Design and Validation of an Inductive Power Transfer System with Zero Phase Angle Detection Algorithm *Vincenzo Castiglia, Nicola Campagna, Rosario Miceli, Stanimir Valtchev*

Printed Circuit Board Coil Design with Reduced Series Resistance for High Power Inductive Wireless Power Transmission Systems *Alexis Adrian Narvaez Acaro, Claudio Carretero, Jesus Acero, Jose M. Burdio*

Harmonic Emission Modelling of Electric Vehicle Chargers *Yawen Liang, Lu Wang, Zian Qin, Pavol Bauer*

Converter Topology Comparison for a Two-Stage Level-2 Onboard Charger in 800-V EV Powertrains *Rachit Pradhan, Mehdi Narimani, Ali Emadi*

Design method of Coreless Coil Considering Power, Efficiency and Magnetic Field Leakage in Wireless Power Transfer *Yuto Yamada, Takehiro Imura, Yoichi Hori, Soma Hasegawa*

Comparison of Circular Coil, Double-D Coil, and 85 kHz Self-Resonant Coil in Road Embedment for Dynamic Wireless Power Transfer *Koki Hanawa, Takehiro Imura, Yoichi Hori, Nagato Abe*

Power Relay Module Based Multiple-load Charging Capability Extension *Kaitian Chao, Peng Zhao, Xinxin Yu, Xiaoxuan Ji, Minfan Fu*

Studio 202

ICTAST: ICT Enablers of Autonomy and Smart Transport (ORAL SESSION)

A Deep Learning Model with the Residual Network for Deployment of Shared Bikes *Haotian Zhang, Long Teng, Yung Po Tsang, Chi Pong Tsui, Chao Liu, Chak-yin Tang*

Towards a context identification method for autonomous robots *Marvin Zager, Christoph Sieber, Alexander Fay*

SmartData Safety: Online Safety Models for Data-Driven Cyber-Physical Systems *Jose Luis Conradi Hoffmann, Antônio Augusto Fröhlich*

Electric Vehicle Physical Parameters Identification *Ricardo Maia, Jérôme Mendes, Rui Araújo*

Semantic-driven Computation Offloading and Resource Allocation for UAV-assisted Monitoring System in Vehicular Networks *Xin Sun*

Performance Evaluation of V2X Communication for Connected Autonomous Vehicles in Platooning *Burak Senkus, Mujdat Soyturk*

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SS21: Reinforcement Learning and Hybrid AI for

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	<p>control applications (ORAL SESSION)</p> <p>Signal identification of low signal-to-noise ratio time series data with deep neural network <i>Zhixiang Ren, Yiming Ren, Tianyu Zhao, Yue Zhou</i></p> <p>Safety Aware Autonomous Path Planning Using Model Predictive Reinforcement Learning for Inland Waterways <i>Astrid Vanneste, Simon Vanneste, Olivier Vasseur, Robin Janssens, Mattias Billast, Ali Anwar, Kevin Mets, Tom De Schepper, Siegfried Mercelis, Peter Hellinckx</i></p> <p>Object Detection To Enable Autonomous Vessels On European Inland Waterways <i>Mattias Billast, Robin Janssens, Astrid Vanneste, Simon Vanneste, Olivier Vasseur, Ali Anwar, Kevin Mets, Tom De Schepper, José Oramas, Steven Latré, Peter Hellinckx</i></p> <p>Chip-SAGAN: A Self-Attention Generative Adversarial Network for Chinese Ink Wash Painting Style Transfer <i>Jiaoju Zhou, Feng Gao, Xuebo Yang, Weiyang Lin</i></p> <p>Reinforcement learning based mass flow and supply temperature control for combined heat distribution <i>Stef Jacobs, Sara Ghane, Ali Anwar, Siegfried Mercelis, Peter Hellinckx, Ivan Verhaert</i></p> <p>Transfer Learning-based Hybrid Modeling Approach for Indoor Temperature Modeling <i>Furkan Elmaz, Sara Ghane, Thomas Huybrechts, Ali Anwar, Siegfried Mercelis, Peter Hellinckx</i></p> <p>Robust Parameter Estimation and Tracking through Lyapunov-based Actor-Critic Reinforcement Learning <i>Thomas Rudolf, Joshua Ransiek, Stefan Schwab, Sören Hohmann</i></p>
	<p>Studio 214</p> <p>ONLINE3: Online-Video Paper Presentations</p> <p>Analytical Model of Class D Inverter for High Frequency Operation <i>Yi Xiong</i></p> <p>A Fair Comparison between Three Different Mainstream IoT Applications for Managing Dynamic Traffic-Lights of Future Smart City <i>Ambreen Joyo, Nicholas Madamopoulos, Raziq Yaqub, Mohamed Ali</i></p>
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