19th MECHATRONIKA 2020

December 2 – 4, 2020, Prague, Czech Republic

V.2

Wednesday, December 2

Opening of Conference 9:20

Dusan Maga, General Chair, Czech Technical University in Prague, Czech Republic

Session V1 (09:30-10:45) - Actuators I (chair: Jan Sobra)

09:30 Martin Skalický, Roman Pechánek, Lukáš Veg: Algorithm for Creating of the Equivalent Thermal Circuit for PMSM
09:45 Sergey German-Galkin, Marek Staude: Energy Properties of a Hybrid DC Generator with PMSM
10:00 Selma Čorović, Nina Šutar, Damijan Miljavec: Modeling of Thermal Effects in Induction Machines due to the Stator End-Windings
10:15 Bohumil Skala, Vladimir Kindl, Jan Sobra, Jan Laksar: Current in Broken Squirrel Cage of Induction Machine
10:30 Roman Pechanek, Martin Skalicky, Jiri Drazan: Determinations of Stator Windings Thermal Model with Various Filling Factor

Session V2 (11:00-12:15) - Actuators II (chair: Jan Laksar)

11:00 Lukas Veg, Martin Skalicky, Roman Pechanek: Tuning of the Thermal Model of Synchronous Machine with PM by Real Measurement
11:15 Vladimir Kindl, Jan Laksar, Bohumil Skala, Tristan Schönfelder: Iron Losses Calculation in Non-Harmonic Power Supply
11:30 Sergey German-Galkin, Dariusz Tarnapowicz: Tests of the Ship's Cage Induction Generator with the DC Electrical Network
11:45 Ondřej Suchý, Štěpán Janouš, Jakub Talla, Zdeněk Peroutka: Torque Ripple Minimization in PMSM Drive with Non-sinusoidal Back EMF Using Model Predictive Control
12:00 Jan Sobra, Radek Cermak, Patrik Kalaj, Tomas Komrska: Vibration Analysis of a Nine-Phase Induction Machine Supplied by Voltage with Harmonics Injection

Session V3 (14:00-15:15) - Actuators III (chair: Karel Hruska)

14:00 Jan Barta, Ladislav Knebl, Marek Toman, Valerii Abramenko, Ilya Petrov, Iveta Lolova: Design and Analysis of 1.5 kW, 1500 rpm Line-Start Permanent Magnet Synchronous Machine
14:15 Ladislav Knebl, Jan Barta, Jiri Kurfürst, Cestmir Ondrusek: High-torque Ferrite Synchronous Reluctance Machine Design Optimization
14:30 Karel Hruska, Pavel Dvorak: Induction Machines Efficiency Mapping
14:45 Jan Laksar, Zdenek Raab, Roman Pechanek: Design of Permanent Magnet Synchronous Generator for a Wide Speed Range
15:00 Iveta Lolova, Jan Barta, Gerd Bramerdorfer, Siegfried Silber: Topology Optimization of Line-start Synchronous Reluctance Machine

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Session V4 (15:30-16:45) - Industrial Applications (chair: Stanislav Vechet)

15:30 Jessica Ulmer, Sebastian Braun, Chi-Tsun Cheng, Steve Dowey, Jörg Wollert: Gamified Virtual Reality Training Environment for the Manufacturing Industry
15:45 Lukas Veg, Roman Pechanek: Influence of Production Tolerances and Production Technologies on the Temperature Model of a High-Speed Synchronous Machine with Permanent Magnets
16:00 Samuel Mifsud, JeanPaul Azzopardi, Mario Farrugia: Liquefied Petroleum Gas (LPG) and Diesel, Dual Fuel Implementation on a Common Rail Diesel Engine
16:15 Jan Vopařil, Aleš Prokop, Kamil Řehák: Influence of a Powertrain Mounting Method on Powertrain Vibration
16:30 Stanislav Vechet, Jiri Krejsa, Kuo-Shen Chen: AGVs Mission Control Support in Smart Factories by Decision Networks

Session V5 (17:00-18:00) - Robotics (chair: Jiri Krejsa)

17:00 Jaroslav Mlýnek, Michal Petrů, Tomáš Martinec, Roman Knobloch: Production of Polymer Frame Composites Using Industrial Robots
17:15 Silvio Cocuzza, Edoardo Rossetto, Alberto Doria: Dynamic Interaction between Robot and UAV in Aerial Manipulation
17:30 Vojtěch Venglář, Jan Králík, Hong-Liang Chin, Kuo-Shen Chen: Mesh Wi-Fi Infrastructure for Multi-agent Robotic System
17:45 Erik Prada, Michal Kelemen, Alexander Gmiterko, Ivan Virgala, Ľubica Miková, Darina Hroncová, Martin Varga, Peter Ján Sinčák: Locomotive, Principally Kinematic System of Snake-like Robot Mathematical Model with Variable Segment Length

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Thursday, December 3

Session V6 (09:30-10:45) - Simulations (chair: Zdenek Hadas)

09:30 Xiaobo Liu-Henke, Sven Jacobitz, Marian Goellner, Jie Zhang, Soeren Scherler, Or Aviv Yarom: Cyber-physical Industry 4.0 Laboratory Test Field to Simulate Self-optimizing Intralogistics
09:45 Rastislav Motuz, Petr Drexler, Tomas Hejtmanek, Nikola Papez: Theoretical Analysis of Simultaneous Influence of Induced Circular and Linear Birefringence on Linear Birefringence Compensation in Fiber Optics Sensory Applications
10:00 Jakub Brazina, Jan Vetiska, Vaclav Stanek, Frantisek Bradac, Michal Holub: Virtual Commissioning as Part of the Educational Process
10:15 Lubomír Drápal, Jozef Dlugoš, Jan Vopařil: Simulation of Torsional Dynamics of a Two-cylinder Internal-Combustion Engine Connected to a Dynamometer
10:30 Jan Kralik, Vojtech Venglar: Low Data Loss Point Cloud to Multi-line Conversion and Union

Session V7 (11:00-12:15) - Control Systems/Power Electronics (chair: Jiri Kovar)

11:00 Soeren Scherler, Xiaobo Liu-Henke, Markus Henke: Predictive Energy Management for an Electric Vehicle with Fuel Cell Range Extender in Connected Traffic Systems
11:15 Mach Ondřej, Jakub Eichler, Krčmář Lukáš: Electronics and Software Structure of BMS with Circuits of BQ769x0 Series
11:30 Martin Doseděl, Zdeněk Havránek: Comparison of Performance of Machine Learning Methods for Bearing Faults Classification Using Time-domain Features
11:45 Mohammad (Behdad) Jamshidi, Jakub Talla, Zdeněk Peroutka: Deep Learning Techniques for Model Reference Adaptive Control and Identification of Complex Systems
12:00 Stepan Janous, Jakub Talla, Tomas Kosan, Zdenek Peroutka: Predictive Control of Induction Motor Drive with Transformer

Session V8 (14:00-15:15) - Military/Transportation (chair: Vaclav Krivanek)

14:00 Vadim Starý, Lukáš Gacho: Modelling and Simulation of Missile Guidance in WEBOTS Simulator Environment
14:15 Alexandr Štefek, Josef Časar, Vadim Starý: Flight Route Generator for Simulation-Supported Wargaming
14:30 Or Aviv Yarom, Sven Jacobitz, Xiaobo Liu-Henke: Design of Genetic Algorithms for the Simulation-Based Training of Artificial Neural Networks in the Context of Automated Vehicle Guidance
14:45 Bo Jiang, Shenhu Huang, Yan Su: The Frequency Characteristics of Cyclic Symmetry Silicon Gyroscope
15:00 Mohammad (Behdad) Jamshidi, Saeed Roshani, Jakub Talla, Zdeněk Peroutka, Sobhan Roshani: A Novel Filter-based Power Divider for Wireless Communication in Intelligent Transportation Systems

Session V9 (15:30-16:45) - Measurement I (chair: Roman Pechanek)

15:30 Dusan Maga, Jaromir Hrad, Jiri Hajek, Alexandre Boulerie: FE Analysis of a Vibration Measuring Stand for Energy Harvester
15:45 Gabriel Dimech, Mario Farrugia: Turbo-lag Measurement on a Hot Gas Test Stand
16:00 David Rura, Jan Barta: The Low-cost Design Approach to The Active Magnetic Bearing Test Stand

16:15 Martin Novak, Jaroslav Novak: Methodology for Calculation of Efficiency Maps for Permanent Magnet Synchronous Motors from Sparse Measured Data

16:30 Peter Fabo, Stefan Sedivy, Michal Kuba, Anna Buchholcerova, Juraj Dudak, Gabriel Gaspar: PLC Based Weather Station for Experimental Measurements

Session V10 (17:00-18:15) - Measurement II, IoT/Industry 4.0 (chair: Tomas Glasberger)

17:00 Gabriel Gaspar, Peter Fabo, Michal Kuba, Jana Flochova, Juraj Dudak, Zuzana Florkova: Development of IoT Applications Based on the MicroPython Platform for Industry 4.0 Implementation

17:15 Carl Caruana, Mario Farrugia: Balancing of a Four Cylinder Engine for Single Cylinder Operation

17:30 Carlos I. Cardona, Hector A. Tinoco, Daniel A. Pereira, Jaime Buitrago-Osorio, Luis Perdomo-Hurtado, Mateo Hurtado-Hernandez, Juliana Lopez-Guzman: Vibration Shapes Identification Applying Eulerian Video Magnification on Coffee Fruits to Study the Selective Harvesting

17:45 Zdenek Hadas, Ondrej Rubes, Pavel Tofel, Zdenek Machu, David Riha, Oldrich Sevecek, Jaroslav Kastyl, Dinara Sobola, Klara Castkova: Piezoelectric PVDF Elements and Systems for Mechanical Engineering Applications

18:00 Petr Jares, Jiri Vodrazka, Pavel Lafata: Experimental Verification of a Simulation Model for Extra-fast Communication on Twisted Pair Lines

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Friday, December 4

Session V11 (09:00-10:15) - Biomechatronics I (chair: Jaromir Hrad)

09:00 Petr Volf, Kristýna Bernášková, Jan Hejda, Anna Francová, Patrik Kutílek, Ján Hýbl, Michaela Hourová: Car Simulator for Selection and Screening of Patients After Brain Injury
09:15 Patrik Kutilek, Jan Hejda, Lenka Lhotska, Jindrich Adolf, Jaromir Dolezal, Michaela Hourova, Pavel Kral, Yoram Segal, Raz Birman, Ofer Hadar: Camera System for Efficient Non-contact Measurement in Distance Medicine
09:30 Patrik Kutilek, Jan Hejda, Petr Volf, Vaclav Krivanek, Ludek Cicmanec, Karel Hana, Pavel Smrcka, Iveta Fajnerova: Evaluation of Psychological Load of Air Defense Members by Physiological Data Monitoring Compared to the Questionnaire Evaluation Method
09:45 Jan Mikulka, Daniel Chalupa, Jan Svoboda, Milan Filipovič, Martin Repko, Marie Maxová: Multimodal and Multiparametric Spatial Segmentation of Spine
10:00 Jiri Krejsa, Stanislav Vechet: Czech Sign Language Single Hand Alphabet Letters Classification

Session V12 (10:30-11:15) - Biomechatronics II (chair: Josef Casar)

10:30 Jan Dusek, Jan Mikulka: Electrical Impedance Tomography-Based Spatial Reconstruction of Admittivity in a Cylindrical Object
10:45 Hung Nguyen Manh, Miroslav Popela: Design Of Automated Desktop Seed Dispensing Robot For Bio-Laboratories
11:00 Grzegorz Ilewicz: Activity Movements of Cardiac Surgeon During Classical, Endoscopic and Robotic Surgery on Soft Tissue

Session V13 (11:30-12:00) - Electronics (chair: Dusan Maga)

11:30 Juraj Dudak, Michal Kebisek, Gabriel Gaspar, Peter Fabo: Implementation of Machine Learning Algorithm in Embedded Devices
11:45 Jaroslav Dragoun, Jakub Talla, Vojtech Blahnik: Experimental Evaluation of Three-phase Voltage Synchronization Algorithms

Short closing speech (12:00)

Dusan Maga, General Chair, Czech Technical University in Prague, Czech Republic

Changes in v.2:
papers order in V11
paper interchange between V2/V3
chaimen interchange between V1/V3

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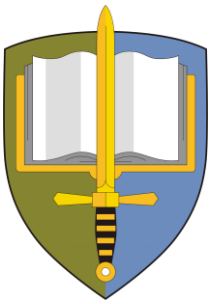

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