2021 IEEE 19th International Conference on Industrial Informatics

Wednesday, 21 July 2021	
08:30-09:00	*Plenary room* **Opening Ceremony**
09:00-10:30	*Plenary room* **Tutorial 1 - Hands-on Deep Learning for Industrial Applications** Daswin De Silva, Rashmika Nawaratne, and Achini Adikari. Centre for Data Analytics and Cognition, La Trobe University, Victoria, Australia.
10:30-12:00	*Plenary room* **Tutorial 2 - Ethics of Artificial Intelligence and Automation for Industrial Applications** Daswin De Silva, Damminda Alahakoon, and Donna Burnett. Centre for Data Analytics and Cognition, La Trobe University, Victoria, Australia.
12:00-13:00	*Plenary room* **Keynote Talk 1 - Universal Automation – the Missing Link for Industry 4.0.** John Conway. Business Transformation, Next Gen Automation Incubator, Industry Business, Schneider Electric. Chairs: Valeriy Vyatkin
13:00-16:50	*Plenary room* **OPEN SPACE UNCONFERENCE: The future of artificial intelligence – chance or danger? (& Lunch and Breaks at your own discretion)** OPEN SPACE DISCUSSION FORUM ! This year, with the all the restrictions and limitations around, we are trying something new to bring back what we treasure so much about conferences: direct interaction and the possibility for spontaneous discussions. The agenda of this experiment is to have no pre-set agenda. You – the participants – will create it on the fly. We only suggest a broad theme: The future of artificial intelligence – chance or danger? We are devising systems that become smarter and smarter, and we collecting and analyzing more data than ever. What do we do with it? What can we do with it? What should we be allowed to do with it? Do we still help society and humanity, or will technology ultimately win over common sense? How much control do we want to give artificial intelligence over our energy consumption, our traffic, our lives? Has AI reached a dead end? YOU get to PROPOSE the TOPICS that will be discussed. No stress, no need to deliver a presentation, just an inspiring opportunity to exchange ideas – that's what open space means. The agenda will be created live by attendees present at the opening session. How can I participate?

Wednesday, 21 July 2021

	Just be there!!
16:50-18:20	*Room1* **TT03 & SS02 - Session 1/4** TT03. Safety and security in industrial applications SS02. Tolerant Control, Condition Monitoring and Diagnosis for Industrial Systems Chairs: Jose Antonino-Daviu **Fault Detection in Solar PV Systems Using Hypothesis Testing** *Fouzi Harrou, Bilal Taghezouit, Benamar Bouyeddou* **Multifractal Spectrum and Higher Order Statistics for the Detection of Field Winding Faults in Wound Field Synchronous Motors** *Miguel Enrique Iglesias Martínez, Jose Antonino-Daviu, Carlos A. Platero, Larisa Dunai, J. Alberto Conejero, Pedro Fernández de Córdoba* **Fault Classification for Wind Turbine Benchmark Model Based on Hilbert–Huang Transformation and Support Vector Machine Strategies** *Yichuan Fu, Zhiwei Gao, Aihua Zhang, Xiaoxu Liu* **Dual Stationary Frame Control of Inverter-based Resources for Reliable Phase Selection** *Abdallah Aboelnaga, Maher Azzouz, Mostafa Shaaban*
16:50-18:40	*Room3* **TT01 & SS10 - Session 1/2** TT01. Industrial cyber-physical systems and industrial agents SS10. Industrial Electronics Trends in Interoperability, Systems integration and Standards Chairs: Victor Huang, Marga Marcos **Towards the generic integration of agent-based AASs and Physical Assets: a four-layered architecture approach** *Alejandro López, Oskar Casquero, Elisabet Estévez, Paulo Leitão, Marga Marcos* **Service-based integration of modular control components in digital manufacturing platforms** *Jonathan Fuchs, Ruwen Schneider, Sascha Julian Oks, Jörg Franke* **Cyber-physical automation systems modelling with IEC 61499 for their formal verification** *Midhun Xavier, Sandeep Patil, Valeriy Vyatkin* **Promela formal modelling and verification of IEC 61499 systems with comparison to SMV** *Viktor Shatrov, Valeriy Vyatkin* **Standards and Interoperability in Industrial Electronics - A Trending View** *Victor Huang, Hiroaki Nishi, Antonio Espirito-Santo, Allen Chen, Dietmar Bruckner*
	Room4 **TT07 - Session 1/1** TT07. Industrial digitalization, digital twins in industrial applications Chairs: Seppo Sierla **Practical Aspects for Exploration and Analysis of Manual Interventions in Process Plants** *Benedikt Schmidt, Reuben Borrison, Marco Gärtler, Sylvia Maczey, Arzam Kotriwala* **Recommendation System using Reinforcement Learning for What-If Simulation in Digital Twin** *Flávia Pires, Bilal Ahmad, António Paulo Moreira, Paulo Leitão* **Business Analytical Framework for the Manufacturing Industry** *Emanuel Lima, Roy Bayot, Paulo Brito, Nelson Rodrigues, Bruno*

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Ribeiro, Nuno Lopes

Adoption of digital technologies during the COVID-19 pandemic – Lessons learned from collaborative Academia-Industry R&D case studies *Ana Correia Simões, Filipe Ferreira, Hélio Castro, Pedro Senna, Daniela Silva, Gustavo Dalmarco*

The digital twin as an enabler of digital transformation: a sociotechnical perspective *Eric Rebentisch, Donna Rhodes, Antonio Lucas Soares, Ricardo Zimmermann, Sergio Tavares*

Room2

TT02 - Session 1/5

TT02. Artificial intelligence in industrial applications

Chairs: Evgeny Osipov

Hyperparameter Tuning and Feature Selection for Improving Flow Instability Detection in Offshore Oil Wells *Bruno Carvalho, Ricardo Vargas, Ricardo Salgado, Celso Munaro, Flávio Varejão*

Deep Reinforcement Learning with Adjustments *Hamed Khorasgani, Haiyan Wang, Chetan Gupta, Susumu Serita*

Object Shape Error Correction using Deep Reinforcement Learning for Multi-Station Assembly Systems *Sumit Sinha, Pasquale Franciosa, Dariusz Ceglarek*

Reinforcement Learning based Condition-oriented Maintenance Scheduling for Flow Line Systems *Raphael Lamprecht, Ferdinand Wurst, Marco F. Huber*

Hierarchical Reinforcement Learning for Waypoint-based Exploration in Robotic Devices *Jonas Zinn, Birgit Vogel-Heuser, Fabian Schuhmann, Luis Alberto Cruz Salazar*

18:40-18:50

Plenary room

Best Presentation Awards

Thursday, 22 July 2021

08:40-10:30

Room3

TT01 & SS10 - Session 2/2

TT01. Industrial cyber-physical systems and industrial agents

SS10. Industrial Electronics Trends in Interoperability, Systems integration and Standards

Chairs: Dietmar Brueckner

Learning-based Co-Design of Distributed Edge Sensing and Transmission for Industrial Cyber-Physical Systems *Tiankai Jin, Zhiduo Ji, Shanying Zhu, Cailian Chen*

QoS-Aware Heterogeneous Data Transmission Mechanism for Industrial IoT Systems *Cheng Ren, Cailian Chen, Mingyan Li, Xinping Guan*

AnaMap: A Methodology of Simulation and Visualization for Actual Farmland Topography *Fan Yang, Lei Shu, Xuying Wang*

Data Acquisition, Filtering and Buffering Protocol Design for Edge Computing Nodes *Xinyi Xu, Wenbin Dai*

Modeling of IEEE 1451-Standardized Low Power Wide Area Networks *Yang Wei, Yucheng Liu, Kim Fung Tsang, Hao Wang*

Room4

Thursday, 22 July 2021

TT12 & TT13 - Session 1/2

TT12. Education in engineering and industrial informatics
TT13. Industrial informatics tools
Chairs: Ye Liu

- **A Framework for Fault Diagnosis using Continuous Bayesian Network and Causal Inference** *Asif Hanif, Saad Ali, Ali Ahmed*
- **Towards establishing formal verification and inductive code synthesis in the PLC domain** *Matthias Weiß, Philipp Marks, Benjamin Maschler, Dustin White, Pascal Kesseli, Michael Weyrich*
- **Migrating Engineering Tools Towards an AutomationML-based Engineering Pipeline** *Anna-Kristin Behnert, Felix Rinker, Arndt Lüder, Stefan Biffl*
- **Remote E-Learning for Cyber-Physical Production Systems in Higher Education** *Ricardo Peres, Jose Barata*
- **From Face to Face to Hybrid Teaching: an Experience on Process Plant Automation Laboratory Course during Global Pandemic** *Udayanto Dwi Atmojo, Mohammad Azangoo, Valeriy Vyatkin, Ilkka Seilonen*

Room1

TT03 & SS02 - Session 2/4

TT03. Safety and security in industrial applications
SS02. Tolerant Control, Condition Monitoring and Diagnosis for Industrial Systems
Chairs: Gerhard Hancke

- **Fault Recognition of Analog Circuits Based on Ultra-Lepton Spatial Attention Mechanism** *Aihua Zhang, Xinglong Yu, Yang Zhang*
- **Fault Diagnosis of Analog Circuit based On Wavelet Packet Analysis and SVD** *Yang Zhang, Aihua Zhang, Danlu Yu*
- **An Ensemble Approach for Fault Diagnose via Continuous Learning** *Dapeng Zhang, Zhiwei Gao, Yichuang Fu*
- **An Ensemble of Benchmarks for the Evaluation of AI Methods for Fault Handling in CPPS** *Kaja Balzereit, Alexander Diedrich, Jonas Ginster, Stefan Windmann, Oliver Niggemann*
- **Adaptive Canonical Correlation Analysis Method Based on Forgetting Factor for Fault Detection** *Jian Guan, Guang Wang*

Room2

TT02 - Session 2/5

TT02. Artificial intelligence in industrial applications
Chairs: Daswin De Silva

- **Diagnosis for IGBT Open-circuit Faults in Photovoltaic Inverters: A Compressed Sensing and CNN based Method** *Xinyi Wang, Bo Yang, Qi Liu, Jingzheng Tu, Cailian Chen*
- **Quantification of Defects with Point-Focusing Shear Horizontal Guided Wave EMAT Using Deep Residual Network** *Hongyu Sun, Songling Huang, Shen Wang, Wei Zhao, Lisha Peng*
- **Defect Detection Using Deep Lifelong Learning** *Chien-Hung Chen, Cheng-Hao Tu, Jia-Da Li, Chu-Song Chen*
- **Dynamic Multi-Loss Weighting for Multiple People Tracking in Video Surveillance Systems** *Xuan-Thuy Vo, Tien-Dat Tran, Duy-Linh Nguyen, Kang-Hyun Jo*

10:40-11:50

Room3

Thursday, 22 July 2021

TT10 - Session 1/1

TT10. Factory automation and communication systems
Chairs: Wolfgang Kastner, Martin Wollschlager

An Automated Semantic Planning Framework applied in a Cloud Manufacturing Domain *Timon Hoebert, Munir Merdan, Wilfried Lepuschitz*
Influence of Roll-off Pulse Shaping on a Parallel Sequence Spread Spectrum Signal *Elias L. Peter, Wolfgang Endemann, Rüdiger Kays*
Tuning of a simulation model for the assessment of Functional Safety over Wi-Fi *Alberto Morato, Giovanni Peserico, Tommaso Fedullo, Federico Tramarin, Stefano Vitturi*

10:40-12:10

Room4

TT06 & TT09 - Session 1/2

TT06. Distributed and networked control and automation systems
TT09. Real-time and networked embedded computing, industrial iot technologies and applications
Chairs: Gaetano Patti, Alois Zoitl

Learning-based Edge Computing Architecture for Regional Scheduling in Manufacturing System *Tianfang Xue*
Development of Cloud-Edge Collaborative Digital Twin System for FDM Additive Manufacturing *Liang Guo, Yunxi Cheng, Yu Zhang, Yingfu Liu, Changcheng Wan, Jing Liang*
Towards Policy-based Task Self-Reallocation in Dynamic Edge Computing Systems *Victor Pazmino Betancourt, Bo Liu, Jürgen Becker*
Distributed Optimal Heating Control of a Residential Building Resilient to Cybersecurity Issues *Vinko Lesic, Filip Vrbanc, Nikica Peric, Anita Banjac, Hrvoje Novak, Luka Jelic*

Room1

TT14 - Session 1/2

TT14. Intelligent finance
Chairs: Heping Pan, Yunchuan Sun

Chinese Value Investing Theory and Quantitative Technology *Heping Pan*
Social Economy Association Analysis for the 2020 Presidential Election with Semi-covariance *Yaqian Qi, Yu Li, Jiamin Huang, Jun Huang, Heping Pan*
Convolutional LSTM Network for forecasting correlations between stocks based on spatiotemporal sequence *Jiaqi Sun, Yong Jiang, Jianwu Lin*
Stock-bond Yield Correlation Analysis based on Natural Language Processing *Yueyue Xu, Ying Kong, Jianwu Lin*

Room2

TT02 - Session 3/5

TT02. Artificial intelligence in industrial applications
Chairs: Muhammad Khan

A Predictive Maintenance Methodology: Predicting the Time-to-Failure of Machines in Industry 4.0 *Marwin Züfle, Joachim Agne, Johannes Grohmann, Ibrahim Doertoluk, Samuel Kounev*
Reliable Real-time Destination Prediction *Gregory Meyers, Miguel Martínez-García, Yu Zhang, Yudong Zhang*
Fault Detection in Railway Switches using Deformable Convolutional

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	Neural Networks *Robert F. Maack, Hasan Tercan, Alexia F. Solvay, Maximilian Mieth, Tobias Meisen* **Anomaly Detection in the Time Series Data from Fehn Pollux Ship with ECO Flettner Rotor** *Farzaneh Nourmohammadi, Allanazar Jumabayev, Elmar Wings*
12:10-12:50	*Spatial room* **Birds of a Feather & Meet Colleagues and Connect with Others**
12:50-13:30	*Spatial room* **Lunch Break**
13:30-14:30	*Plenary room* **Keynote Talk 2 - Advances in Distributed Computing, Communications and New Paradigms for Industrial Systems** Dave Cavalcanti. Intel Corporation. Chairs: Stefano Vitturi
14:40-16:10	*Plenary room* **Industry forum - Session 1/2** TITLE: Industry 4.0 and the Industrial Internet of Things. - Talk 1. Cloud-based Automation Engineering for Industrie 4.0: Challenges, Implementation Possibilities, Potentials and Examples. Speakers: Heinrich Steininger, (logi.cals, St. Pölten, Austria), Philip Lange (EclipseSource, Vienna, Austria). - Talk 2. Dynamic and Robust Distributed (Control) Systems – An answer to complex Industry 4.0 demands. Speaker: Tiberiu Seceleanu (ABB Sweden and Mälardalens University, Sweden). - Talk 3. Cognitive Robotic Systems for Digitalized and Networked (Automated) Insect Farms. The CoRoSect 4.0 Solution. Speaker: Armando Walter Colombo (University of Applied Sciences Emden, Germany and IEEE Systems Council). Chairs: Stamatis Karnouskos, Thomas Strasser
16:10-16:50	*Puzzel room* **Puzzle Challenge**
	Spatial room **Meet Colleagues and Connect with Others**
16:50-18:00	*Room3* **TT05 - Session 1/3** TT05. Robotics and mechatronics in industrial applications Chairs: Andrea Bonci, Ya-Jun Pan

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Multi-Robot Multiple Camera People Detection and Tracking in Automated Warehouses *Michela Zaccaria, Mikhail Giorgini, Riccardo Monica, Jacopo Aleotti*

An Autonomous Mobile Robot Navigation Architecture for Dynamic Intralogistics *David Taranta, Francisco Marques, André Lourenço, Pedro Alexandre Prates, Alexandre Souto, Eduardo Pinto, Jose Barata*

Comparison of PMSMs Motor Current Signature Analysis and Motor Torque Analysis Under Transient Conditions *Andrea Bonci, Marina Indri, Renat Kermenov, Sauro Longhi, Giacomo Nabissi*

Room1

TT03 & SS02 - Session 3/4

TT03. Safety and security in industrial applications
SS02. Tolerant Control, Condition Monitoring and Diagnosis for Industrial Systems
Chairs: Zhiwei Gao, Remigiusz Wisniewski

Indirect Mass Flow Estimation based on Power Measurements of Conveyor Belts in Mineral Processing Applications *Bernhard Heinzl, Jorge Martinez-Gil, Johannes Himmelbauer, Michael Roßbory, Christian Hinterdorfer, Christian Hinterreiter*

Model-checking infinite-state nuclear safety I&C systems with nuXmv *Antti Pakonen*

Fine-grained Access Control for Time-Series Databases using NGAC *Alex Chiquito, Ulf Bodin, Olov Schelén*

Room2

TT04 - Session 1/2

TT04. System and software engineering, runtime intelligence
Chairs: Herbert Prähofer

The Role of Service Contracts in Interoperability Mismatch Identification *Cristina Paniagua*

Platform Generation for Edge AI Devices with Custom Hardware Accelerators *Leon Hielscher, Alexander Bloeck, Alexander Viehl, Marc Staiger, Oliver Bringmann*

18:00-18:10

Plenary room

Best Presentation Awards

Friday, 23 July 2021

08:40-10:20

Room4

TT11 - Session 1/1

TT11. Technologies, infrastructures and applications for smart grids, buildings, cities, and smart cities
Chairs: Thomas Strasser

Deep Learning with Accelerated Execution: A Real-Time License Plate Localisation System *Jimmy Ma, Zoran Salcic*

Automatic classification of EEG signals via deep learning *Tao Wu, Xiangzeng Kong, Yiwen Wang, Xue Yang, Jingxuan Liu, Jun Qi*

Network Transparent Decrypting of Cryptographic Stream Considering Service Provision at the Edge *Hiroki Hiraga, Hiroaki Nishi*

Tensor Multi-Task Learning for Predicting Alzheimer's Disease Progression using MRI data with Spatio-temporal Similarity

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Measurement *Yu Zhang, Po Yang, Vitaveska Lanfranchi*

08:40-10:30

Room1

TT03 & SS02 - Session 4/4

TT03. Safety and security in industrial applications
SS02. Tolerant Control, Condition Monitoring and Diagnosis for Industrial Systems
Chairs: Gerhard Hancke

Fixed-time Trajectory Tracking Control of a Wheeled Mobile Robot *Chenghu Wang, Bo Li, Haichao Zhang, Bing Xiao, Wenquan Gong*

Review on Oversampling Approaches for Control and Estimation in Electrical Drives *Niko Nevaranta*

Blockchain application in simulated environment for Cyber-Physical Systems Security *Riccardo Colelli, Chiara Foglietta, Roberto Fusacchia, Stefano Panzieri, Federica Pascucci*

Room2

TT02 - Session 4/5

TT02. Artificial intelligence in industrial applications
Chairs: Daswin De Silva

Board-to-Board Connector Mating Using Data-Driven Approach *Hsien-I Lin, Ashutosh Singh*

Constraint Checking of Skills using SHACL *Aljosha Köcher, Luis Miguel Vieira da Silva, Alexander Fay*

Stacked denoising autoenocder for infrared thermography image enhancement *Ziang Wei, Henrique Fernandes, Jose Ricardo Tarpani, Ahmad Osman, Xavier Maldague*

A deep attention-driven model to forecast solar irradiance *Dairi Abdelkader, Fouzi Harrou, Ying Sun*

Application of Deep Neural Network on Net Photosynthesis Modeling *Ying Qu, Anders Clausen, Bo Nørregaard Jørgensen*

10:40-12:10

Room3

TT05 - Session 2/3

TT05. Robotics and mechatronics in industrial applications
Chairs: Yasutaka Fujimoto

Robotic Grasp Detection by Rotation Region CNN *Hsien-I Lin, Hong-Qi Chu*

The Correction of the Nozzle-Bed-Distance in Robotic Fused Deposition Modeling *Gian Frederik Mewes, Alexander Fay*

TruckTrix Path-Planning in the helyOS Operating System for Yard Automation *Nikolay Belov, Viol Barbosa Carlos Eduardo, Felix Keppler, Julius Kolb, Gunter Nitzsche, Sebastian Wagner*

Synergetic Control of Fixed-wing UAVs in the Presence of Wind Disturbances *Gennady Veselov, Aline Ingabire*

Room4

TT06 & TT09 - Session 2/2

TT06. Distributed and networked control and automation systems
TT09. Real-time and networked embedded computing, industrial iot technologies and applications
Chairs: Luis Almeida, Frank Golatowski

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	Analysis of Latency and Reliability Improvement with Multi-Link Operation over 802.11 *Guillermo Lacalle, Iñaki Val, Oscar Seijo, Mikel Mendicute, Dave Cavalcanti, Javier Perez-Ramirez* **The 5G Transparent Clock: Synchronization Errors in Integrated 5G-TSN Industrial Networks** *Tobias Striffler, Hans D. Schotten* **Enhancing MQTT with Real-Time and Reliable Communication Services** *Ehsan Shahri, Paulo Pedreiras, Luis Almeida* **Improving Code Reuse between Industrial Embedded Systems and Discrete Event Simulators** *Niclas Ericsson, Johan ÅKerberg, Mats Björkman, Tomas Lennvall, Stig Larsson, Hongyu Pei-Breivold*
	Room1 **TT08 - Session 1/1** TT08. Human, computer and machine interaction Chairs: Marco Porta **A Custom Brace Design to Connect a User Limb to an Exoskeleton Link with Minimal Discomfort** *Suleyman Cevik, Mustafa Derman, Ramazan Unal, Barkan Ugurlu, Ozkan Bebek* **Monitoring of Human-Intensive Assembly Processes Based on Incomplete and Indirect Shopfloor Observations** *Ouijdane Guiza, Christoph Mayr Dorn, Georg Weichhart, Michael Mayrhofer, Bahman Bahman Zangi, Alexander Egyed, Björn Fanta, Martin Gieler* **Automated Deviation Detection for Partially-Observable Human-Intensive Assembly Processes** *Ouijdane Guiza, Christoph Mayr Dorn, Georg Weichhart, Michael Mayrhofer, Bahman Bahman Zangi, Alexander Egyed, Björn Fanta, Martin Gieler* **Machine Learning Support for Repetitive Tasks in Metal Processing SMEs** *Bernhard Girsule, Gernot Rottermanner, Christian Jandl, Thomas Moser*
	Room2 **TT02 - Session 5/5** TT02. Artificial intelligence in industrial applications Chairs: Yudong Zhang **knowlEdge Project - Concept, Methodology and Innovations for Artificial Intelligence in Industry 4.0** *Sergio Alvarez-Napagao, Boki Ashmore, Marta Barroso, Cristian Barrué, Christian Beecks, Fabian Berns, Ilaria Bosi, Sisay Adugna Chala, Nicola Ciulli, Marta Garcia-Gasulla* **Open Set Recognition for Machinery Fault Diagnosis** *Jiawen Xu, Matthias Kovatsch, Sergio Lucia* **A Grid-Structured Model of Tubular Reactors** *Katsiaryna Haitsiukevich, Samuli Bergman, Cesar de Araujo Filho, Francesco Corona, Alexander Ilin* **Automated Pruning of Neural Networks for Mobile Applications** *Andreas Glinserer, Martin Lechner, Alexander Wendt*
12:10-12:50	*Spatial room* **Around the world & Meet Colleagues and Connect with Others**
12:50-13:30	*Spatial room* **Lunch Break**
13:30-14:30	*Plenary room*

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	Keynote Talk 3 - Trusting the AI: Helping AI make the right decisions and fighting the bad bias Milos Manic. VCU Cybersecurity Center, Virginia Commonwealth University Chairs: Thilo Sauter
14:40-16:10	*Plenary room* **Industry forum - Session 2/2** TITLE: Energy Infrastructure and E-Mobility. - Talk 1. Artificial Intelligence (AI) in Distributed Energy Resource Management Systems (DERMS). Speaker: Nikolaos-Antonios Livanos (EMTECH SPACE, Athens, Greece). - Talk 2. Applications for HIL Testing in EV Charger Development & Validation and their Impact on Faster EV Charger Deployment. Speaker: Friedemann Steinbach (Typhoon HIL, Somerville, USA). - Talk 3. Sustainable Microgrids from a Solution Provider Perspective - Validation Center and Microgrid Controller. Speakers: Marco Cupelli (Rolls-Royce Solution GmbH, Friedrichshafen, Germany), Alexander Bernhard (Rolls-Royce Solution GmbH, Friedrichshafen, Germany). Chairs: Regina Roos, Thomas Strasser
16:20-17:30	*Room3* **TT05 - Session 3/3** TT05. Robotics and mechatronics in industrial applications Chairs: Andrea Bonci, Ya-Jun Pan **Cloud Simulation for Continuous Integration and Deployment in Robotics** *Sérgio Teixeira, Rafael Arrais, Germano Veiga* **Development and Deployment of Complex Robotic Applications using Containerized Infrastructures** *Pedro Melo, Rafael Arrais, Germano Veiga* **Novelty Detection for Iterative Learning of MIMO Fuzzy Systems** *Jorge Sampaio Silveira Júnior, Jérôme Mendes, Rui Alexandre Matos Araújo, João Luís Ruivo Carvalho Paulo, Cristiano Premebida*
	Room4 **TT12 & TT13 - Session 2/2** TT12. Education in engineering and industrial informatics TT13. Industrial informatics tools Chairs: Bilal Ahmad, Andrei Lobov **Overview and Trends for Application of AI Methods for Product Design** *Brikene Berisha, Andrei Lobov* **Extending design automation by integrating external services for product design** *Liang Zhang, Andrei Lobov* **Using In-Browser Augmented Reality to Promote Knowledge-Based Engineering throughout the Product Life Cycle** *Anna Florea, Andrei Lobov, Tatiana Minav*
	Room1

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	TT14 - Session 2/2 TT14. Intelligent finance Chairs: Jianwu Lin, Heping Pan **A Predicting Model For Accounting Fraud Based On Ensemble Learning** *Yunchuan Sun, Zixiu Ma, Xiaoping Zeng, Yao Guo* **Explainable Machine Learning for Improving Logistic Regression Models** *Yimin Yang, Min Wu* **Blockchain Based Global Financial Service Platform** *Mingyang Zhang, Yingjun Li, Chonghe Zheng, Xu Han, Haisong Gu, Heping Pan*
	Room2 **TT04 - Session 2/2** TT04. System and software engineering, runtime intelligence Chairs: Herbert Prähofer **Utilizing an Enterprise Architecture Framework for Model-Based Industrial Systems Engineering** *Christoph Binder, Werner Leitner, Oliver Jöbstl, Lukas Mair, Christian Neureiter* **Integration of a formal specification approach into CPPS engineering workflow for machinery validation** *Birgit Vogel-Heuser, Christoph Huber, Suhyun Cha, Bernhard Beckert* **Reuse Assessment of IEC 61131-3 Control Software Modules Using Metrics – An Industrial Case Study** *Juliane Fischer, Birgit Vogel-Heuser, Christoph Huber, Markus Felger, Matthias Bengel*
17:30-18:10	*Spatial room* **Feedback & Looking towards the Future**
18:10-18:30	*Plenary room* **Awards ceremony & Wrap up**