2013 IEEE 18th Conference on Emerging Technologies & Factory Automation

(ETFA 2013)

Cagliari, Italy
10-13 September 2013

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Wednesday, September 11, 2013

Track 1-1 (Room T1, 8:30 – 11.00): Model-Based Engineering
Co-chairs: Alexander Fay and Nikolaos Papakonstantinou

Liyong Yu, Sten Grüner and Ulrich Epple
An Engineerable Procedure Description Language for Industrial Automation¨%

Werner Herfs, Adam Malik, Wolfram Lohse and Kamil Fayzullin
Model Based Assembly Control Concept¨-

Michael Weyrich and Yongheng Wang
Architecture Design of Vision-based Intelligent System for Automated Disassembly of E-waste with A Case Study of Traction Battery¨%+

Nikolaos Papakonstantinou and Seppo Sierla
Generating an Object Oriented IEC 61131-3 software product line architecture from SysML¨&)

Pekka Pihlanko, Seppo Sierla, Kleanthis Thramboulidis and Mauri Viitasalo
An industrial evaluation of SysML: the case of a nuclear automation modernization project¨' '

Track 2-1 (Room T3, 8:30 – 11.00): Wireless Communications
Co-chairs: Uwe Meier and Gianluca Cena

Svetlana Girs, Elisabeth Uhlemann and Mats Björkman
Increased Reliability or Reduced Delay in Wireless Industrial Networks Using Relaying and Luby Codes¨(%

Mitchel S. Felske, Carlos Montez, Alex S. R. Pinto, Francisco Vasques and Paulo Portugal
GLHOVE: A Framework for Uniform Coverage Monitoring using Cluster-Tree Wireless Sensor Networks¨) $

Sergio Montero and Javier Gozalvez
LAN-ND, a New Neighbour Discovery Protocol for Mobile WirelessHART Industrial Networks¨) ,

André Schimschar, David Hasler, Martin Wollschlaeger and Robert Lehmann
Device-related Modeling of Wireless Components for Industrial Automation Systems¨`

Lutz Rauchhaupt and Uwe Meier
Performance Classes for Industrial Wireless Application Profiles and its Determination¨+(

Markus Rentschler, Ramez Daoud, Hassanein Amer, Omar A. Mady, Marco T. Kassis, Hassan Halawa, Tarek Refaat and Hany Elsayed
Simulation of Parallel Redundant WLAN with OPNET¨, &

Track 3-1 (Room T8, 8:30 – 11.00): Timing Analysis and Synthesis of Complex and Hierarchical Real-Time Systems
Co-chairs: Giorgio Buttazzo and Moris Behnam

Kostiantyn Berezovskyi, Konstantinos Bletsas and Stefan M. Petters
Faster Makespan Estimation for GPU Threads on a Single Streaming Multiprocessor¨- $

Alessandra Melani, Eric Noulard and Luca Santinelli
Learning from Probabilities: Dependences within Real-Time Systems¨- ,

Rafia Inam, Mikael Sjödin and Reinder J. Bril
Mode-Change Mechanisms support for Hierarchical FreeRTOS Implementation¨%$*

Nima Moghaddami Khalilzad, Moris Behnam and Thomas Nolte
Adaptive Hierarchical Scheduling Framework: Configuration and Evaluation¨%⅜

Ernest Wozniak, Asma Mehiaoui, Chokri Mraidha, Sara Tucci-Piergiovanni and Sebastien Gerard
An Optimization Approach for the Synthesis of AUTOSAR Architectures¨%&*

Patrice Bonhomme
State Observer Synthesis of Real-Time Systems Modeled by P-Time Petri Nets¨% *

Christoforos Keroglou and Christoforos Hadjicostis
Initial State Opacity in Stochastic DES¨%⁄(

Kézia de Vanconcelos Oliveira, Angelo Perkusich, Kyller Costa Gorgônio, Leandro Dias Da Silva and Alderon Falcao Martins
Using Equivalence Classes for Testing Programs for Safety Instrumented Systems¨%⁄&

Sadok Turki, Olivier Bistorin and Nidhal Rezg
Infinitesimal Perturbation Analysis Based Optimization for a Manufacturing-Remanufacturing System¨%⁄-

Patrik Bergagård and Martin Fabian
Derivation of Placement Transitions for Offline Calculation of Restart States¨%+

Nina Sundström and Bengt Lennartson
Event- and Time-Based Design of Operation Sequences with Uncertainties in Execution Times¨%+)

Mariagrazia Dotoli, Nicola Epicoco, Marco Falagario and Nicola Costantino
An Integrated Approach for Lean Warehouse Design and Reengineering: A Case Study¨%'

Stephan Schäefer, Ulrich Berger, Dirk Schöttke and Thomas Kämpfe
Technical Conditions for the use of Autonomous Systems: A general Approach on an Example¨%$

Victor Valenzuela, Vicente Lucena, Nasser Jazdi and Peter Göhner
Reusable hardware and software model for remote supervision of Industrial Automation Systems using Web technologies¨%-

Milton Cunguara, Tomás Oliveira E Silva and Paulo Pedreiras
On the Application of Block Transmissions For Improving Control over Lossy Networks¨&$+

Silvia Maria Zanoli and Lorenzo Orlietti
Steam Reforming Plant Optimization with Model Predictive Control¨&%

Keynote 1 (Room T1, 12:00 – 13:00)

Massimo Mattucci and Franco Deregibus
Global Automation Trends and Design Drivers for Competitive Factory¨B#5

Track 1-2 (Room T1, 14:00 – 15:40): Model-Based Tests and Virtual Commissioning
Co-chairs: Jurgen Jasperneite and Alois Zoitl

Timo Vepsäläinen and Seppo Kuikka
Benefit From Simulating Early in MDE of Industrial Control¨&&'

Ken Bruton, Daniel Coakley, Peter O'Donovan, Marcuc M Keane and Dominic T.J. O'Sullivan
Results from testing of an online automated fault detection and diagnosis tool for AHU's¨¨&' %

Alois Zoitl, Gerhard Ebenhofer and Michael Hofmann
Developing a Monitoring Infrastructure for IEC 61499 Devices¨&' -

Track 2-2 (Room T3, 14:00 – 15:40): Dependable Communications
Co-chairs: Guillermo Rodriguez-Navas and Stefano Vitturi

Marco Di Natale and Haibo Zeng
Practical Issues with the Timing Analysis of the Controller Area Network¨&( )

Gianluca Cena, Ivan Cibrario Bertolotti, Tingting Hu and Adriano Valenzano
Software-Based Assessment of the Synchronization and Error Handling Behavior of a Real CAN Controller¨&) '

Aneeq Mahmood and Reinhard Exel
Servo Design for Improved Performance in Software Timestamping-assisted Wireless Synchronization using IEEE 1588¨¨¨&* &

Gianluca Dini and Marco Tiloca
On Simulative Analysis of Attack Impact in Wireless Sensor Networks¨&+$

Track 3-2 (Room T8, 14:00 – 15:40): Operating Systems, Libraries and FPGA Support for Embedded Systems
Co-chairs: Moris Behnam and Giorgio Buttazzo

Julien Tanguy, Jean-Luc Béchennec, Mikaël Briday, Sébastien Dubé and Olivier-H Roux
Device driver synthesis for embedded systems ¨&+,

Mikael Åsberg, Thomas Nolte, Mikael Joki and Jimmy Hogbrink
Fast Linux Bootup using Non-Intrusive Methods for Predictable Industrial Embedded Systems ¨&, *

Giorgio C Buttazzo and Giuseppe Lipari
Ptask: an Educational C Library for Programming Real-Time Systems on Linux ¨&- (

Benjamin Nahill, Ari Ramdial, Haibo Zeng, Marco Di Natale and Zeljko Zilic
An FPGA Implementation of Wait-Free Data Synchronization Protocols ¨' $&

WIP4 (Room T4A, 14:00 – 15:40): Automated Manufacturing Systems
Co-chairs: Dimitri Lefebvre and Thilo Sauter

Mona Noori Hosseini, Bengt Lennartson, Maria Paola Cabasino and Carla Seatzu
Efficient diagnosability test for automata and bounded Petri nets ¨' %$

Jan Ladiges, Christopher Haubeck, Alexander Fay and Winfried Lamersdorf
Operationalized Definitions of Non-Functional Requirements on Automated Production Facilities to Measure Evolution Effects with an Automation System ¨' %

Beniamino Guida and Alberto Cavallo
A Petri Net application for energy management in aeronautical networks ¨' &&

Dimitri Lefebvre
Fault diagnosis of a production and distribution system with Petri nets ¨' &,

Marius Kloetzer, Cristian Mahulea and José-Manuel Colom
Petri net approach for deadlock and collision avoidance in robot planning ¨' ' &

Antti Pakonen, Teemu Mätäsniemi, Jussi Lahtinen and Tommi Karhela
A Toolset for Model Checking of PLC Software ¨' ' *

Federica Ferraguti, Nicola Golinelli, Cristian Secchi, Nicola Preda and Marcello Bonfe
A Component-Based Software Architecture for Control and Simulation of Robotic Manipulators ¨' (&

Carlos Cesar Mansur Tuma, Orides Morandin and Vinicius Fernandes Caridá
Minimizing the makespan for the problem of reactive production scheduling in a FMS with AGVs using a new structure of chromosome in a hybrid GA with TS ¨' (+

Cesare Fantuzzi and Lorenzo Racchetti
Hardware in the Loop Simulation and Machine Modular Development: Concepts and Application ¨') '

Lluís Ribas-Xirgo, José-Miguel Moreno-Villafranca and Ismael-Fabricio Chaile
On Using Automated Guided Vehicles Instead of Conveyors ¨') +

Anaïs Guignard and Jean-Marc Faure
Enforcing I/O sequences for PLC validation purposes ¨' * %

Sergej Fatikow, Volkmar Eichhorn, Malte Bartenwerfer and Florian Krohs
Nanorobotic AFM/SEM/FIB System for Processing, Manipulation and Characterization of Nanomaterials ¨' * +

Jasen Markovski and Michel Reniers
Supervisory Movement Coordination in Pipeless Chemical Plants ¨' + %

Marcel Halbauer, Christian Lehmann, J. Philipp Städter, Ulrich Berger and Francesco Lealiá
Milling strategies optimized for industrial robots to machine hard materials ¨' +)

Gian Antonio Susto, Sean Mcloone, Andrea Schirru, Simone Pampuri, Daniele Pagano and Alessandro Beghi
Prediction of Integral Type Failures in Semiconductor Manufacturing through Classification Methods ¨' + -

Yin Tong, Zhiwu Li and Alessandro Giua
General Observation Structures for Petri Nets ¨' , '

Fotis Koumboulis
On the Exact Model Matching of Linear Singular Multi-Delay Systems via Measurement Output Feedback¨' , +

Luís Osório, Jérôme Mendes, Rui Araújo and Tiago Matias
A Comparison of Adaptive PID Methodologies Controlling a DC Motor With a Varying Load¨' - '

Miguel Angel Davó and Alfonso Baños
Reset control of a liquid level process¨' - -

Luigi Biagiotti, Claudio Melchiorri, Matteo Pilati, Graziano Mazzucchetti, Giacomo Collepalumbo and Pierantonio Ragazzini
Integration of Robotic Systems in a Packaging Machine: a Tool for Design and Simulation of Efficient Motion Trajectories¨($'

Sebastian Bohlmann, Matthias Becker, Sinan Balci, Helena Szczerbicka and Eric Hund
Online Simulation Based Decision Support System for Resource Failure Management in Multi-Site Production Environments¨($+

Michael Skarpetis and Fotis Koumboulis
Robust PID Controller for Electro - Hydraulic Actuators¨(%%

Tilman Leune, Thorsten Wehs, Manuel Janssen, Gerd von Cölln and Carsten Koch
Optimization of Wireless Locating in Complex Environments through Placement of Anchor Nodes with Evolutionary Algorithms¨(%

A. Cemal Oezluek and Klaus Kabitzsch
A Domain-Inspired Hyperheuristic for Solving Complex Design Problems of Automation Systems¨(&&

Alberto Tellaeche and Ramon Arana
Machine Learning algorithms for quality control in Plastic Molding Industry¨(&,

Keem Siah Yap, Shen Yuong Wong and Sheih Kiong Tiong
Compressing and Improving Fuzzy Rules Using Genetic Algorithm and Its Application to Fault Detection ¨(' &

Grzegorz Bocewicz, Wojciech Muszynski and Zbigniew Banaszak
Cyclic Scheduling of Multimodal Processes in Mesh-like Environment ¨(' *

A. Cemal Oezluek and Klaus Kabitzsch
Optimal Device Placement Planning for Wireless Building Automation Systems ¨((&

Christian Bayer, Martyna Bator, Uwe Mönks, Alexander Dicks, Olaf Enge-Rosenblatt and Volker Lohweg
Sensorless Drive Diagnosis Using Automated Feature Extraction, Significance Ranking and Reduction ¨((*

Boguslaw Cyganek and Michal Wozniak
A Framework for Image Analysis and Object Recognition in Industrial Applications with the Ensemble of Classifiers ¨( ) $

Michele Dassisti, Mariagrazia Dotoli and David Chen
Interoperability analysis: General concepts for an axiomatic approach ¨( ) (

Keynote 2 (Room T1, 16:15 – 17:15)

Edward A. Lee
Reliable and Flexible Factory Automation: It's About Time ¨B#5 ´

Thursday, September 12, 2013

Track 1-3 (Room T1, 9:00 – 10.40): Device Descriptions for Seamless Engineering of Automation Systems
Co-chairs: Jurgen Jasperneite and Stefan Runde

Thomas Hadlich and Christian Diedrich
Using properties in systems engineering¨( ) ,

Stefan Runde, Gerrit Wolf and Michael Braun
EDDL and Semantic Web – from Field Device Integration (FDI) to Future Device Management (FDM)¨¨(*)

Dirk Schulz and Ralf Gitzel
Seamless Maintenance – Integration of FDI Device Management & CMMS¨(+'

Michael Obst, Stefan Runde, Gerrit Wolf and Leon Urbas
Integration Requirements of Package Units - A Description Approach With FDI¨(, $

Track 2-3 (Room T3, 9:00 – 10.40): Device Descriptions for Seamless Engineering of Automation Systems
Co-chairs: Henning Trsek and Julián Proenza

Waqas Ikram, Niklas Jansson, Britta Fismen, Stig Petersen and Simon Carlsen
Towards the Development of a SIL Compliant Wireless Hydrocarbon Leakage Detection System¨(, ,

Timo Lindhorst, Georg Lukas and Edgar Nett
Wireless Mesh Network Infrastructure for Industrial Applications - A Case Study of Tele-operated Mobile Robots¨(- *

Handityo Aulia Putra, Dong-Seong Kim and Yoon-Suk Choi
Discovery Protocol for Data Distribution Service in Naval Warships using Extended Counting Bloom Filters¨) $(

Shingo Hattori, Kentaro Kobayashi, Hiraku Okada and Masaaki Katayama
A Note on Adaptive Coding Scheme Based on Control Quality for Wireless Feedback Control Systems¨) %&

Track 3-3 (Room T8, 9:00 – 10:40): Real-Time Networking and End-to-End Timing Analysis
Co-chairs: Martijn van den Heuvel and Marco Di Natale

Georges Kemayo, Frédéric Ridouard, Henri Bauer and Pascal Richard
Optimistic problems in the trajectory approach in FIFO context¨) %,

Tony Fernando Flores Pulgar, Jean-Luc Scharbarg, Katia Jaffrès-Runser and Christian Fraboul
*Extending CAN over the air: an interconnection study through IEEE802.11¨) &**

Saad Mubeen, Jukka Mäki-Turja and Mikael Sjödin
Extending Offset-Based Response-Time Analysis for Mixed Messages in Controller Area Network¨) ' (

Felix Reimann, Sebastian Graf, Fabian Streit, Michael Glaß and Jürgen Teich
Timing Analysis of Ethernet AVB-based Automotive E/E Architectures¨) ((

Track 5-2 (Room T4A, 9:00 – 10:40): Industrial Control Applications
Chair: Andrzej Debowski

Andrzej Debowski, Przemysław Łukasiak and Daniel Lewandowski
Mixed-loop control of an asynchronous traction drive based on electromagnetic state stimulator concept¨)) &

Jürgen Greifeneder, Dirk Schulz and Pablo Rodriguez
*Efficient Drive Engineering by the use of profile based IEC 61131 function blocks¨) * &*

Ùæ¦æÁÆæ^^: ¸ÁCdr Sajjad Haider Zaidi and Ayesha Siddiqui
6 fc_ Yb ˙F chcf ˙6 Uf ˙8 YhYWfjcb ˙cZG]b[˙`YD\ UgY ÷bXi Wfjcb ˙A chcf ˙I g]b[ ˙K ][ bYf! J ]`˙Y 8]ghf]Vi hjcbg¨B#5

Hyungi Cho, Jongsuk Choi and Hanseok Ko. The Robust Sound Source
Localization using a Wiener filter¨) +$

Ireneus Wior, Mohsen Mirza Aligoudarzi, Alexander Fay, Daniel Görges and Steven Liu
Control Design for Nodes in Decentralized Traffic Networks with Delayed Traffic Information¨) +*

Alessio Colombo, Daniele Fontanelli, Dhaval Gandhi, Sean Sedwards, Axel Legay and Luigi Palopoli
Social Force Model Analysis through Stochastic Modeling of Human Behaviours for Robotic Applications¨) , &

Lluís Ribas-Xirgo and Ismael Fabricio Chaile
Multi-Agent-based Controller Architecture for AGV Systems¨) , ,

Carlos López-Limón, Javier Ruiz, Alejandro Cervantes-Herrera and Antonio Ramirez
Formation and Trajectory Tracking of Discrete-time Multi-agent Systems using Block Control¨) - &

Batu Akan, Baran Cürüklü and Lars Asplund
Scheduling POP-Star for Automatic Creation of Robot Cell Programs¨) - *

Mario de Sousa
On Adding IEC61131-3 Support to ROS Based Robots¨*$$

Michele Furci, Andrea Paoli and Roberto Naldi. A Supervisory Control Strategy for
Robot-Assisted Search and Rescue in Hostile Environments¨*$(

Michael Weyrich and Mustafa Waad Abdullah
Concept of a Three D.O.F Spherical-Joint Gripper for Industrial Robots¨*$,

Davide Alghisi, Marco Ferrari and Vittorio Ferrari
Portable Battery Less Noncontact Temperature Measurement System Powered On Demand by Human Action¨*%&

Stephan Wildermuth, Ulf Ahrend and Moritz Hochlehnert
Infrared Temperature Sensor for Industrial Application: Package Design for Reliable Operation in a High Voltage Generator Circuit Breaker¨*%

Vlad Popescu, Daniele Giusto, Mariella Sole, Claudia Musu and Fabrizio Boi
RFID Sensor Network for Workplace Safety Management¨*&$

Herbert Nachtnebel and Roman Beigelbeck
A Mixed-Signal Co-Simulation Environment for Brushless DC Motors¨*&(

Thomas Glatzl, Franz Kohl, Thilo Sauter and Wilfried Hortschitz
Concept of a Thermal Flow Sensor Integraion on Circuit Board Level¨*&,

Just Agbodjan Prince, Franz Kohl and Thilo Sauter
Lamb waves detection in composite material with fiber optic sensor¨¨*'&

Daniela De Venuto and Jan Rabaey
Data Communication and Power system for Wireless Neural Recording¨*'*

Dariusz Koscielnik and Marek Miskowicz
Event-Driven Analog-to-Digital Converter with Conversion-Speed-Centric Architecture and Activity-Dependent Power Consumption¨*($

Keynote 3 (Room T1, 11:15 – 12:15)

Rainer Drath
Platform Industry 4.0 – The fourth Industrial Revolution¨B#5

Track 1-4 (Room T1, 12:15 – 13:30): Design Aspects of Distributed Automation
Co-chairs: Alexander Fay and Valeriy Vyatkin

Wenbin Dai, Valeriy Vyatkin and James Christensen
Essential Elements for Programming of Distributed Automation and Control Systems¨(**

Daniel Hallmans, Thomas Nolte and Stig Larsson
A Method for Handling Evolvability in a Complex Embedded System¨*) (

Gerhard Ebenhofer, Harald Bauer, Matthias Plasch, Sebastian Zambal and Sharath Chandra Akkaladevi and Andreas Pichler
A System Integration Approach for Service-Oriented Robotics¨**&

SS04 (Room T3, 12:15 – 13:30): Simulation Techniques for Model Based System Engineering (MBSE) Development of Mechatronic Systems
Co-chairs: Cesare Fantuzzi and Ronald Rosendahl
Organizers: Cesare Fantuzzi and Roberto Borsari

Gianluca Rizzello, David Naso, Alexander York and Stefan Seelecke
Modeling and Position Control of an Electromechanical Actuator Based on a Mass-Spring-Biased EAP System¨*+$

Arndt Lüder, Nicole Schmidt and Ronald Rosendahl
Validation of behavior specifications of production systems within different phases of the engineering process¨*+,

Johann Hufnagel, Timo Frank and Birgit Vogel-Heuser
Framework for a Model-Based, Cross-Domain System Interconnection in Automation Technology¨*, *

Track 3-4 (Room T8, 12:15 – 13:30): Mixed Criticality and Mixed Mode Systems
Co-chairs: Marco Di Natale and Felix Reimann

Pengcheng Huang, Pratyush Kumar, Nikolay Stoimenov and Lothar Thiele
Interference Constraint Graph – A New Specification for Mixed-Criticality Systems ¨*-)

Philippe Thierry, Laurent George and Jean-Marc Lacroix
A Framework for a secure embedded filtering connector for multi-criticality systronic systems ¨+$'

Martijn M.H.P. Van Den Heuvel, Reinder J. Bril, Xiaodi Zhang, Syed Md Jakaria Abdullah and Damir Isovic
Limited preemptive scheduling of mixed time-triggered and event-triggered tasks ¨+%

SS01 (Room T4A, 12:15 – 13:30): Distributed and Autonomous Intelligent Systems
Co-chairs: Petr Novak and Petr Kadera
Organizers: Alois Zoitl, Thomas Strasser, Paulo Leitão, Munir Merdan, and Pavel Vrba

Petr Novak, Petr Kadera, Pavel Vrba and Radek Sindelar
Architecture of a Multi-Agent System for SCADA Level in Smart Distributed Environments ¨+&&

Aleksey Bratukhin, Albert Treytl and Thilo Sauter
Energy aware manufacturing environments ¨+' $

Holger Voos and Suparchoek Wangmanaopituk
Multiagent-Based Flexible Automation of Microproduction Systems Including Mobile Transport Robots ¨+' ,

WIP1-1 (Room T4B, 12:15 – 13:30): Information Technology in Automation (Part I)
Co-chairs: Paulo Pedreiras and Mario de Sousa

Arndt Lüder, Nicole Schmidt and Sebastian Helgermann
Lossless exchange of graph based structure information of production systems by AutomationML¨+( )

Ferry Pramudianto, Hussein Khaleel, Jonathan Simon and Claudio Pastrone
Prototyping the Internet of Things for the Future Factory Using a SOA-based Middleware and Reliable WSNs¨+(-

Michael Weyrich and Matthias Scharf
Architecture for Auto Configuration of Tools for Industrial Robots¨+) '

Carlos C. Insaurralde and Alois Zoitl
Control Software Development in Industrial Automation¨+) +

Salvatore Cavalieri, Ferdinando Chiacchio and Alberto Di Savia Puglisi
A Novel Approach for KNX and OPC UA Integration¨+*%

Wolfgang Beer, Bernhard Dorninger and Mario Winterer
Flexible and Reliable Software Architecture for Industrial User Interfaces¨+*)

Arndt Lüder, Nicole Schmidt, Matthias Foehr, Thomas Schäffler and Jürgen Elgar
Evaluation of the importance of mechatronical concepts in practical applications¨++%

Ravish Kumar, Apala Ray and Mallikarjun Kande
WirelessHART Device Integration Challenges and Solutions in Industrial Automation¨++-

Giacomo Barbieri, Cesare Fantuzzi and Roberto Borsari
Key points for the development of an optimal design methodology for mechatronic systems¨+, '

Omid Givehchi, Henning Trsek and Juergen Jasperneite
Cloud Computing for Industrial Automation Systems - A Comprehensive Overview¨+, +

Aitor Agirre, Marga Marcos, Elisabet Estevez and Jon Perez
SCA Extensions to Support Safety Critical Distributed Embedded Systems¨+- %

Federico Perez, Isidro Calvo Gordillo, Mikel Gonzalez Astorga and Adrián Noguero Mucientes
Reconfiguring Factory Automation Applications with FTT-MA¨+-)

Rafael Priego, Aintzane Armentia, Dario Orive and Marga Marcos
Supervision-based Reconfiguration of Industrial Control Systems¨+- -

Gregor Ryba, Markus Jung and Wolfgang Kastner
Authorization as a Service in Smart Grids: Evaluating the PaaS Paradigm for XACML Policy Decision Points¨, $'

Track 1-5 (Room T1, 14:30 – 16:35): Virtualisation and Service-Oriented Automation Systems
Co-chairs: Alexander Fay and Thomas Nolte

Lars Evertz and Ulrich Epple
Laying a basis for service systems in process control¨, $+

Reinhard Langmann and Laurid Meyer
Architecture of a Web-oriented Automation System¨, %)

Paolo Brizzi, Hussein Khaleel, Pietro Cultrona, Ferry Pramudianto, Davide Conzon, Martin Knechtel, Riccardo Tomasi and Maurizio Spirito
Bringing the Internet of Things along the Manufacturing Line: A Case Study in Controlling Industrial Robot and Monitoring Energy Consumption Remotely¨, &'

Kristian Sandström, Aneta Vulgarakis, Markus Lindgren and Thomas Nolte
Virtualization Technologies in Embedded Real-Time Systems¨, ' %

Cheng Pang, Valeriy Vyatkin, Yinbai Deng and Majid Sorouri
Virtual Smart Metering in Automation and Simulation of Energy-Efficient Lighting System¨, ' -

Track 2-4 (Room T3, 14:30 – 16:35): Industrial Ethernet
Co-chairs: Gianluca Cena and Mario de Sousa

Giuliana Alderisi, Gaetano Patti and Lucia Lo Bello
Introducing Support for Scheduled traffic over IEEE Audio Video Bridging Networks¨, (+

Gaetano Patti, Lucia Lo Bello, Giuliana Alderisi and Orazio Mirabella
An EDF-based Swapping Approach to Enhance Support for Asynchronous Real-Time Traffic over EtherCAT networks¨,) *

Stefano Vitturi and Federico Tramarin
Energy Efficient Ethernet for the Industrial Communication Scenario¨, *(

Mohammad Ashjaei, Moris Behnam, Guillermo Rodriguez-Navas and Thomas Nolte
Implementing a Clock Synchronization Protocol on a Multi-Master Switched Ethernet Network¨, +&

Dalimir Orfanus, Reidar Indergaard, Gunnar Prytz and Tormod Wien
EtherCAT-based Platform for Distributed Control in High-Performance Industrial Applications¨, , &

SS05-1 (Room T8, 14:30 – 16:35): Theory and Applications of Petri Nets – Part II
Co-chairs: Francesco Basile and Maria Pia Fanti
Organizers: Maria Paola Cabasino and Lingxi Li

Ziyue Ma, Zhiwu Li and Alessandro Giua
Petri Net Controllers for Disjunctive Generalized Mutual Exclusion Constraints¨¨, - $

Manuel Navarro-Gutierrez, Antonio Ramirez-Treviño and David Gomez-Gutierrez
Modelling the Behaviour of a Class of Dynamical Systems with Continuous Petri Nets¨, - ,

Dimitri Lefebvre
State estimation and fault prediction with partially observed Petri nets¨- $(

Maria Pia Fanti, Agostino Marcello Mangini, Giuliana Rotunno and Walter Ukovich
Modeling Steelmaking and Continuous Casting Plants by Timed Petri Nets¨- ‰&

Carla Seatzu and Yorai Wardi
On the Use of IPA in Performance Optimization of Continuous Marked Graphs: A Case Study¨- ‰

Track 5-3 (Room T4A, 14:30 – 16:35): Process Control Theory and Design
Co-chairs: Robin de Keyser and Houda Nouasse

Robin De Keyser, Anca Maxim, Cosmin Copot and Clara Mihaela Ionescu
Validation of a multivariable Relay-Based PID Autotuner with Specified Robustness¨- &+

Robin De Keyser, Clara Mihaela Ionescu and Cosmin Copot
Evaluation of an Internal Model Control Extension for Efficient Disturbance Rejection¨- ' '

Houda Nouasse, Pascale Chiron and Bernard Archimède
A water storage and release strategy for flood management based on transportation network with time delay¨- ' -

Helem Sabina Sánchez and Ramon Vilanova
Multiobjective tuning of PI controller using the NNC Method: Simplified problem definition and guidelines for decision making¨- (+

Victor Alfaro and Ramon Vilanova
Robust Tuning of 2DoF PID Controllers with Filter for Unstable First-Order Plus Dead-Time Processes¨-))

Xuepei Wu, Lihua Xie and Freddy Lim
*EtherCAT-Enabled Next Generation Baggage Handling Systems¨- * '*

Mario Collotta, Arcangelo Lo Cascio, Giovanni Pau and Gianfranco Scata
*A Fuzzy Controller to improve CSMA/CA performance in IEEE 802.15.4 Industrial Wireless Sensor Networks¨- * -*

Luis Lino Ferreira, Michele Albano and Luis Miguel Pinho.
QoS enabled Middleware for Real-time Industrial Control Systems¨- + '

George Athanasiou, Pradeep Chathuranga Weeraddana, Carlo Fischione and Pål Orten
Communication Infrastructures in Industrial Automation: The Case of 60 GHz MillimeterWave Communications¨- ++

Shanthi Vellingiri, Deepaknath Tandur and Mallikarjun Kande
Communication Architecture for Remote Monitoring and Diagnostics in Open Pit Mine¨- , '

Thanikesavan Sivanthi and Otmar Goerlitz
Systematic Real-time Traffic Segmentation in Substation Automation Systems¨¨- , -

Markus Runde, Christopher Tebbe and Karl-Heinz Niemann.
Performance evaluation of an IT Security Layer in Real-time Communication¨- - '

Hassan Halawa, Ramez Daoud, Hassanein Amer and Hani Elgebaly
Performance Optimization for Reliable Wireless Networked Control Systems in the Presence of Interference¨- - +

Ganesh Man Shrestha, Jahanzaib Imtiaz and Jürgen Jasperneite
An Optimized OPC UA Transport Profile to Bringing Bluetooth Low Energy Device into IP Networks¨%$$%

Daniel Macedo, Ivanovitch Silva, Luiz Affonso Guedes, Paulo Portugal and Francisco Vasques
*A framework for dependability evaluation of industrial processes¨%$$**

Gunnar Prytz and Massimo Ussoli
SNTP Time Synchronization Accuracy Measurements¨%$%$

Matthias Freund, Christopher Martin, Annerose Braune and Uwe Steinkrauss
JSUA - an OPC UA JavaScript Framework˙¨%\$%

David Gessner, Julian Proenza, Manuel Barranco and Luis Almeida
Towards a Flexible Time-Triggered Replicated Star for Ethernet˙¨%\$%

Alberto Ballesteros, David Gessner, Manuel Barranco, Julián Proenza and Paulo Pedreiras
Towards Preventing Error Propagation in a Real-Time Ethernet Switch˙¨%\$&&

Paolo Ferrari, Alessandra Flammini, Stefano Rinaldi, Emiliano Sisinni and Gunnar Prytz
Co-simulation of network infrastructure for substation automation systems˙¨%\$&*

Sinisa Derasevic, Julian Proenza and David Gessner
Towards Dynamic Fault Tolerance on FTT-based Distributed Embedded Systems˙¨%\$' \$

Guillermo Rodriguez-Navas And Julián Proenza
A proposal for Flexible, Real-Time and Consistent Multicast in Switched Ethernet˙¨%\$' (

Henning Trsek, Tim Tack, Omid Givehchi, Juergen Jasperneite and Edgar Nett.
Towards an Isochronous Wireless Communication System for Industrial Automation˙¨%\$' ,

Waqas Ikram and Nina Thornhill
Towards the Development of a Wireless Network Node Lifetime Calculation Tool˙¨%\$(&

Giuliana Alderisi, Gaetano Patti, Giancarlo Iannizzotto and Lucia Lo Bello
Prioritization-based Bandwidth Allocation for MOST networks˙¨%\$(*

Friday, September 13, 2013

Track 7-1 (Room T1, 9:00 – 10:40): Autonomous Systems
Co-chairs: Marina Indri and R. Suarez

Kristoph Keunecke and Gerd Scholl
Reducing Position Instability of Unaided Inertial Navigation Systems in Standstill¨%\$) \$

Hendrik Thamer, Henning Kost, Daniel Weimer and Bernd Scholz-Reiter
A 3D-Robot Vision System for Automatic Unloading of Containers¨%\$) ,

Matthieu Myrsky, Heikki Nikula, Seppo Sierla, Jari Saarinen, Nikolaos Papakonstantinou, Bryan O'halloran and Ville Kyrki
Simulation-Based Risk Assessment of Robot Fleets in Flooded Environments¨%\$)*

Vladislav Gribov and Holger Voos
Safety Oriented Software Engineering Process for Autonomous Robots¨%\$+'

Track 6-1 (Room T3, 9:00 – 10:40): Optimization and Modeling in Heterogeneous Intelligent Systems
Co-chairs: Carlo Francesco Morabito and Michal Wozniak

Sarmad Riazi, Oskar Wigstrom, Carla Seatzu and Bengt Lennartson
Benders/Gossip Methods for Optimizing the Heterogeneous Multi-Vehicle Routing Problem¨%\$, %

Tiago Matias, Rui Araújo, Carlos Antunes and Dulce Gabriel
Genetically Optimized Extreme Learning Machine¨%\$, +

Syed Shiraz Gilani, Stefan Windmann, Oliver Niggemann, Florian Pethig and Björn Kroll
The Importance of Model-Learning for the Analysis of the Energy Consumption of Production Plants ÁŦ€JÍ

Dulce Gabriel, Tiago Matias, Jorge Pereira and Rui Araújo
Predicting Gas Emissions in a Cement Kiln Plant using Hard and Soft Modeling Strategies¨%$'

WIP3 (Room T8, 9:00 – 10:40): Real-Time and (Networked) Embedded Systems
Co-chairs: Henning Trsek and Fotis Koumboulis

Matteo Morelli, Federico Moro, Daniele Fontanelli, Luigi Palopoli, Marco Di Natale and Tizar Rizano
A Robotic Vehicle Testbench for the Application of MBD-MDE Development Technologies¨%%%

Luis Marques, Verónica Vasconcelos, Paulo Pedreiras and Luis Almeida
Schedulability Analysis of Server-Based Error-Recovery Mechanisms for Time-Triggered Systems¨%%%

Jérôme Ermont and Christian Fraboul
Modeling a Spacewire architecture using Timed Automata to compute worst-case end-to-end delays¨%%%

Meng Liu, Moris Behnam and Thomas Nolte
Schedulability Analysis of Mixed-queued Controller Area Networks with Multi-Frame Messages¨%%&'

Federico Ciccozzi
Towards Code Generation from Design Models for Embedded Systems on Heterogeneous CPU-GPU Platforms¨%%&-

Nesrine Badache, Katia Jaffrès-Runser, Jean-Luc Scharbarg and Christian Fraboul
End-to-end delay analysis in an integrated Modular Avionics architecture¨%% '

Daniel Hallmans, Kristian Sandström, Markus Lindgren and Thomas Nolte
GPGPU for Industrial Control Systems¨%% +

Rafia Inam, Joris Slatman, Moris Behnam, Mikael Sjödin and Thomas Nolte
Towards Implementing Multi-resource Server on Multi-core Linux Platform¨%%(%

Hamid Reza Faragardi, Björn Lisper and Thomas Nolte
Towards a Communication-efficient Mapping of AUTOSAR Runnables on Multi-cores¨%⁄( )

Haoues Mohammed, Dahane Mohammed, Mouss Kinza Nadia and Rezg Nidhal
Production Planning in Integrated Maintenance Context for Multi-Period Multi-Product Failure-Prone Single-Machine¨%⁄) $

Hamza Boudhar, Mohammed Dahane and Nidhal Rezg
Order/Remanufacturing Policy of Spare Part with Recovery Option for Stochastic Deteriorating System¨%⁄) ,

Lisa Ollinger, Detlef Zuehlke, Alfred Theorin and Charlotta Johnsson
A Reference Architecture for Service-oriented Control Procedures and its Implementation with SysML and Grafchart¨%‰)

Radu-Eugen Breaz, Octavian Constantin Bologa, Melania Tera and Sever-Gabriel Racz
Computer Assisted Techniques for the Incremental Forming Technology¨%‰')

WIP1-2 (Room T4B, 9:00 – 10:40): Information Technology in Automation (Part II)
Co-chairs: Guillermo Rodriguez-Navas and Arndt Lueder

Julius Pfrommer, Miriam Schleipen and Jürgen Beyerer
PPRS: Production skills and their relation to product, process, and resource

Ikhwan Kim, Taehyoun Kim, Minyoung Sung, Edouard Tisserant, Laurant Bessard and Cheol Choi
An Open-source Development Environment for Industrial Automation with EtherCAT and PLCopen Motion Control

Pekka Aarnio and Ilkka Seilonen
RDF Triple Stores as a Knowledge Management Technology for CBM Services

Pascal Stoffels, Wassim Mohamed Boussahel, Michael Vielhaber and Georg Frey
Energy Engineering in the Virtual Factory

Mathias Oppelt, Oliver Drumm, Benjamin Lutz and Gerrit Wolf
Approach for integrated Simulation based on Plant Engineering Data

Samira Souit, Caio Fattori, Fabrício Junqueira, Diolino Santos and Paulo Miyagi
Orchestrating dispersed productive systems

Victor Valenzuela, Payam Parvaresh, Vicente Lucena, Nasser Jazdi and Peter Göhner
Voice-activated system to remotely control building and industrial automation systems using cloud computing

Jeffrey Yan, Cheng Pang and Valeriy Vyatkin
Visualization Architecture Enabling Automated Design of Distributed Automation Applications

Sandeep Patil, Jeffrey Yan, Valeriy Vyatkin and Cheng Pang
On Composition of Mechatronic Components Enabled by Interoperability and Portability Provisions of IEC 61499: A Case Study

Heng-You Lin, Majid Sorouri, Valeriy Vyatkin and Zoran Salcic
Model-based Customisation of Intelligent Mechatronic Systems Using SysML

Björn Kroll, Sebastian Schriegel, Stefan Schramm and Oliver Niggemann
A Software Architecture for the Analysis of Energy and Process-Data ¨%&&%

Björn Böttcher, Johann Badinger, Natalia Moriz and Oliver Niggemann
Design of Industrial Automation Systems - Formal Requirements in the Engineering Process ¨%&&)

Georg Neugschwandtner, Maarten Reekmans and Dirk Van der Linden
An open automation architecture for flexible manufacturing FGGJ

Raphaela Galhardo Fernandes Lima, Gustavo Leitão, Luiz Affonso Guedes, Jorge Dantas Melo and Adrião Duarte Dória Neto
Semantic Alarm Correlation Based on Ontologies ¨%&'(

Frank Schumacher, Sebastian Schröck and Alexander Fay
Tool support for an automatic transformation of GRAFCET specifications into IEC 61131-3 control code ¨%&',

Ireneus Wior, Jan Ladiges, Esteban Arroyo and Alexander Fay
First Steps from a Traffic Node to Traffic Networks - Modeling and Stability ¨%&(&

Keynote 4 (Room T1, 11:15 – 12:15)

Karl Weber
Energy and Automation – Quo Vadis? ¨B#5

Track 1-6 (Room T1, 12:15 – 13:30): Improving Flexibility of Distributed Automation Systems
Co-chairs: Jurgen Jasperneite and Valeriy Vyatkin

Jeffrey Yan and Valeriy Vyatkin
Extension of Reconfigurability Provisions in IEC 61499 ¨%&(*

Michael Wahler, Manuel Oriol, Ettore Ferranti and Aurelien Monot
Reconciling Flexibility and Robustness in Industrial Automation Systems, and Living Happily Ever After ÁFGÍ H

Markus Graube, Jens Ziegler, Jan Hladik and Leon Urbas
Linked Data as Enabler for Mobile Applications for Complex Tasks in Industrial Settings ¨%&*%

Track 6-2 (Room T3, 12:15 – 13:30): Monitoring and Fault Detection in Factory Automation
Co-chairs: Carlo Francesco Morabito and Boguslaw Cyganek

Uwe Mönks and Volker Lohweg
Context Based Anticipatoric Condition Monitoring with Importance Controlled Information Fusion for Cyber-physical Systems in Machine Engineering ¨%&*-

Markus Rentschler, Clemens Zangl and Stephan Kehrer
System Self Diagnosis for Industrial Devices ¨%&++

Tiago Matias, Dulce Gabriel, Francisco Souza, Rui Araújo and Jorge Pereira
Fault Detection and Replacement of a Temperature Sensor in a Cement Rotary Kiln ¨%&,)

SS03 (Room T8, 12:15 – 13:30): Towards the Society of Robots in Industrial Plants
Co-chairs: Lucia Pallottino and Gianluca Dini
Organizers: Lucia Pallottino and Luigi Palopoli

Lorenzo Cancemi, Adriano Fagiolini and Lucia Pallottino
Distributed Multi-level Motion Planning for Autonomous Vehicles in Large Scale Industrial Environments ¨%&-'

Pashalis Padeleris, Xenophon Zabulis and Antonis Argyros
Multicamera tracking of multiple humans based on colored visual hulls ¨%$%

Marco Tiloca, Domenico De Guglielmo, Gianluca Dini and Giuseppe Anastasi
SAD-SJ: a Self-Adaptive Decentralized solution against Selective Jamming attack in Wireless Sensor Networ_g ¨%$-¨

Track 8 (Room T4A, 12:15 – 13:30) Sensors and Actuators
Co-chairs: Daniela De Venuto and Thilo Sauter

Marco Crepaldi, Paolo Motto Ros, Mariagrazia Graziano and Danilo Demarchi
A 130 nm PMOS Drain-Degenerated Ratioless Level-Shifter for Near-Threshold designs¨¨% %

Daniela Carboni, Andrea Gasparri and Giovanni Ulivi
Improving Sensor Network Localization Accuracy via Mobility¨¨% &(

Track 5-4 (Room T4B, 12:15 – 13:30): Automatic Control Applications
Co-chairs: Fotis Koumboulis and Takao Sato

Fotis Koumboulis and Nikolaos Kouvakas
Triangular Decoupling with simultaneous Disturbance Rejection of General Neutral Time Delay Systems via a Measurement Output Feedback Dynamic Controllers¨¨% ' %

Yosuke Sakuragi, Takao Sato, Nozomu Araki and Yasuo Konishi
Self-Tuning PI Control for a Boiler Control System¨¨% ' +

Fathi Abugchem, Michael Short and Donglai Xu
An Experimental HIL Study on the Jitter Sensitivity of an Adaptive Control System¨¨% (&

Track 7-2 (Room T1, 14:30 – 16:35): Manipulators
Co-chairs: Antoni Grau and H. Voos

Andres Montano and Raul Suarez
An On-Line Coordination Algorithm for Multi-Robot Systems¨¨%) $

Carlos Rodriguez Pacheco, Andres Montano and Raul Suarez
Manipulation tasks with a dual arm system including obstacles removing¨¨%) +

Marina Indri, Ivan Lazzero, Alessandro Antoniazza and Aldo Maria Bottero
Friction modeling and identification for industrial manipulators¨% * (

Marina Indri, Ivan Lazzero and Basilio Bona
Robotics education: proposals for laboratory practices about manipulators¨% +&

Noe Alvarado Tovar and Raúl Súarez
Grasp analysis and synthesis of 2D articulated objects with 2 and 3 links¨% , $

SS02 (Room T3, 14:30 – 16:35): Software Engineering Methods, Tools and Practices for Automation Systems
Co-chairs: Raoul Jetley and Alpana Dubey
Organizers: Anil Nair, Alpana Dubey, and Raoul Jetley

Raoul Jetley, Anand Rath, Aparajithan V., Kumar D., Vinu Prasad, Srini Ramaswamy
An Approach for Comparison of IEC 61131-3 Graphical Programs¨% , ,

Florian Angerer, Herbert Praehofer, Rudolf Ramler and Friedrich Grillenberger
Points-To Analysis of IEC 61131-3 Programs: Implementation and Application¨% - *

Luka Lednicki, Jan Carlson and Kristian Sandström
Device Utilization Analysis for IEC 61499 Systems in Early Stages of Development¨% $(

Franco Antonio Cavadini, Diego Manzocchi, Mauro Mazzolini and Alessandro Brusaferri
Integrated Software Platform for Advanced Design and Optimization of Industrial Manufacturing Control System¨% %&

Jukka Peltola, Seppo Sierla, Pekka Aarnio and Kari Koskinen
Industrial Evaluation of Functional Model-Based Testing for Process Control Applications Using CAEX¨% &$

SS05-2 (Room T8, 14:30 – 16:35): Theory and Applications of Petri Nets – Part I
Co-chairs: Ernesto Lopez-Mellado and Francesco Basile
Organizers: Maria Paola Cabasino and Lingxi Li

Ana Paula Estrada-Vargas, Ernesto Lopez-Mellado and Jean-Jacques Lesage
Identification of Partially Observable Discrete Event Manufacturing Systems

Francesco Basile, Pasquale Chiacchio and Jolanda Coppola
An approach for the identification of Time Petri Net systems

Francesco Basile, Maria Paola Cabasino and Carla Seatzu
State estimation of Time Petri nets with unobservable transitions

Xu Wang, Cristian Mahulea and Manuel Silva
Decentralized Diagnosis Based on Fault Diagnosis Graph

José Luis García, Antonio Ramirez, Carlos Renato Vázquez and Enrique Aguayo-Lara
Observer design for Continuous Timed Petri Nets with Product Server Semantics