Monday 24th of July

CE - Opening Ceremony
T151, Monday 24th of July, 09:00

CE - Keynote Speech - Keynote 1
T151, Monday 24th of July, 09:30
Keynote Speaker: Laila Gide

IF - Digital Energy Ecosystems
T149, Monday 24th of July, 11:00
Chair/s:

Industry Forum 1: Digital Energy Ecosystems

Title: Smart Data and Service Platform - Smart Data for the Energiewende
Dipl.-Phys. Jens Walter, EWE, Germany

Title: Data-driven business opportunities in digitalized energy eco-systems - An enera case study
Dr. Matthias Postina, EWE, Germany

Title: Efficient integration of renewables into electric distribution power grids using automatic grid controllers
Dr. -Ing. Matthias Rohr, EWE, Germany

Title: Power Grid Optimization with the help of Machine Learning Algorithms
Gerald Ristow & Marc Dorchain, EWE, Germany

Open Discussions

TT01 - TT01: Internet of Things and Emerging Paradigms
S202, Monday 24th of July, 11:00
Chair/s: Jerker Delsing, N.N.

Empirical Propagation Performance Evaluation of LoRa for Indoor Environment
Mr. Salaheddin Hosseinzadeh, Prof. Hadi Larijani, Dr. Krystyna Curtis, Mr. Andrew Wixted, Mr. Amin Amini

Next-Generation Enterprise Architectures -- Common Vernacular and Evolution Towards Service-Orientation
Dr. Mohsen Moghaddam, Prof. C. Robert Kenley, Mrs. Julia Colby, Ms. Marissa Cadavid Berns, Mr. Randal Rausch, Mr. Joel Markham, Mr. Wesley Skeffington, Mr. John Garrity, Prof. Alok Chaturvedi, Prof. Abhi Deshmukh

Early Model-Driven Timing Validation of IoT-Compliant Use Cases
Dr. Padma Iyenghar, Mr. Arne Noyer, Prof. Elke Pulvermueller
Protocol interoperability of OPC UA in Service Oriented Architectures
Mr. Hasan Derhamy, Mr. Jesper Rönnholm, Prof. Jerker Delsing, Prof. Jens Eliasson, Prof. Jan van Deventer

Ontology-driven IoT code generation for FIWARE
Mr. Charles Steinmetz, Mrs. Greyce Schroeder, Prof. Carlos Eduardo Pereira, Mr. Alexandre dos Santos Roque, Mrs. Carolin Wagner, Mr. Philipp Saalmann, Prof. Bernd Hellingrath

TT07 - TT07: Factory Automation and Communication, Mechatronics and Robotics
S217, Monday 24th of July, 11:00
Chair/s: N. N., N. N.

Simulative Evaluation of Applying Optimized Support Vector Machines to Identify the Simplified Ship Dynamic Model
Ms. Man Zhu, Prof. Axel Hahn, Prof. Yuan Q. Wen

Solar Powered High Performance Switched Reluctance Motor for EV applications
Mr. Jose Thankachan, Prof. S. P. Singh

Performance evaluation of the message queue protocols to transfer binary JSON in a distributed CNC system
Dr. Maxim Ya. Afanasev, Dr. Yuri V. Fedosov, Ms. Anastasiia A. Krylova, Mr. Sergey A. Shorokhov

Fast View-based Pose Estimation of Industrial Objects in Point Clouds using a Particle Filter with an ICP-based Motion Model
Mr. Bjarne Grossmann, Prof. Volker Krueger

Continuous hand-eye calibration using 3D points
Mr. Bjarne Grossmann, Prof. Volker Krueger

Ontology-Based Web Service Integration for Flexible Manufacturing Systems
Dr. Haibo Cheng, Dr. Lingling Xue, Dr. Peng Wang, Prof. Peng Zeng, Prof. Haibin Yu

SS09 - SS09: Lifecycle Engineering of Cyber Physical Manufacturing Systems
S206, Monday 24th of July, 11:00
Chair/s: Bilal Ahmad, Daniel Vera

Ensuring the consistency between assembly process planning and machine control software
Mr. Mussawar Ahmad, Mr. Borja Ramis Ferrer, Dr. Bilal Ahamd, Prof. José L. Martinez Lastra, Prof. Robert Harrison
Providing an Access Control layer to Web-Based Applications for the industrial domain

Mr. Samuel Olaiya Afolaranmi, Mr. Borja Ramis Ferrer, Mr. Wael M. Mohammed, Prof. Jose Luis Martinez Lastra, Mr. Mussawar Ahmad, Prof. Robert Harrison

Recovery Planning Method as End-of-Life Support for Production Systems

Ms. Nicole Schmidt, Prof. Arndt Lüder

Multifunctional Use of Functional Mock-up Units for Application in Production Engineering

Mr. Dominik Hauf, Mr. Sebastian Süß, Dr. Anton Strahilov, Prof. Jörg Franke

Experiences in Integrating Internet of Things and Cloud Services with the Robot Operating System

Mr. Stamatis Karnouskos, Ms. Nadine Gaertner, Dr. Nemrude Verzano, Mr. Frank Beck, Mr. Andre Becker, Mr. Santo Bianchino, Dr. Daniel Kuntze, Mr. Miguel Perez, Mr. Rupam Roy, Mr. Serge Saelens

TT05 - TT05: Industrial Digitalization, Big Data and Analytics
S207, Monday 24th of July, 11:00
Chair/s: N. N., N. N.

Building Scalable Models for Anomaly Detection in Self-Organizing Industrial Systems

Mrs. Marie Kiermeier, Dr. Martin Werner, Mr. Horst Sauer, Dr. Jan Wieghardt

Towards Industrie 4.0 Compliant Configuration of Condition Monitoring Services

Mr. Florian Pethig, Prof. Oliver Niggemann, Dr. Armin Walter

Big Data as a Promoter of Industry 4.0: Lessons of the Semiconductor Industry

Mr. David Cemernek, Mr. Heimo Gursch, Dr. Roman Kern

Towards a Big Data Platform for Managing Machine Generated Data in the Cloud

Dr. Nicolas Ferry, Dr. German Terrazas, Mr. Per Kalweit, Dr. Amor Solberg, Prof. Svetan Ratchev, Mr. Dirk Weinelt

Ontology-Based Integration of Performance Related Data and Models: An Application to Industrial Turbine Analytics

Mrs. Gulnar Mehdi, Prof. Thomas Runkler, Dr. Mikhail Roshchin, Dr. Sindhu Suresh, Mr. Nguyen Quang

Semi-supervised Soft Sensor and Feature Ranking Based on Co-Regularised Least Squares Regression Applied to a Polymerization Batch Process

Mr. Vasco Ferreira, Dr. Francisco Souza, Prof. Rui Araújo
SS08 - SS08: Big Data Analysis and Diagnosis For Industrial Applications
S209, Monday 24th of July, 11:00
Chair/s: N. N., N. N.

**AutoEncoder based High-dimensional Data Fault Detection System**
Mr. Jicong Fan, Dr. Wei Wang, Dr. Haijun Zhang

**Recommending e-Books by Multi-layer Clustering and Locality Reconstruction**
Dr. Haijun Zhang, Ms. Shuang Wang, Dr. Eric Ke Wang, Dr. Yan Li, Dr. Yongjun Zhang, Prof. Dianhui Chu

**An Exponential Triangle Model for the Facebook Network Based on Big Data**
Mr. Dong Yang, Prof. Tommy W. S. Chow, Prof. Yichao Zhang, Prof. Guanrong Chen

**Multi-Label Classification for images with Missing Labels**
Ms. Jianghong Ma, Mr. Jicong Fan, Prof. Wei Wang

**Hierarchical Context-Aware Anomaly Diagnosis in Large-Scale PV Systems Using SCADA Data**
Mrs. Qi Liu, Ms. Yingying Zhao, Ms. Yawen Zhang, Mr. Dahai Kang, Prof. Qin Lv, Prof. Li Shang

**Complexity Based Test Cases for Log File Analyzers**
Mr. Esa Heikkinen, Prof. Timo D. Hämäläinen

**Semi-supervised Classification for Rolling Fault Diagnosis via Robust Sparse and Low-rank Model**
Prof. Mingbo Zhao

**Graph based Semi-supervised Classification via Capped l2,1-Norm Regularized Dictionary Learning**
Prof. Mingbo Zhao

**Holiday Effecton User Growth Profile and Analysis of Sales Ratein Short Time Scale**
Dr. Choujun Zhan, Prof. Chi K. Tse

**Detrended Fluctuation Analysis of Daily Rainfall Records of the Entire China**
Dr. Choujun Zhan

**Incorporating Word Embeddings in the Hierarchical Dirichlet Process for Query-Oriented Text Summarization**
Mr. Hadrien Van Lierde, Prof. Tommy Chow
 Sentiment Analysis of Foreign Tourists to Bangkok using Data Mining through Online Social Network

Mr. Taweesak Kuhamanee, Mr. Nattaphon Talmongkol, Mr. Krit Chaisuriyakul, Dr. Wimol San-Um, Dr. Noppadon Pongpisuttinun, Dr. Surapong Pongyupinpanich

A Reliable Weighted Feature Selection for Auto Medical Diagnosis

Mrs. Golnaz Sahebi, Mr. Amin Majd, Dr. Masoumeh Ebrahimi, Prof. Juha Plosila, Prof. Hannu Tenhunen

Analysis and Machine-Learning based Detection of Outlier Measurements of Ultra-WideBand in an Obstructed Environment

Dr. Yiming Quan, Dr. Lawrence Lau, Dr. Alan Wen, Mr. Faming Jing, Dr. Qian Nie, Dr. Siu-Yeung Cho

Multi-class Novelty Detection in Diagnostic Trouble Codes from Repair Shops

Dr. Andreas Theissler

TU 1 - Balancing Small Samples and Big Data - An Introduction to Time Series Feature Extraction for Industrial Applications

S211, Monday 24th of July, 11:00
Lecturer/s: Andreas W. Kempa-Liehr

Promising fields of application for machine learning are the Internet of Things (IoT) and Industrie 4.0 environments. In these fields, machine learning models anticipate future device states by combining knowledge about device attributes with historic sensor time series. They permit the classification of devices into risk classes with respect to a specific defect.

This tutorial introduces a distributed and parallel time series feature extraction algorithm on basis of the recently published Python library tsfresh, which allows to balance small samples (e.g. predictive maintenance) with big data volumes from sensor time series and enterprise data on basis of scalable hypothesis tests.

The tutorial will explain the use cases both from the application and machine learning point of view as well as implications for the enterprise architecture, and will demonstrate the integration of the automated time series feature extraction into machine learning pipelines. Since its publication in October 2016, the respective Github project (https://github.com/blue-yonder/tsfresh) has been starred nearly 1,900 times and benefits from a growing international user group.

SS01 - SS01: Monitoring, Diagnosis, Prognosis and Tolerant Control Methods and Applications

S202, Monday 24th of July, 14:00
Chair/s: Zhiwei Gao, N.N.

Monitoring Self-Organizing Industrial Systems Using Sub-Trajectory Dictionaries

Mrs. Marie Kiermeier, Mr. Horst Sauer, Dr. Jan Wieghardt
Robust Fault Tolerant Control for Drive Train in Wind Turbine Systems with Stochastic Perturbations
Ms. Xiaoxu Liu, Dr. Zhiwei Gao, Prof. Aihua Zhang, Prof. Yanling Li

An Automatic Fuzzy Clustering Segmentation Algorithm with Aid of Set Partitioning
Prof. Yanling Li, Dr. Zhiwei Gao, Ms. Xiaoxu Liu

Class-based Query-Optimization for Minimizing Worst-Case Execution Times of Diagnostic Queries in Embedded Real-Time Systems
Ms. Nadra Tabassam, Mr. Roman Obermaisser

Leakage Detection in a Gas Pipeline Using Artificial Neural Networks Based on Wireless Sensor Network and Internet of Things
Mr. Mohsen Rahmati, Mrs. Honeyeh Yazdizadeh, Dr. Alireza Yazdizadeh

Reinforcement-Learning Based Fault-Tolerant Control
Dr. Dapeng Zhang, Dr. Zhiling Lin, Dr. Zhiwei Gao

Adaptive Quadratic Interpolation for Loss Minimization of Direct Torque Controlled Induction Motor Driven Electric Vehicle
Dr. Sukanta Das, Mr. Abhisek Pal, Mr. Murli Manohar

TT10 - TT10: Education in engineering and industrial informatics
S217, Monday 24th of July, 14:00
Chair/s: Elena Mäkiö-Marusik , N. N.

Concept for Introducing the Vision of Industry 4.0 in a Simulation Game for Non-IT Students
Mr. Maximilian Zarte, Mrs. Agnes Pechmann

Summer School on Intelligent Agents in Automation: Experience and Reflections from the Second Edition
Prof. Luis Ribeiro, Prof. Paulo Leitao, Prof. Birgit Vogel-Heuser, Prof. Jose Barata

Methodology and Case Study for Investigating Curricula of Study Programs in Regard to Teaching Industry 4.0
Mr. Moritz Götting, Mr. Frederik Gosewehr, Mr. Marcel Müller, Mr. Jeffrey Wermann, Mr. Maximilian Zarte, Prof. Armando W. Colombo, Prof. Agnes Pechmann, Prof. Elmar Wings

Current Trends in Teaching Cyber Physical Systems Engineering
Mrs. Elena Mäkiö-Marusik

Discussion: No S Without Q
Mrs. Anita Messinger, Prof. Eva Kühn
Reconfigurable devices based experimentation supporting teaching introductory digital systems  
Prof. Luis Gomes, Prof. Aniko Costa, Prof. Filipe Moutinho, Prof. Pedro Maló

An Approach to Renewable Energies Course for Energy Engineering Students in the Framework of the European Higher Education Area (EHEA)  
Prof. Herminio Martinez-Garcia, Prof. Encarna Garcia-Vilchez

SS02 - SS02: Intelligent Engineering of Intelligent Automation Systems  
S206, Monday 24th of July, 14:00  
Chair/s: Valeriy Vyatkin, N. N.

A Framework for Designing Dynamic and Interoperable Automation and Robotics Systems  
Prof. Zoran Salcic, Dr. Udayanto Dwi Atmojo, Dr. Hee Jong Park, Mr. Andrew Tzer-Yeu Chen, Dr. Kevin I-Kai Wang

A framework for runtime verification of industrial process control systems  
Mr. Roope Savolainen, Dr. Seppo Sierla, Prof. Tommi Karhela, Mr. Tuomas Miettinen, Prof. Valeriy Vyatkin

Towards a Task Allocation Algorithm for Frequency Containment Reserves  
Mr. Christian Giovanelli, Mr. Olli Kilkki, Dr. Seppo Sierla, Dr. Ilkka Seilonen, Prof. Valeriy Vyatkin

Modeling faults in communication protocols based on an aspect-oriented method  
Prof. Alexandre dos Santos Roque, Ms. Charles Steinmetz, Dr. Edison Pignaton Freitas, Dr. Carlos Eduardo Pereira

Legacy Systems Interactions with the Supply Chain Through the C2NET Cloud-based Platform  
Mr. Khurshid Ali Qureshi, Mr. Wael M. Mohammed, Mr. Borja Ramis Ferrer, Dr. Carlos Agostinho, Prof. Jose Luis Martinez Lastra

Development of a Mobile Application for the C2NET Supply Chain Cloud-based Platform  
Mr. Enbo Chen, Mr. Wael M. Mohammed, Mr. Borja Ramis Ferrer, Prof. Jose Luis Martinez Lastra

SS04 - SS04: Evolution of Cyber Physical Production Systems and their Services  
S207, Monday 24th of July, 14:00  
Chair/s: Armando W. Colombo , N.N.
Generalized Test Tables: A Powerful and Intuitive Specification Language for Reactive Systems
Mr. Alexander Weigl, Mrs. Franziska Wiebe, Mr. Mattias Ulbrich, Mr. Sebastian Ulewicz, Ms. Suhyun Cha, Mr. Michael Kirsten, Mr. Bernhard Beckert, Mrs. Birgit Vogel-Heuser

Deploying Microservices for a Cloud-based Design of System-of-Systems in Intralogistics
Mr. Andreas Habl, Mr. Orthodoxos Kipouridis, Prof. Johannes Fottner

Evolution of Cyber-Physical Production Systems supported by community-enabled experiences
Mr. Christopher Haubeck, Mr. Abhishek Chakraborty, Mr. Jan Ladiges, Dr. Alexander Pokahr, Prof. Winfried Lamersdorf, Prof. Alexander Fay

An AutomationML Model for Plug-and-Produce Assembly Systems
Mr. Paul Danny, Dr. Pedro Ferreira, Dr. Niels Lohse, Mr. Magno Guedes

Towards Trustworthy End-to-End Communication in Industry 4.0
Mr. Ani Bicaku, Ms. Silia Maksuti, Ms. Silke Palkovits-Rauter, Prof. Markus Tauber, Dr. Rainer Matischek, Mr. Christoph Schmittner, Dr. Georgios Mantas, Mr. Mario Thron, Prof. Jerker Delsing

CPPS on Low Cost Devices for Batch Process under IEC-61499 and ISA-88
Mr. Marcelo V. Garcia, Mr. Carlos A. Garcia, Mr. Esteban X. Castellanos, Mr. Cesar Rosero, Mr. Carlos Sanchez, Dr. Federico Perez, Dr. Marga Marcos

Towards Flexible and Secure End-to-End Communication in Industry 4.0
Ms. Silia Maksuti, Mr. Ani Bicaku, Prof. Markus Tauber, Ms. Silke Palkovits-Rauter, Ms. Sarah Haas, Prof. Jerker Delsing

TU 2 - Automation ML and its usage in the Industrie 4.0 context
S211, Monday 24th of July, 14:00
Lecturer/s: Nicole Schmidt, Roland Rosendahl

AutomationML was initially developed as a data exchange format to enable a consistent and lossless data exchange in a heterogeneous software tool landscape within the engineering process of production systems. In the last years, the syntax, basic semantics, and advanced semantics were developed. But recent developments go beyond the single use within the engineering phase. Essential for those was the cooperation of the AutomationML association with the OPC Foundation. The result was a standard that describes how AutomationML can get transferred via the OPC UA technology. This enables a usage of AutomationML even in the operation phase of production system. By this, the requirements - postulated in the Industrie 4.0 context - on digitalization and data consistency can be met.

CE - Reception
Dining Hall, Monday 24th of July, 18:00
Tuesday 25th of July

CE - Keynote Speech - Keynote 2

T151, Tuesday 25th of July, 09:00
Keynote Speaker: Roland Essmann

IF - Standards for Industry 4.0

T149, Tuesday 25th of July, 10:30
Chair/s:

Industry Forum 2: Standards for Industry 4.0

Title: Industrie 4.0 – From RAMI4.0 Model to Administration Shell: The Role of Standards for the Development of Industrie 4.0 Components
Dr. Martin Wollschläger, Technische Universität Dresden, Germany

Title: Capabilities of AutomationML – status quo
Nicole Schmidt, Otto-von-Guericke-Universität Magdeburg, Germany

Title: OPC-UA
Roland Essmann, Honeywell, Germany

Title: Importance of IT Standards in project execution business
Dr. Matthias Foehr, Siemens, Germany
Open Discussions

TT02 - TT02: Cyber-Physical Systems and Industrial Agents

S202, Tuesday 25th of July, 10:30
Chair/s: N.N., Andy West

A New Approach to Model-Based Test Case Generation for Industrial Automation Systems
Mr. Kevin Pinkal, Prof. Oliver Niggemann

Developing Open Source Cyber-Physical Systems for Service-Oriented Architectures Using OPC UA
Mr. Marcel Müller, Prof. Elmar Wings, Mr. Lars Bergmann

Optimally Scheduled Interventions in the Presence of Vulnerabilities for Modern Cyber-Physical Systems
Mr. Hunor Sandor, Dr. Piroska Haller, Dr. Bela Gnege, Dr. Zoltan Katai

A Railway Safety and Security Concept for low-power mixed-criticality systems
Dr. Ainara Bilbao, Mrs. Irune Yarza, Mr. Jose Luis Montero, Dr. Mikel Azkarate-askasua, Mrs. Nera Gonzalez
Prof. Bela Genge, Prof. Adrian-Vasile Duka, Prof. Piroska Haller, Prof. Bogdan Crainicu, Mr. Hunor Sandor, Mr. Flavius Graur

System reconfiguration of modular production units using a SOA-based control structure
Prof. Andreas Schwung, Mr. Alexander Eibel, Mrs. Dorothea Schwung

SS11 - SS11: Integrating Cloud Technologies, Context Sensitive Tools and Data Mining for Design of Product-Service
S217, Tuesday 25th of July, 10:30
Chair/s: Sebastian Scholze, N. N.

Multi-Layered Data Mining Architecture in the Context of Internet of Things
Prof. Oliviu Matei, Mrs. Carmen Anton, Mr. Sebastian Scholze, Mr. Claudio Cenedese

ProSEco as a Data Processing Platform A Service-Oriented Architecture for Data Analysis
Mr. Pedro Lima-Monteiro, Mr. Guilherme Brito, Mr. André Dionisio Rocha, Mr. Paulo Ilheu, Mr. Joao Freire, Prof. Jose Barata, Mr. Claudio Cenedese

Context Sensitive Collaborative Product Service System Development Environment
Mrs. Ana Correia, Dr. Dragan Stokic, Mr. Sebastian Scholze

An Approach for Context Sensitive Product Extensions Services
Mr. Sebastian Scholze, Mr. Kevin Nagorny, Dr. Karsten Stöbener, Mr. David Brückner

Orchestrating Loosely Coupled and Distributed Components for Product/Process Servitization
Mr. Guilherme Brito, Mr. Giovanni di Orio, Dr. José Barata

A real-world application scenario for a novel collaborative ICT engineering platform
Mr. Kevin Nagorny, Mr. Sebastian Scholze, Prof. Armando Walter Colombo

TT08 - TT08: Distributed and Networked Control Systems
S206, Tuesday 25th of July, 10:30
Chair/s: N. N., N. N.

New Predictive PID Controllers for packet dropouts in Wireless Networked Control Systems
Ms. Mercedes Chacón Vásquez, Dr. Reza Katebi
A tiered security analysis of Industrial Control System Devices
Ms. Cyntia Vargas Martinez, Mr. Michael Langfinger, Prof. Birgit Vogel-Heuser

OPC UA Integration for Field Devices
Mr. Armin Veichtlbauer, Mr. Martin Ortmayer, Dr. Thomas Heistracher

Scheduler for Reliable Distributed Systems with Time-Triggered Networks
Mr. Ayman Murshed, Prof. Roman Obermaisser

Integration of Safety Aspects in Modelling of Networked Control Systems
Mr. Michael Sollfrank, Mrs. Mina Fahimi Pirehgalin, Prof. Birgit Vogel-Heuser

TT07 - TT07: Factory Automation and Communication, Mechatronics and Robotics
S207, Tuesday 25th of July, 10:30
Chair/s: N. N., N. N.

Development of the design and description of the control system of the hand rehabilitation device
Mr. Sergei V. Krivosheev, Mr. Roman V. Oleynik, Mr. Ivan I. Borisov, Mr. Stanislav S. Reznikov

Addressing security challenges in industrial augmented reality systems
Mr. Michael Langfinger, Mr. Michael Schneider, Prof. Didier Stricker, Prof. Hans D. Schotten

Real-Time Wireless Extensions of Industrial Ethernet Networks
Mr. Michele Luvisotto, Mrs. Alessia Tagliapietra, Mr. Stefano Romagnolo, Dr. Federico Tramarin, Prof. Stefano Vitturi

Robotic Conveyor Tracking with Dynamic Object Fetching for Industrial Automation
Prof. Ren C. Luo, Mr. Chun-Hao Liao

Generation of Monitoring Functions in Production Automation Using Test Specifications
Mrs. Suhyun Cha, Mr. Sebastian Ulewicz, Mr. Alexander Weigl, Mr. Mattias Ulbrich, Mr. Bernhard Beckert, Mrs. Birgit Vogel-Heuser

Modeling and verifying behavioral constraints for automation systems
Mr. Benjamin Brandenbourger, Mr. Milan Vathoopen, Dr. Alois Zoitl

TT11 - TT11: Tools for Industrial Informatics Application
S209, Tuesday 25th of July, 10:30
Chair/s: Bilal Ahmad, Valeriy Vyatkin
A MDE-based framework to improve the process management: The EMPOWER project
Dr. Julian Garcia

ArChes - Automatic Generation of Component Fault Trees from Continuous Function Charts
Dr. Marc Zeller, Dr. Kai Hoefig, Mr. Jean-Pascal Schwinn

Model-based Control Design for a District Heating Plant
Mr. Vitali Vansovits, Dr. Boris I. Godoy, Dr. Aleksei Tepljakov, Dr. Kristina Vassiljeva, Dr. Eduard Petlenkov

Benchmarking of existing OPC UA implementations for Industrie 4.0-compliant digitalization solutions
Mr. Hermann Haskamp, Mr. Michael Meyer, Ms. Romina Möllmann, Mr. Florian Orth, Prof. Armando Colombo

Current Status of Software Development in Industrial Practice: Key Results of a Large-Scale Questionnaire
Prof. Birgit Vogel-Heuser, Mr. Alexis Sardá-Espinosa

Scalable Cloud Based Semantic Code Analysis To Support Continuous Integration of Industrial PLC Code
Ms. Safa Bougoufffa, Mr. Sebastian Diehm, Mr. Michael Schwarz, Mrs. Birgit Vogel-Heuser

Universal Parser for Wireless Sensor Networks in Industrial Cyber Physical Production Systems
Mr. Ricardo Silva, Mr. João Reis, Mr. Luís Neto, Dr. Gil Gonçalves

Development of an ontology-based competence management system
Mr. Markus Brandmeier, Mr. Christian Neubert, Mr. Matthias Brossog, Prof. Jörg Franke

A roundtrip engineering approach for data consistency in process industry environments
Mr. Julian Rahm, Mr. Markus Graube, Prof. Leon Urbas

SOC Estimation for a Lithium-Ion Battery by Designing a Nonlinear Observer Based on an Equivalent Circuit Model
Mr. Mehdil Gholizadeh, Dr. Alireza Yazdizadeh, Mr. Mohsen Rahmati, Dr. Abbas Aliabadi

An Appraise of Human Happiness Level based on Air Quality through Fuzzy Logic Inference System
Mr. Nattaphon Talmongkol, Dr. Noppadon Pongpisuttinun, Dr. Wimol San-Um, Dr. Surapong Pongyupinpanich
Algorithm and Tool for LD to SFC Conversion With State-space Method
Mr. Vitor Lopes, Prof. Mário Sousa

Automatic Person Information Extraction Using Overlay Text in Television News Interview Videos
Mr. Sanghee Lee, Prof. Kanghyun Jo

Energy Efficiency in Industry 4.0 using SDN
Ms. Theo Lins, Dr. Ricardo Augusto Rabelo Oliveira

TU 3 - Event-driven controllers for IoT Green Applications
S211, Tuesday 25th of July, 10:30
Lecturer/s: Ciufudean Calin Horatiu

Our tutorial proposes sustainable development of urban communities seen through the new technologies involved in office and home automation, urban traffic and services automation as application areas to exchange new research results and ideas to explore synergies and foster scientific advancement of the event-based paradigm.
This tutorial provides event-formalisms for modeling and diagnosing both urban and industrial environment threats for the assurance of sustainable development of human modern habitats. We will also provide an event-diagnosis method of these challenges. A valuable insight to evaluation of methods and applications necessary for implementing urban regeneration are also shown.
The urban regeneration, in particular of building, public utilities and energy infrastructures, e.g. ecological footprint, is one of the basic steps for the development of a Smart City, where architectural and energetic innovative models and best practices can be tested.
Our tutorial examines the critical topics and the strategies for monitoring, risk assessment, innovative materials, in the urban areas, also analyzing aspects of seismic protections and building diseases. We mention that all these topics are also relevant one of the most prominent ICT technologies that underpin our society, e.g. the Internet of Things (IoT) and its new branches for a sustainable development, as a whole we call it Green IoT, for example:
- The "Things-Oriented" as a branch of IoT is focused on Things connectivity technologies e.g., RFID (Radio-Frequency Identification), NFC (Near Field Communications), WSN (Wireless Sensor Networks), etc.
- The "Internet-Oriented" is focused on the web-of-things layer for simplifying application development, IPv6 for internet connectivity and identification etc.
- The "Semantics-Oriented" is focused on technologies for accessing and leveraging the semantics of IoT, other reasoning technologies etc.
Modelling tools discussed and exemplified in our tutorial will deal with the following (and not only) frameworks:
1. Artificial Social Systems (ASoS)
2. Grid Petri Nets (GPNs)
3. Basic Equivalent Transfer Functions for GPNs
4. Perturbation Parameters Modelled with GPNs
5. Application to a Queuing Grid Network: practical example
6. Application to a IoT controlled Flexible Manufacturing System
7. Modelling Control and Hazards in Industrial Applications driven by IoT.

RF - Technical Tour - Volkswagen Emden
Technical Tours, Tuesday 25th of July, 12:20
TT04 - TT04: Cognitive and Computational Intelligence
S202, Tuesday 25th of July, 13:30
Chair/s: Sebastian Scholze, Doriana Daddona

Segmentation of the Left Ventricle by Slope Difference Distribution Based on Threshold Selection
Ms. Jingjing Xiong, Mr. Yongming Yang, Prof. Zhenzhou Wang

Self-optimization of energy consumption in complex bulk good processes using reinforcement learning
Mrs. Dorothea Schwung, Mr. Tim Kempe, Prof. Andreas Schwung, Prof. Steven Ding

An Application of Reinforcement Learning Algorithms to Industrial Multi-Robot Stations for cooperative handling operation
Mrs. Dorothea Schwung, Mr. Fabian Csaplar, Prof. Andreas Schwung, Prof. Steven Ding

Evaluation of State of the Art Segmentation Methods for Muscle Cells
Ms. Haixing Li, Mr. Yongming Yang, Mr. Zhenzhou Wang

Hybrid Spiking Neural Model for Clustering Smart Environment Activities
Dr. Hesham Amin, Dr. Wael Deabes, Dr. Kheireddine Bouazza

Online Evolving Fuzzy Control Design: An Application to a CSTR Plant
Dr. Jerome Mendes, Dr. Francisco Souza, Dr. Rui Araujo

Adaboost-based algorithm for human action recognition
Mr. Nabil Zerrouki, Dr. Fouzi Harrou, Prof. Ying Sun, Prof. Amrane Houacine

Lego-like reconfigurable machining system
Dr. Doriana M. D’Addona, Prof. Alessandro A.G. Bruzzone

TT03 - TT03: Cloud and Wireless Systems for Industrial Applications
S217, Tuesday 25th of July, 13:30
Chair/s: Gerhard Hancke, N. N.

Wireless Interference Identification with Convolutional Neural Networks
Mr. Malte Schmidt, Mr. Dimitri Block, Prof. Uwe Meier

Solutions for Inter-connectivity and Security in a Smart Hospital Building
Mr. Andreas Plageras, Mr. Christos Stergiou, Prof. Kostas Psannis, Prof. Byung-Gyu Kim, Dr. Brij Gupta, Prof. Yutaka Ishibashi
Mr. Sean W. Pritchard, Prof. Gerhard P. Hancke, Dr. Adnan M. Abu-Mahfouz

Nash equilibrium for Proactive Anti-jamming in IEEE 802.15.4e (Emerging wireless sensor actuator technologies for I4.0)
Mr. Aydin Homay, Prof. Mario de Sousa, Prof. Luis Almeida

FamilyPal: An Effective System for Detecting Family Activities Based on Smartphones
Dr. Fei Gu, Prof. Jianwei Niu, Dr. Zhenxue He, Mr. Xin Jin

A Decrease-and-Conquer Genetic Algorithm for Energy Efficient Virtual Machine Placement in Data Centers
Mrs. Chanipa Sonklin, Dr. Maolin Tang, Prof. Yu-Chu Tian

Dr. Juan Pimentel, Mr. Oscar Baltuano, Mr. Renzo Chan, Mr. Jean-Pierre Tincopa

An ultrasonic-based localization system for underground mines
Mr. Johannes Jordaan, Mr. Carel Kruger, Mr. Bruno Silva, Dr. Gerhard Hancke

SS02 - SS02: Intelligent Engineering of Intelligent Automation Systems
S206, Tuesday 25th of July, 13:30
Chair/s: Valeriy Vyatkin, N. N.

On Requirements-driven Design of Distributed Smart Grid Automation Control
Mr. Chen-Wei Yang, Prof. Valeriy Vyatkin

A novel approach for Flexible Automation Production Systems
Dr. Elisabet Estévez, Dr. Federico Pérez, Dr. Dario Orive, Prof. Marga Marcos

Automatic Generation of Function Block Systems Implementing HMI for Energy Distribution Automation
Mr. Artem Voinov, Mr. Chen-Wei Yang, Prof. Valeriy Vyatkin

Service-Oriented Data Acquisition and Management for Industrial Cyber-Physical Systems
Prof. Wenbin Dai, Mr. Zhijie Zhang, Mr. Peng Wang, Prof. Valeriy Vyatkin, Dr. James Christensen
Towards Electric Vehicles Integration to Distributed Energy Resources of Prosumer
   Mr. Evgeny Nefedov, Dr. Seppo Sierla, Prof. Valeriy Vyatkin

CSP-based inference of function block finite-state models from execution traces
   Dr. Daniil Chivilikhin, Dr. Vladimir Ulyantsev, Prof. Anatoly Shalyto, Prof. Valeriy Vyatkin

Plant trace generation for formal plant model inference: methods and case study
   Mr. Dmitry Avdyukhin, Dr. Daniil Chivilikhin, Dr. Georgiy Korneev, Dr. Vladimir Ulyantsev, Prof. Anatoly Shalyto

Automatic Generation of Function Block Applications Using Evolutionary Algorithms: Initial Explorations
   Mr. Vladimir Mironovich, Dr. Maxim Buzdalov, Prof. Valeriy Vyatkin

Safe Dynamic Reconfiguration Through Supervisory Control in IEC 61499 Compliant Systems
   Mr. Leando Israel Pinto, Prof. Andre B. Leal, Prof. Roberto Ubertino Rosso

SS10 - SS10: Innovative Approaches for Re-Configurability of Industrial Production Systems
S207, Tuesday 25th of July, 13:30
Chair/s: Jeffrey Wermann, Michael Gepp, Jose Barbosa

Introducing agent-based simulation of manufacturing systems to industrial discrete-event simulation tools
   Mr. Lennart Büth, Mr. Nik Broderius, Prof. Christoph Herrmann, Dr. Sebastian Thiede

Validation of PERFoRM reference architecture demonstrating an automatic robot reconfiguration application
   Ms. Nandini Chakravorti, Ms. Evangelia Dimanidou, Mr. Giacomo Angione, Mr. Jeffrey Wermann, Mr. Frederik Gosewehr

A harmonized approach for constructing a robust and efficient technology backbone for agile manufacturing systems
   Mrs. Olga Meyer, Ms. Ambra Calà, Mr. Greg Rauhoeft, Mr. Christian Henkel

Integrating Material Flow Simulation Tools in a Service-oriented Industrial Context
   Dr. Jan Fischer, Mrs. Birgit Obst, Dr. Benjamin Lee

Model-based Engineering of CPPS in the process industries
   Mr. Henry Bloch, Mr. Stephan Hensel, Mr. Mario Hoernicke, Mrs. Anna Hahn, Prof. Alexander Fay, Prof. Leon Urbas, Mr. Sachari Wassilew, Mr. Knohl Torsten, Dr. Jens Bernshausen, Mr. Axel Haller
Traditionally, the perception system of autonomous vehicles is composed of an array of sensors that include vision cameras, radar, lidar, and ultrasonic. Although not a sensor per se, wireless communications can significantly enhance the perception system of autonomous vehicles thus leading to the concept of “connected vehicles” as an enhancement of traditional autonomous vehicles perception system. In this tutorial, participants will be given a detailed overview and in depth discussions on the state of the art of wireless technologies and standards that support the concept of connected vehicles together with a survey of research and development projects including a discussion of commercial offerings.

Learning Objectives
1. Requirements to support autonomous vehicles
2. Main technologies and standards
3. Survey of research and development projects
4. Survey of commercial offerings
Wednesday 26th of July

CE - Keynote Speech - Keynote 3
T151, Wednesday 26th of July, 09:00
Keynote Speaker:

IF - Digitalization of Logistics
T149, Wednesday 26th of July, 10:30
Chair/s:

Industry Forum 3: Digitalization of Logistics

Title: N.A.
Robert Harrison, Warwick Manufacturing Group, UK

Title: N.A.
N.A., Jaguar Land Rover, UK

Title: The increasing digitalisation and automation in the car industry, using the example of Volkswagen Emden
Andree Clüver, Volkswagen Emden, Germany

Title: Automotive and battery production in Emden
Torsten Slink, Industrie- und Handelskammer für Ostfriesland und Papenburg, Germany

Lunch Break
Title: Automated solutions for the last mile - perspectives and challenges
Uwe Meinberg, Brandenburgische Technische Universität, Germany

Title: "Be smart" – Logistics and Mobility on the way to a new era
Ernst Kreppenhofer, Sentiero Logistiq, Germany

Title: Smart glasses in industrial applications
Hannes Baumann, Ubimax, Germany

Title: Digitalization in Intralogistics
Ulf Gerdes, M & K ProCon, Germany

Open Discussions

TT02 - TT02: Cyber-Physical Systems and Industrial Agents
S202, Wednesday 26th of July, 10:30
Chair/s: Marga Marcos, N.N.

The Relational Model: in Search for Lean and Mean CPS technology
Dr. Andrea Bonci, Dr. Massimiliano Pirani, Prof. Aldo Franco Dragoni, Prof. Alessandro Cucchiarelli, Prof. Sauro Longhi
Cloud architecture for industrial image processing
Mr. Dirk Jacobsen, Prof. Peter Ott

Method of automated design of operating the workpieces in a CAD system environment.
Prof. Dmitry Kulikov, Prof. Eugeny Yablochkinov, Mr. Artem Vostropyatov, Mr. Aleksandr Arnst

Modelling and Certification for Electric Mobility
Mr. Alexander Graf-Brill, Dr. Arnd Hartmanns, Prof. Holger Hermanns, Mr. Steffen Rose

Classification of Agent-based Approaches to Apply Cyber Physical Systems in Manufacturing
Mr. Luis Alberto Cruz Salazar, Prof. Birgit Vogel-Heuser

Interoperability rules for heterogenous Multi-Agent Systems Levels of conceptual interoperability model applied for multi-agent systems
Mr. Erik Wassermann, Prof. Alexander Fay

TT09 - TT09: Technologies and Infrastructures for Smart Grids, Buildings, and Cities
S217, Wednesday 26th of July, 10:30
Chair/s: N. N., N. N.

Development of a Microgrid Controller for Black Start Procedure and Islanding Operation
Ms. Maria Nuschke

New Control Functions for IEC 61850
Mrs. Julia Masurkewitz-Möller, Dr. Thomas Kumm, Dr. Mathias Uslar, Mr. Wolfgang Friedrich

ECoS: Energy Control System for Smart Homes
Mrs. Latha Karthigaa Murugesan, Dr. Rashina Hoda, Prof. Zoran Salcic

Low Carbon Technologies Integration in Smart Low Voltage Network
Mr. Rilwan O. Oliyide, Mr. Charalampos Marmaras, Mr. Emmanuel T. Fasina, Dr. Liana M. Cipcigan

Localised Energy Systems in Nigeria Power Network
Mr. Emmanuel T. Fasina, Mr. Rilwan O. Oliyide, Dr. Liana M. Cipcigan

Semantic-aware Anomaly Detection in Real Time Parking Data
Mr. Arnamoy Bhattacharyya, Mr. Weihan Wang, Ms. Christine Tsang, Dr. Cristiano Amza
Novel Infrastructure with Common API using Docker for Scaling the Degree of Platforms for Smart Community Services
    Mr. Tatsuki Miura, Dr. Janaka Wijekoon, Dr. Shanaka Prageeth, Prof. Hiroaki Nishi

Simulation: A Case for Interoperability based on LCIM
    Dr. Mathias Uslar, Ms. Judith Schulte, Dr. Davood Babazadeh, Mr. Florian Schlögl, Mr. Carsten Krüger, Ms. Maike Rosinger

Placing Reflectors for Reducing Payback Period of Solar PV for Smart Buildings
    Mr. Dehan Vithana, Mr. Prathap Wijesuriya, Mr. Saman Wickramathilaka, Mr. Lovindu Wijesinghe, Prof. HY Ranjit Perera

The Use of Output-Capacitorless Class-AB CMOS Low-Dropout Regulator for Power Management
    Prof. Herminio Martinez-Garcia

Efficient LDO-Assisted DC/DC Buck Converter for Power Management Integrated Systems
    Prof. Herminio Martinez-Garcia

Computerized Control Strategy to Prevent Wastewater Plants Pollution
    Dr. Yolanda Bolea, Prof. Antoni Grau, Dr. Herminio Martinez

SS06 - SS06: Advanced Methodology and Applications of Industrial Software
S206, Wednesday 26th of July, 10:30
Chair/s: Takaaki Goto, N. N.

Ontology Driven Query Language for NoSQL Databases
    Ms. Shreya Banerjee, Dr. Takaaki Goto, Prof. Narayan C Debnath, Dr. Anirban Sarkar

Water Quality Prediction: Multi Objective Genetic Algorithm coupled Artificial Neural Network based approach
    Mr. Sankhadeep Chatterjee, Mr. Sarbartha Sarkar, Dr. Nilanjan Dey, Dr. Soumya Sen, Prof. Takaaki Goto, Prof. Narayan C Debnath

Efficient Data Lookup in Non-DHT Based Low Diameter Structured P2P Network
    Prof. Bidyut Gupta, Mr. Nick Rahimi, Prof. Shahram Rahimi, Mr. Ashraf Alyanbaawi

A Modified Version of DVR-Based Multicasting with Security
    Prof. Bidyut Gupta, Dr. Sindoora Koneru, Mr. Ashraf Alyanbaawi, Mr. Nick Rahimi, Prof. Ziping Liu
Real Time System for Measuring the Pantograph Vertically Movement
Prof. Caius Panoiu, Prof. Raluca Rob, Prof. Stela Rusu-Anghel

An Efficient Approach for Load-Shared and Fault- Tolerant Multicore Shared Tree Multicasting
Mr. A. Alyanbaawi, Prof. B. Gupta, Prof. S. Rahimi, Mr. N. Rahimi, Dr. K. Sinha

SS12 - SS12: Information and Communication Technologies for Smart Water Management System
S207, Wednesday 26th of July, 10:30
Chair/s: Gerhard P Hancke Sr. , N. N., Jianwei Niu

Analysis of River Bed Variation Based on Hydrological and Hydraulic Models
Mr. Muhammad Azam, Dr. Seung Jin Maeng, Mr. Ju Ha Hwang

An Interface for Coupling Optimization Algorithms With EPANET in Discrete Event Simulation Platforms
Dr. Lawrence Letting, Prof. Yskandar Hamam, Dr. Adnan Abu-Mahfouz

A Spreadsheet Tool for the Analysis of Flows in Small-scale Water Piping Networks
Mr. Kazeem B. Adedeji, Prof. Yskandar Hamam, Dr. Bolanle T. Abe, Dr. Adnan M. Abu-Mahfouz

State estimation in water distribution network: A review
Mr. Kgaogelo Tshehla, Prof. Yskandar Hamam, Dr. Adnan Abu-Mahfouz

Achieving Interoperability Using Low-Cost Middleware OPC UA Wrapping Structure. Case Study in the Water Industry
Dr. Adrian Korodi, Prof. Ioan Silea

An Autopilot System Based on ROS Distributed Architecture and Deep Learning
Mr. Meng Liu, Prof. Jianwei Niu, Ms. Xin Wang

A Time-synchronized ZigBee Building Network for Smart Water Management
Mr. Chung Kit Wu, Mr. Hongxu Zhu, Prof. Loi Lei Lai, Ms. Anna S. F. Chang, Dr. Fengjun Li, Dr. Kim Fung Tsang, Prof. Roy Kalawsky

SS03 - SS03: Smart Data and Data Analytics for Automation and Manufacturing Systems
S209, Wednesday 26th of July, 10:30
Chair/s: Benjamin Klöpper, Paulo Leitao
**Energy Efficiency Enhanced Shop Floor Scheduling - Data Model and Flexible Optimization Heuristics**

Prof. Heiko Thimm, Mr. Can Kaymakci, Mr. Reinhard Andre, Mr. Milan Tanik

**Detection of Regime Switching Points in Non-Stationary Sequences using Stochastic Learning based Weak Estimation Method**

Mr. Ezdin Aslancı, Mr. Kutalmış Coşkun, Dr. Peter Schüller, Dr. Borahan Tümer

**Unsupervised Mode Detection in Cyber-Physical Systems using Variable Order Markov Models**

Mr. Barış Gün Sürmeli, Mrs. Feyza Eksen, Mr. Bilal Dinç, Prof. Peter Schüller, Prof. Borahan Tümer

**Framework for Mining Event Correlations and Time Lags in Large Event Sequences**

Mr. Marc-Andre Zöller, Prof. Marcus Baum, Dr. Marco Huber

**Online Data-Driven Battery Voltage Prediction**

Dr. Milutin Pajovic, Dr. Zafer Sahinoglu, Dr. Yebin Wang, Dr. Philip Orlik, Dr. Toshihiro Wada

**Defining and Validating Similarity Measures for Industrial Alarm Flood Analysis**

Ms. Marta Fullen, Dr. Peter Schüller, Prof. Oliver Niggemann

**Towards a Methodology for Assisted Knowledge Discovery in Manufacturing**

Mr. Steffen Huber, Mr. Gordon Lemme, Dr. Michael Schwarzenberger, Dr. Hajo Wiemer, Prof. Steffen Ihlenfeldt

**Explanation-Aware Feature Selection using Symbolic Time Series Abstraction: Approaches and Experiences in a Petro-Chemical Production Context**

Dr. Martin Atzmueller, Mr. Naveed Hayat, Mr. Andreas Schmidt, Dr. Kloepper Benjamin

**Grid-Based Outlier Detection in Large Data Sets for Combine Harvesters**

Ms. Ying Gu, Mr. Ram Kumar Ganesan, Mr. Benjamin Bischke, Dr. Ansgar Bernardi, Dr. Alexander Maier, Mr. Heinrich Warkentin, Mr. Thilo Steckel, Prof. Andreas Dengel

**Data-driven Model Development for Quality Pediction in Forming Technology**

Ms. Iris Kirchen, Prof. Birgit Vogel-Heuser, Mr. Philipp Hildenbrand, Mr. Robert Schulte, Mr. Manfred Vogel, Mr. Michael Lechner, Prof. Marion Merklein

**Metrics for the Evaluation of Data Quality of Signal Data in Industrial Processes**

Ms. Iris Kirchen, Mr. Daniel Schütz, Mr. Jens Folmer, Prof. Birgit Vogel-Heuser

**RF - Technical Tour - Meyer shipyard, Papenburg**

Technical Tours, Wednesday 26th of July, 12:00
SS05 - SS05: Cyber-Physical Systems: Innovative Use Cases and Business Models
S202, Wednesday 26th of July, 13:30
Chair/s: Juho Mäkiö, Elena Mäkiö-Marusik

Cyber physical systems by humanistic management. Introduction
   Prof. Rafal Maciag

Testbed Architecture for Maritime Cyber Physical Systems
   Mr. Marius Brinkmann, Prof. Axel Hahn

Business Competencies and Innovation Capability in Cross-border Small Regional Enterprises
   Dr. Jolanta Kowal, Prof. Juho Mäkiö, Dr. Anna Jasińska-Biliczak

Automation, per se, is not Job Elimination: How Artificial Intelligence Forwards Cooperative Human-Machine Coexistence
   Dr. Oussama H. Hamid, Dr. Norris Lee Smith, Dr. Amin Barzanji

Guidelines for Using MARTE Profile Packages Considering Concerns of Real-Time Embedded Systems
   Mrs. Fabiola G. C. Ribeiro, Dr. Achim Rettberg, Dr. Carlos E. Pereira, Dr. Sílvia S. da C. Botelho, Dr. Michel Soares

TT07 - TT07: Factory Automation and Communication, Mechatronics and Robotics
S206, Wednesday 26th of July, 13:30
Chair/s: N. N., N. N.

Automated Seam Tracking System based on Passive Monocular Vision for Automated Linear Robotic Welding Process
   Mr. Átila A. Weis, Mr. Jusoan L. Mór, Mrs. Luciane B. Soares, Mr. Cristiano R. Steffens, Dr. Paulo L. J. Drews-Jr, Mr. Matheus F. de Faria, Mr. Paulo J. D. de O. Evald, Dr. Rodrigo Z. Azzolin, Dr. Nelson D. Filho, Dr. Sílvia S. da C. Botelho

Cooperative Localization of Unmanned Aerial Vehicles in ROS - The Atlas Node
   Mr. Paul Kremer, Mr. Jan Dentler, Dr. Somasundar Kannan, Prof. Holger Voos

Simulative assessments of the IEEE 802.15.4 CSMA/CA with Priority Channel Access in Structural Health Monitoring scenarios
   Mr. Luca Leonardi, Dr. Gaetano Patti, Dr. Filippo Battaglia, Prof. Lucia Lo Bello

TT06 - TT06: Human, Computer and Machine Interface
S207, Wednesday 26th of July, 14:00
Chair/s: N. N., N. N.
A Virtual Training System for Aging Employees in Machine Operation
    Mr. Frieder Loch, Prof. Birgit Vogel-Heuser

Improvement of Maintenance through Speech Interaction in Cyber-Physical Production Systems
    Mr. Joachim Fischer, Dr. Dorothea Pantfoerder, Prof. Birgit Vogel-Heuser

An Improved Method for 3D Shape Estimation Using Cascade of Neural Networks
    Mr. Van-Thanh Hoang, Dr. Van-Dung Hoang, Prof. Kang-Hyun Jo

SS07 - SS07: Industry 4.0: Keeping Humans in the Loop and in Control
    S206, Wednesday 26th of July, 14:40
    Chair/s: N. N., N. N., Marco Porta

Design of the High-Payload Grasping Device for Assistive Manipulation
    Mr. Ivan I. Borisov, Mr. Oleg I. Borisov, Mr. Sergey A. Kolyubin

Co-Simulation Techniques in Assistance Systems for Process Control
    Mr. Florian Schloegl, Dr. Lars Fischer, Prof. Sebastian Lehnhoff, Mr. Roland Rosen, Mr. Jan C. Wehrstedt

CE - Closing Ceremony
    T151, Wednesday 26th of July, 15:30