## At a Glance - Conference Schedule

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<th>Tuesday 19 July 2016</th>
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<th>Thursday 21 July 2016</th>
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<tr>
<td>08:30 - 09:00</td>
<td>Registration, Registration Desk</td>
<td>08:30 - 09:00</td>
</tr>
<tr>
<td>09:00 - 09:30</td>
<td>Opening Session, Auditorium</td>
<td>09:00 - 10:00</td>
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<tr>
<td>09:30 - 10:30</td>
<td>Plenary Session, Auditorium</td>
<td>09:00 - 10:00</td>
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<tr>
<td>10:00 - 10:30</td>
<td>Coffee-break</td>
<td>10:00 - 10:30</td>
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<tr>
<td>10:30 - 11:00</td>
<td>Coffee-break</td>
<td>10:30 - 12:30</td>
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<tr>
<td>11:00 - 12:40</td>
<td>Parallel Sessions, Room F</td>
<td>12:30 - 14:00</td>
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<tr>
<td>12:40 - 14:00</td>
<td>Lunch, Restaurant</td>
<td>14:00 - 15:40</td>
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<tr>
<td>14:00 - 15:40</td>
<td>Parallel Sessions, Room F</td>
<td>16:10 - 23:00</td>
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<tr>
<td>15:40 - 16:10</td>
<td>Coffee-break</td>
<td>16:10 - 17:50</td>
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<tr>
<td>16:40 - 17:00</td>
<td>Parallel Sessions</td>
<td></td>
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<tr>
<td>18:00 - 23:00</td>
<td>Welcome reception, Auto Moto Vélo</td>
<td>17:50 - 18:15</td>
</tr>
</tbody>
</table>

- **Stefan Bina (B&R Automation)**
- **Axel Weber (Kuka)**

**Futuroscope Visit**
- Gala Dinner, Futuroscope

**Closing Address, Auditorium**
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Message from the INDIN 2016 General Co-Chairs

We are honoured and pleased to welcome you in Futuroscope of Poitiers, to the 14th International Conference on Industrial Informatics (INDIN), sponsored by IEEE Industrial Electronics Society and Poitiers University. The INDIN 2016 conference is held from 18 to 21 July 2016 at the Futuroscope Convention Center in Poitiers, FRANCE.

The purpose of the IEEE INDIN international conference is to provide a forum for presentation and discussion of the state-of-art and future perspectives of industrial information technologies. Industry experts, researchers and academics are gathering together to share ideas and experiences surrounding frontier technologies, breakthroughs, innovative solutions, research results, as well as initiatives related to industrial informatics and their applications.

This is the fourteenth in the series following the previous ones being hosted as follows: Vienna, Austria (2007), Daejeon, Korea (2008), Cardiff, UK (2009), Osaka, Japan (2010), Lisbon, Portugal (2011), Beijing, China (2012), Bochum, Germany (2013) and Porto Alegre, Brazil (2014) and Cambridge UK (2015).

We would like to express gratefulness to program Co-chairs, special sessions Co-chairs, technical tracks Co-chairs, organizing committee as well as tutorial Co-chairs for their help and their enthusiastic involvement for the success of INDIN 2016. They have all worked efficiently to the success of the present conference.

In addition, we wish to acknowledge and thank the multitude of reviewers for their time, efforts and timely review of technical papers of this conference.

We express a special thanks to the local organising committee which consists of members of RoBioSS Team of Pprime Institute, staff of the department of Mechanical Engineering and Complex Systems of Pprime Institute as well as Poitiers University students.

On behalf of IEEE-Industrial Electronics Society (the main sponsor of this conference series) and University of Poitiers, we welcome you to the conference in futuroscope convention centre. We hope you will enjoy the intellectual stimulation prepared for you in this conference through the various technical tracks, special sessions and in addition to the three plenary presentations from speakers involved in industrial informatics.

University of Poitiers, founded in 1431, is one of the oldest universities in France. Some of students, of the University of Poitiers, became world-known philosophers such as Guez de Balzac, François Rabelais, René Descartes, etc.

In addition to the intellectual stimulation of this conference technical program, the conference has prepared for you a free visit to the world-famous theme park “Futuroscope”. The visit will be within the Gala dinner program. Delegates, and their partners, can also take a time to visit Futuroscope after the conference to enjoy all attractions and shows offered by this park. We also hope that take advantage for your visit to Poitiers and enjoy its rich heritage.
We hope you become a member of IEEE Industrial Electronics Society to enjoy all the technical activities at a reduced rate. We look forward to welcome you to the INDIN 2016 Conference in Futuroscope of Poitiers.

Professor Saïd Zeghloul  
University of Poitiers

Yousef Ibrahim  
Federation University

IEEE INDIN 2015 General Co-Chairs
INDIN 2016 Organizing Committees

Honorary Chairs
Yves Jean (France)
Jean-Claude Croizet (France)
David Battersby (Australia)
Bogdan Wilamowski (USA)
Gérard Capolino (France)
John Hung (USA)

General Chairs
Said Zeghloul (France)
Yousef Ibrahim (Australia)

Program Chairs
Luis Gomes (Portugal)
Kim Man (Hong Kong)
Armando Colombo (Germany)

Finance Chairs
Catherine De Saint Martin (France)
Laurence Artus (France)
Estelle Ferdinand (France)
Med Amine Laribi (France)
Terry Martin (USA)

Publicity Chairs
Med Amine Laribi (France)
Jean-Pierre Gazeau (France)
Antonio Luque (Spain)

Tutorial Chairs
Pierre Laguillaumie (France)
Thilo Sauter (Austria)

Special Session Chairs
Kim Man (Hong Kong)
Juan Jose Rodriguez-Andina (Spain)
Mike Hobbs (UK)
Gerhard P. Hancke (South Africa)
Jan Haase (Austria)
Marco Liserre (Germany)
Lucia Lo Bello (Italy)
Zhiwei Gao (UK)

Publication Chairs
Med Amine Laribi (France)
Jean-Pierre Gazeau (France)
Andrés A. N. Meléndez (Spain)

Exhibition Chairs
Pierre Laguillaumie (France)
Philippe Vulliez (France)
Jean-Pierre Gazeau (France)

Local Organising Committee
Med Amine Laribi (France)
Jean-Pierre Gazeau (France)
Pascal Seguin (France)
Antoine Eon (France)
Cédric Bouquet (France)
Fabien Courrèges (France)
Majdi Khoudeir (France)
Marc Arsicault (France)
Pierre Laguillaumie (France)
Philippe Vulliez (France)
Technical Track Co-Chairs

**TT01. Technologies and Infrastructures**
Peter Palensky (Netherland)
Dietmar Bruckner (Austria)

**TT02. Cognitive and Computational Intelligence**
Ladjel Bellatreche (France)
José Barata (Portugal)

**TT03. Distributed, Embedded & Networked Control Systems**
Olivier Bachelier (France)
Carlos Eduardo Pereira (Brazil)
Shyh Wei Teng (Australia)

**TT04. Real-Time and Embedded Computing**
Pascal Richard (France)
Luis Ribeiro (Sweden)

**TT05. Factory Automation**
Lucia Lo Bello (Italy)
Shen Yin (China)

**TT06. Human-Machine Interfaces**
Kang Hyun Jo (S. Korea)
Milos Manic (USA)

**TT07. Mechatronics and Robotics**
Peter Korondi (Hungary)
Damien Chablat (France)
Lotfi Romdhane (UAE)

**TT08. Energy Efficiency**
Seddik Bacha (France)
Mo-Yuen Chow (USA)
Federico Baronti (Italy)

**TT09. Wireless, Cyber-Physical and Cloud Technologies**
Paulo Leitão (Portugal)
KF Tsang (Hong Kong)
Rodolphe Vauzelle (France)

**TT10. Tools and Applications**
Valery Vyatkin (Sweden)
Alois Zoitl (Austria)

**TT11. New and Emerging Paradigms**
Xinghuo Yu (Australia)
Eric Monmasson (France)
Huijun Gao (China)
Special Session Organisers

SS01. Big Data and Advanced Data Analytics in the Context of Manufacturing Systems
Martin Atzmüller
Felix Jordan
Benjamin Klöpper
Julian Krumeich

SS02. Advanced Signal processing methods and pattern and image recognition techniques for condition monitoring of electrical machines
Jose A. Antonino-Daviu
Vicente Climente-Alarcon

SS03. Big data driven digital ecosystems and their knowledge management
Shastri L. Nimmagadda
Amit Rudra

SS04. Monitoring, Diagnostic and Prognostic Methods and Industrial Applications
Zhiwei Gao
Shen Yin

SS05. Cyber-Physical Systems: from technological solutions to real industrial applications
Damien Trentesaux
Paulo Leitão
Armando Colombo

SS06. Digital Holography for Industrial Applications
Peter Wai Ming
T.-C. Poon

SS07. Industrial Wireless Networking
Mikael Gidlund
Johan Åkerberg

SS08. Biologically-Inspired Cognitive Architectures in Dependable Cyber-Physical Systems
Evgeny Osipov
Valeriy Vyatkin

SS09. Computational Intelligence: The Enabler for Smarter Grids
Ahmed F. Zobaa
Alfredo Vaccaro
Loi Lei Lai

SS10. Industrial Internet and Engineering of Automation Systems
Valeriy Vyatkin
Jose Luis Martinez Lastra

SS11. Vision-Based Systems for Danger Detection
Giancarlo Iannizzotto
Marco Porta

SS12. High Dimensionality Reduction Techniques for Information and Industrial Applications
Tommy W S Chow
Jonathan Wu
Haijun Zhang

SS13. Advanced Methodology and Applications of Industrial Software
Narayan Debnath
Takaaki Goto

SS14. Security Aspects in Smart Homes
Jan Haase
Dominik Meyer

SS15. Smart Technology for Wearable Health Care Systems
Kim-Fung Tsang
Wing-Kuen Ling

SS16. IoT, Physical vs Social Sensing and Data Analytics
Robin G Qiu

SS17. Human-Centric Sensing for Industrial Environments
Gerhard P. Hancke
Lei Shu
SS18. Advanced Sensor Networks for Harsh Environments
Gerhard P Hancke Sr.
Jianwei Niu
KF Tsang

SS19. Industrial Applications of Big Data
Hing Kai Chan
Xiaojun Wang
Sai Ho Chung

SS20. 5G and Beyond Mobile Technologies and Applications for IoT
Shahid Mumtaz
Ai Bo
Xianbin Wang
Kim-Fung Tsang

SS21. Information and Communication Technology for Smart Community
Hiroaki Nishi
Kim-Fung Tsang
Moe Alahmad
Joern Plönnigs
Jan Haase

SS22. Knowledge based automated production systems and services-enabled by data analytics
Birgit Vogel-Heuser
Kunpeng Zhu

SS23. Wireless Communication Techniques and Advanced Signal Processing Methods for Life Science Industry
Wing-Kuen Ling
Kim-Fung Tsang

SS24. Embedded Systems & Reconfigurable SoCs
Luis Gomes
Juan J. Rodriguez-Andina

Attahiru Alfa
Gerhard P Hancke Sr.
John Isaac

SS26. Automotive Communications
Lucia Lo Bello
Unmesh Dutta Bordoloi

Birgit Vogel-Heuser
Herbert Prähofer
Alois Zoitl
Anil Nair
Raoul Jetley

SS28. Distributed Data Processing with Smart Sensors
Gayan Kahandawa
Tanveer Choudhur
Pavel Dzitac
Abdul Md Mazid
Med Amine Laribi

SS29. Applied Modelling, Numerical Simulation, Computation and Optimization
Cheng-Chi Wang
Chao-Lin Kuo
Keynote Speakers

**Tuesday, July 19, 09:30 - 10:30, Auditorium**

**Speaker:** Tomas Prchal  
Technology Manager CNC and Robotics, B&R Automation, Austria

**Presentation:** Issues in automation for Industries 4.0

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**Speaker Biography**

**Education:**

**Employment history:**
1996:
At ElektroMar Brno. Application Engineer, PLC programming (Siemens Simatic).

1997-2004:
At B&R Automation: Application Engineer. Focus on motion applications, CNC applications. International applications (Czech Republic, Germany, India).

2004-2010:
At B&R Automation: Motion Software Development (CNC and robotics)

2011- now:
At B&R Automation: Global Technology Manager, metal and robotics (Business Development department)

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**Abstract**

Robot as a Machine Component

B&R offers the most advanced way of robot integration – seamless integration into machine control. The machine (e.g. press brake, packaging machine, or plastic molding machine) and the robot(s) are using the same processor, memory and timing.

**Benefits of robot integration**

- **Unmatched performance**
  - Robot and machine fully synchronized using common network POWERLINK.
- **Energy efficiency**
  - Common DC-bus for machine and robot drives
- **User-tailored solution**
  - Customized HMI, program syntax, technology functions
- **Space saving**
  - One controller for machine and robot
  - Reduction of cabinet space and electric wiring
- **Single engineering tool**
  - Automation Studio for simulation, programming, testing and commissioning
- **Web based diagnostics and remote maintenance**
  - Diagnostics of robot via PLC. Errors as text messages - diagnostics up to the motor

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**Scalable Hardware and Software Platform**

**Drive System – B&R ACOPOS P3**

ACOPOS P3 enables a new dimension of machine and operator safety: the product extends the range of available SafeMOTION functions with Safely Limited Torque (SLT) and Remanent Safe Position (RSP). The combination of SLT with SLS (Safely Limited Speed) enables innovative new solutions at a totally new level of operator protection. RSP is essential for the availability of a safe absolute position after power on without homing. This functionality is essential for the safe operation of robots.

ACOPOS P3 is available as one-, two- and three-axes system. Due to its extremely high power density it saves valuable cabinet space (up to -69% reduced footprint).
ACOPOS P3 features extremely high computing power: a single-axis module can run all control loops (current, speed and position) in a cycle time of 50µs (100µs for a three-axes module). This guarantees highest axes precision and machine productivity.

**Safety Functions for Robots**

In order for humans and robots to work safely together, robotic movements must be monitored effectively and reliably. Only by integrating safe position and speed data from all axes involved in the kinematic chain can safety be ensured. SafeMOTION technology, in combination with the SafeROBOTICS functions offers a diverse range of possibilities.

Let us see the testing cell at EgRoTec!

**mapp Technology**

mapp eliminates these recurring programming tasks for developers by providing preconfigured blocks that are easy to use and already extensively tested. Programmers can then concentrate on their main task: implementing machine or system processes in the application software.

mapp blocks are seamlessly integrated into B&R's automation software landscape. This means that any developer who works with Automation Studio can implement mapp blocks to make their work easier and their application software clearer. The end results speak for themselves: increased machine availability, lower maintenance costs and much easier team collaboration.

For these reasons, mapp is an important tool to support the efficiency of companies that can now focus their developers on machine processes in order to enhance their own distinctive and competitive elements. mapp technology also integrates specialized functions optimized for the handling of COMAU robot arms.
Wednesday, July 20, 09:00 -10:00, Auditorium

Speaker: Stefan Bina  
Technology Marketing Engineer at B&R Automation, Austria

Presentation: Open Communication Standards - Key to Success for Industry 4.0

Speaker Biography  
Stefan is responsible for technology consulting and marketing of POWERLINK, OPC UA and openSAFETY at B&R Automation in Austria. He worked at Bilfinger as a trainer in electronic engineering and is also supporting open standards in his private life. Stefan received his M.Sc. degree in electrical engineering and business from the University of Technology Graz in Austria.

Abstract  
Industry 4.0 is advertised to be the fourth industrial revolution which aims for a connected and intelligent factory. This enables a dynamic response to product demands. Mass customization is put into focus. The active organization of manufacturing production processes through intelligent products depends on self-optimization, configuration and diagnosis of the whole production.

One of the main challenges of Industry 4.0 is also to find a standardized technological basis for the interconnection of systems. Only the use of open communication standards such as OPC UA, POWERLINK and openSAFETY ensures the necessary interoperability while meeting needs for real-time communication and secure connectivity, from the sensor to the cloud.

Based on practical examples, the presentation shows a future-oriented integrated automation architecture based on open standards, while it explains the functionality and lays out its resulting benefits.
**Thursday, July 21, 09:00 -10:00, Auditorium**

**Speaker:** Axel Weber  
Business Development Manager, Division Healthcare at Kuka, Germany

**Presentation:** Challenges and trends in the field of medical robotics

**Speaker Biography**
Axel Weber received his Bachelor and Diploma degree in electrical engineering from the Technische Universität München, Germany in 2003 and 2004 respectively. After finishing his Diploma thesis at the German Aerospace Center on Medical Robotics in Oberpfaffenhofen, Germany he joined the Nuclear Medicine Department of the Technische Universität München as research assistant in the field of molecular imaging with PET, SPECT and CT. He was working as the technical manager of the Laboratory for Molecular Imaging in the coordination of preclinical imaging studies.

He followed an offer of Siemens Healthcare in Erlangen, Germany to work on the industrial side of preclinical imaging systems as product and application specialist for the EMEA region. In 2012 Mr. Weber joined KUKA Robotics in Augsburg, Germany as Business Development Manager for Medical Robotics. Since then he is looking for collaborations in academia and industry developing the next generation of medical robotics with the KUKA robotics technology know-how. He is also acting as key account manager for medical robotics since 2015.

**Abstract**
The presentation will discuss the challenges and trends in medical robotics. It will give an overview in which medical fields robotics are already in use today and where the chances are for further use in future. The ongoing industrial development of collaborative robots, e.g. lightweight robotics, will bring new opportunities for use in different medical applications. Several applications are in the evaluation phase and will be prepared for clinical use as a medical product. The talk will show some examples of users and partners of KUKA robotics from academia to medical technology industry.
## Tutorials

### Tuesday, July 19, 11:00 -12:40

**Tutorial 1.** On Big data Driven Digital Ecosystems & Technologies (DEST) and their Knowledge Management.

**Location:** Room F  
**Presenters:**  
Dr Shastri L Nimmagadda,  
School of Information Systems, Curtin Business School, Curtin University of Technology, Perth, WA, Australia.

Dr Amit Rudra,  
School of Information Systems, Curtin Business School, Curtin University of Technology, Perth, WA, Australia.

### Tuesday, July 19, 14:00 -16:10

**Tutorial 2.** Industrial Informatics for Future Smart Homes and Buildings

**Location:** Room F  
**Presenters:**  
Zhibo Pang,  
Principal Scientist, ABB Corporate Research, Sweden

Gordon Padkin,  
Thread Group and NXP Semiconductors, Germany

Kim Fung TSANG,  
Associate Professor, City University of Hong Kong, Hong Kong

Gerhard Hancke,  
Assistant Professor, City University of Hong Kong, Hong Kong

Wing-Kuen Ling,  
National Young Thousand People Distinguished Professor, Guangdong University of Technology, China
Instructions for Oral Session Chairs

Session Chairs are asked to collect their packs from the Registration Desk well before their session. To ensure smooth running of the conference, Session Chairs are kindly asked to strictly respect the schedule.

An evaluation form should be completed for each session by the Session Chairs and left at the registration desk.

All rooms will be equipped with a computer, a video projector and a screen. Presentations must be downloaded to the computer before the session starts. Authors have been asked to meet Session Chairs at the session room a few minutes before the beginning of the session and to provide them with their presentations (in MS Powerpoint or PDF) and short printed biographies (50 words maximum).

The length of oral presentations is restricted to 20 minutes, including questions. The authors are strongly advised to keep their oral presentation within 15 minutes and to leave 5 minutes for discussion with the audience and change of speaker. Session Chairs are kindly asked to closely monitor the timing against the schedule. In case of “no show”, the session must be either suspended until the time the next paper is scheduled or closed if there are no more papers in the session.
Instructions for Presenters of Papers

Authors are kindly requested to meet their Session co-chairs in the session room a few minutes before the scheduled time in order to download their presentation to the computer. They have to provide the co-chairs with a Powerpoint or PDF presentation, as well as a short (50 words maximum) printed biography. Authors must ensure that all fonts needed are embedded in their presentation files.

The files can be downloaded to the computer from a USB key. The use of the author’s computer will not be allowed, in order for sessions to run smoothly.

The length of the presentation is restricted to 20 minutes, including questions. Authors are strongly advised to keep their oral presentation within 15 minutes (about 15 slides) and to allow 5 minutes for discussion with the audience and change of speaker.
### Oral & Dialogue Sessions

**Tuesday 19th of July, 11:00 – 12:40**

**TT01 - Technologies and Infrastructures**  
**Room A, Chair/s: Loi Lei Lai**

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<tr>
<th>Paper Number</th>
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<th>Authors</th>
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<tr>
<td>PD-000663</td>
<td>Partitioning model for mobile electric vehicle data</td>
<td>Malte Zuch</td>
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<tr>
<td>PD-005487</td>
<td>OPC UA extension for IP Auto-Configuration in Cyber-Physical Systems</td>
<td>Markus Rentschler, Henning Trsek, Lars Duerkop</td>
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<tr>
<td>PD-006092</td>
<td>Co-Simulation with OPC UA</td>
<td>Stephan Hensel, Markus Graube, Leon Urbas, Till Heinzerling, Mathias Oppelt</td>
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<tr>
<td>PD-009482</td>
<td>REDIRNET - Emergency Responder Data Interoperability Network</td>
<td>Aurel Machalek, Dominic Dunlop, Zoltan Balogh, Emil Gatial, Ladislav Hluchy</td>
</tr>
<tr>
<td>PD-008788</td>
<td>Chance Constrained Programming Based Optimal Network Reconfiguration in Smart Grid</td>
<td>Shunqi Zeng, Zhao Xu, Fushuan Wen, Loi Li Lai</td>
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**SS13 - Advanced Methodology and Applications of Industrial Software I**  
**Room B, Chair/s: Narayan Debnath and Takaaki Goto**

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<tr>
<th>Paper Number</th>
<th>Title</th>
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<tr>
<td>PD-005649</td>
<td>A Graph Grammar for Entity Relationship Diagrams</td>
<td>Toshihiro Yoshizumi, Tadaaki Kirishima, Takaaki Goto, Kensei Tsuchida, Takeo Yaku</td>
</tr>
<tr>
<td>PD-006173</td>
<td>Subdivision and Homogenization of cells in Heterogeneous Rectangular Dissections by an Octal Grid Graph Model</td>
<td>Koichi Anada, Taikou Ikeda, Youzou Miyadera, Takeo Yaku</td>
</tr>
<tr>
<td>PD-006467</td>
<td>Concept for the Detection of Virtual Functional Modules in Existing Plant Topologies</td>
<td>Anna Hahn, Stephan Hensel, Mario Hoernicke, Leon Urbas</td>
</tr>
<tr>
<td>PD-006491</td>
<td>Vision Based Adaptive Rail Surface Defects Detection Approach with Morphological Tracking</td>
<td>Canan Taştimur, Mehmet Karaköse, Erhan Akin, Ilhan Aydin</td>
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**SS29 - Applied Modelling, Numerical Simulation, Computation and Optimization**  
**Room C, Chair/s: Cheng-Chi Wang and Chao-Lin Kuo**

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<tr>
<th>Paper Number</th>
<th>Title</th>
<th>Authors</th>
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<tbody>
<tr>
<td>PD-001724</td>
<td>Influence of Bearing Number on High Speed Air Rotor Bearing Systems</td>
<td>Kuo-Nan Yu, Chin-Tsung Hsieh, Cheng-Chi Wang, Her-Terng Yau, Ming-Jyi Jang</td>
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PD-001732
The Hole Type Design of Rotor for Considering the Dynamic Stiffness of Rotor-Shaft Assembly
Shin-Yong Chen, Jhe-Wei Lin, Jia-Xuan Lu, Te-Tan Liao

PD-003859
Application of Extension Method and Chaos Theory in ECG Identity Recognition System
Meng-Hui Wang, Zong-Yi Lee

PD-004731
A PID Controller for the Underwater Robot Station-Keeping
Chao-Lin Kuo, Chien-Kuo Tsui, Neng-Sheng Pai, Chia-Hung Lin, Shih-Chung Chen, Po-Wei Li

PD-005746
Modified Particle Swarm Optimization Method for MPPT in Photovoltaic Module Arrays
Long-Yi Chang, Yi-Nung Chung, Kuei-Hsiang Chao, Jia-Jing Kao

SS23 - Wireless Communication Techniques and Advanced Signal Processing Methods for Life Science Industry
Room D, Chair/s: Kim Fung Tsang and Rodolphe Vauzelle

PD-000566
Stabilization Of Single Bit High Order Interpolative Sigma Delta Modulators For Analog-To-Digital Conversion In Wireless Mobile Handset Based Electromyogram Acquisition System
Yu-Fan Zeng, Wing-Kuen Ling, Yaping Gui, Zhijing Yang, Qingyun Dai

PD-001759
The graphics of the solutions by learning a RBM: discussion on a special case
Qian Zhang, Zhijing Yang, Chao Huang, Zhihua Yang, Lihua Yang

PD-005355
An Algorithm for Fragile Audio Watermarking by Bit Modification
Kaliappan Gopalan

PD-008427
An indoor office locator for the partially blind
Theunis Els, Deep Bhatt, Bruno Silva, Gerhard P. Hancke

PD-010685
ZigBee LNA Design for Wearable Healthcare Application
Tony Chi Chung Lee, Yi Shen, Wah Ching Lee, Faan Hei Hung, Kim Fung Tsang

SS06 - Digital Holography for Industrial Applications I
Room E, Chair/s: Ting-Chung Poon

PD-009326
Optical Methods for the Analysis of Residual Stresses and Measurement of Displacements in the Nanometric Range
Giancarlo Pedrini, Venancio Martinez-Garcia, Peter Weidmann, Alok Kumar Singh, Wolfgang Osten

PD-003166
Chromatic aberration issue on full-color optical scanning holography [Invited]
Taegeun Kim

PD-001538
Computer-Generated Hologram Authentication via Optical Correlation
Wen Chen

PD-011053
Holographic Lensless Interference Encryption Based on Single Spatial Light Modulator
Dezhao Kong, Liangcai Cao, Hao Zhang, Qingsheng He, Guofan Jin
**TT04 - Real-Time and Embedded Computing**

**Room A, Chair/s: Jose Barata and Dominik Meyer**

- **PD-003433**
  Mixed-Criticality Transactional Memory Controller for Embedded Systems
  Zaher Owda, Roman Obermaisser

- **PD-007536**
  Robust malfunction diagnosis in process industry time series
  Thanasis Vafeiadis, Stelios Krinidis, Chrysovalantou Ziogou, Dimosthenis Ioannidis, Spyros Voutetakis, Dimitrios Tzovaras

- **PD-007617**
  Towards a Multi-softcore FPGA Approach for the HOG Algorithm
  José Arnaldo Mascagni de Holanda, João Manuel Paiva Cardoso, Eduardo Marques

- **PD-009792**
  A Confidence Assessment of WCET Estimates for Software Time Randomized Caches
  Pedro Benedicte, Leonidas Kosmidis, Eduardo Quinones, Jaume Abella, Francisco J. Cazorla

- **PD-007889**
  A system reconfiguration architecture for hybrid automation systems based in agents and programmable logic controllers
  Tiago Santos, Luis Ribeiro, Andre Dionisio Rocha, Jose Barata

**SS13 - Advanced Methodology and Applications of Industrial Software II**

**Room B, Chair/s: Takaaki Goto and Narayan Debnath**

- **PD-005525**
  Wavelet-Based Contour Synthesis to Simulate Injection Molding Process Signals
  Christoph Wunck, Martin Ruoff

- **PD-007137**
  Context Driven Metadata Representation for SaaS
  Amit Mandal, Anirban Sarkar, Narayan Debnath

- **PD-008184**
  A Software Approach to Improving Cloud Computing Datacenter Energy Efficiency and Enhancing Security through Botnet Detection
  Razvan I. Dinita, Adrian Winckles, George Wilson

- **PD-000892**
  LDEPTH: A Low Diameter Hierarchical P2P Network Architecture
  Nick Rahimi, Koushik Sinha, Bidyut Gupta, Shahram Rahimi, Narayan C. Debnath

**TT02 - Cognitive and Computational Intelligence**

**Room C, Chair/s: Loi Lei Lai and Kang-Hyun Jo**

- **PD-002518**
  Color filter arrays revisited - Evaluation of Bayer pattern interpolation for industrial applications
  Matthias Breier, Wei Li, Constantin Haas, Dorit Merhof

- **PD-010057**
  Machine Learning Based Estimation of Ozone Using Spatio-Temporal Data from Air Quality Monitoring Stations
  Tapiwa M. Chiwewe, Jeofrey Ditsela

- **PD-006505**
  Detecting Illegally Parked Vehicle Based on Cumulative Dual Foreground Difference
  Wahyono Wahyono, Alexander Filonenko, Kang-Hyun Jo
A Multipurpose Autonomous Robot for Target Recognition in Unknown Environments
Danilo Avola, Gian Luca Foresti, Luigi Cinque, Cristiano Massaroni, Gabriele Vitale, Luca Lombardi

Artificial Neural Networks used for Pattern Recognition of Speech Signal based on DCT Parametric Models of Low Order
Priscila Rocha, Washington Silva

SS20 - 5G and Beyond Mobile Technologies and Applications for IoT
Room D, Chair/s: Kim Fung Tsang and Rodolphe Vauzelle

Misbehavior Detection in the Internet of Things: A Network-Coding-aware Statistical Approach
Angelos Antonopoulos, Christos Verikoukis

Analysis of Cooperative Transmissions as an Enabling Technology for Smart Grid Data Aggregation: An Experimental Perspective
Muhammad Shahmeer Omar, Syed Ahsan Raza Naqvi, Shahroze Humayun Kabir, Syed Ali Hassan

Optimal Power Control for Energy Efficiency of Device-to-device Communication Underlaying Cellular Networks
Yang Yang, Yuan Zhang, Kexin Shi, Jianjun Li

Spectrum Allocation Techniques for Industrial Smart Grid Infrastructure
Saba Al-Rubaye, Anwer Al-Dulaimi, John Cosmos

Device-to-Device Assisted Mobile Cloud Framework for 5G Networks
Muhammad Ikram Ashraf, Syed Tameer-ul-Hassan, Shahid Mumtaz, Kim Fung Tsang, Jonathan Rodriguez

SS06 - Digital Holography for Industrial Applications II
Room E, Chair/s: Ting-Chung Poon

High-speed holographic metrology: principle, limitations and application to vibro-acoustics of structures
Pascal Picart, Julien Poittevin, François Gautier, Charles Pezerat

Holographic-laser-drawing volumetric display
Kota Kumagai, Yoshio Hayasaki

Optimizations for Robust, High-Efficiency, Waveguide-Based Holographic Video
Scott Gneiting, Daniel E Smalley, Kamran Gaderi, Andrew Henrie, Benjamin Haymore, Stephen McLaughlin, Jacob Kimball, Christopher Leach, Taylor DeGraw

Fast Calculation Techniques for Computer-Generated Holograms
Takashi Nishitsuji, Tomoyoshi Shimobaba, Takashi Kakue, Tomoyoshi Ito

Wavefront modulation by complex amplitude in holographic display
Xin Li, Juan Liu, Yongtian Wang
TT08 - Energy Efficiency
Room A, Chair/s: Herminio Martinez

PD-000442
Power System load modeling and disaggregation based on dictionary learning
Rahul Sinha, Spoorthy S, Prema Khurana, M. Girish Chandra

PD-003794
Control Strategy for Extreme Conditions Regenerative Braking of a Hybrid Energy Storage System for an Electric Vehicle
Khaled Itani, Alexandre De Bernardinis, Zoubir Khatir, Ahmad Jammal, Mohamad Oueidat

PD-007099
Power distribution network reconfiguration based on min-cost flow problem
Abdelkrim Ali Zazou, Emmanuel Grolleau, Emilie Chevrier, Richard Pascal, Jean-Paul Gaubert, Ladjel Bellatreche

PD-010499
Improvement of the Controller Algorithms for Active Power Filters operating under Distorted and Unbalanced Grid Voltages
Petre-Marian Nicolae, Dinut-Lucian Popa

PD-007285
An Output-Capacitorless FVF-Based Low-Dropout Regulator for Power Management Applications
Vahideh Shirmohammadi, Alireza Saberkari, Herminio Martinez-Garcia, Eduard Alarcon-Cot

TT03 - Distributed, Embedded and Networked Control Systems
Room B, Chair/s: Jose Barata

PD-004677
Challenges from research to deployment of Industrial Distributed Control Systems
Niclas Ericsson, Tomas Lennvall, Johan Åkerberg, Mats Björkman

PD-007595
Model Predictive Control for the Reference Regulation of Current Mode Controlled DC-DC Converters
Luca Cavanini, Gionata Cimini, Gianluca Ippoliti

PD-007927
Simultaneous TCP and NCS Flows in a UPPAAL Framework with a New AQM Technique
Luciano Mauro Arley Sup, Renato Moraes, Adolfo Bauchspiess

PD-004685
Efficient Load Balancing for Multi-Controller in SDN-based Mission-critical Networks
Nguyen Tien Hai, Dong-Seong Kim

PD-010154
Performance Analysis of Compressed Sensing based Multi-User Detection Technique in Small Packet Transmission Scenario
Guoyu Ma, Yiru Liu, Bo Ai, Xianan Hu, Xiaobing Jiang

Room C, Chair/s: Herbert Praehofer and Raoul Jetley

PD-003905
Feature-Oriented Development in Industrial Automation Software Ecosystems: Development Scenarios and Tool Support
Herbert Prähofer, Daniela Rabiser, Florian Angerer, Peter Feichtinger, Paul Grünbacher
Variability Management for Automated Production Systems Using Product Lines and Feature Models
Birgit Vogel-Heuser, Thomas Simon, Juliane Fischer

From Requirements to Code (Re2Code) - A Model-Based Approach for Controller Implementation
Isabel Sofia Brito, João Paulo Barros, Luís Gomes

A Threat-Model for Building and Home Automation
Dominik Meyer, Jan Haase, Marcel Eckert, Bernd Klauer

Chouquet Fuzzy Integral Based Condition Monitoring and Analysis Approach Using Simulation Framework for Rail Faults
Yunus Santur, Mehmet Karakose, Erhan Akın

**SS16 - IoT, Physical vs Social Sensing and Data Analytics**

**Room D, Chair/s: Robin Qiu**

Physical-Social Fusion to Assist Public Services in the War against Air Pollution in China
Xunan Zhang, Miao He, Bing Shao, Changrui Ren

Privacy Preserving for Patients’ Information: A Knowledge-Constrained Access Control Model for Hospital Information Systems
Runtong Zhang, Donghua Chen, Xiaopu Shang

Toward Smarter Service Systems through Service-oriented Data Analytics
Chie-Hyeon Lim, Paul P. Maglio, Kwang-Jae Kim, Min-Jun Kim, Ki-Hun Kim

Revenue sharing contract based on vertical alliance among competing manufacturers
Liu Xu, Xu Qi, Fan Dandan, Xu Lixia

Integrating Physical and Social Sensing to Enable Smart City Mobility Services
Robin Qiu, Lawrence Qiu, Youakim Badr

**SS06 - Digital Holography for Industrial Applications III**

**Room E, Chair/s: Ting-Chung Poon**

Enhanced Autofocusing Scheme in Digital Holography Based on Hologram Decomposition
Shuming Jiao, P.W.M. Tsang

Recent Advances in FINCH Technology
Joseph Rosen, Roy Kelner, Yuval Kashter, Vijayakumar Anand

Experimental Investigation on Sum of Squared Difference between Photon-counting Elemental Images
Seokwon Yeom
SS10 - Industrial Internet and Engineering of Automation Systems I
Room F, Chair/s: Valeriy Vyatkin

PD-001953
Plant Model Inference for Closed-Loop Verification of Control Systems: Initial Explorations
Igor Buzhinsky, Valeriy Vyatkin

PD-003344
A Study on User-Friendly Formal Specification Languages for Requirements Formalization
Cheng Pang, Antti Pakonen, Igor Buzhinsky, Valeriy Vyatkin

PD-001996
Requirement verification in simulation-based automation testing
Eero Siirola, Seppo Sierla, Hannu Niemistö, Tommi Karhela, Valeriy Vyatkin

PD-007374
Speculative Computation in IEC 61499 Function Blocks Execution - Modeling and Simulation
Dmitrii Drozdov, Victor Dubinin, Valeriy Vyatkin

PD-007242
Reconstruction of Function Block Controllers Based on Test Scenarios and Verification
Danii Chivilikhin, Ilya Ivanov, Anatoly Shalyto, Valeriy Vyatkin

Wednesday 20th of July, 10:30 – 12:30

TT10 - Tools and Applications I
Room A, Chair/s: Francisco Vasques

PD-000019
PLC Code Generation Based on a Formal Specification Language
Dániel Darvas, Enrique Blanco Viñuela, István Majzik

PD-006394
Towards an Intelligent Control System for District Heating Plants: Design and Implementation of a Fuzzy Logic based Control Loop
Vitali Vansovits, Aleksei Tepijakov, Kristina Vassiljeva, Eduard Petlenkov

PD-008192
Improving Maintenance Processes with Distributed Monitoring Systems
Hans Fleischmann, Johannes Kohl, Jörg Franke, Andreas Reidt, Markus Duchon, Helmut Krcmar

PD-005878
Engineering of Automation Systems using a Metamodel implemented in AutomationML
Benjamin Brandenbourger, Milan Vathoopan, Alois Zoitl

PD-005886
Solving Circular Dependencies in Industrial Automation Programs
Sreeja Nair, Raoul Jetley

PD-010766
A Simple Strategy for Fall Events Detection
Fouzi Harrou, Nabil Zerrouki, Ying Sun, Amrane Houacine

TT07 - Mechatronics and Robotics II
Room B, Chair/s: Antoni Grau

PD-008133
Designing a biomimetic model of non-linear elastic safety mechanism for collaborative robots
Fabien Courreges, Med Amine Laribi, Marc Arsicault, Said Zeghloul

PD-009822
Adaptive SMC For Trajectory Tracking In FreeForm Grinding
Sophie Klecker, Peter Plapper
Evolving Fuzzy Models for the Position Control of Twin Rotor Aerodynamic Systems
Radu-Emil Precup, Mircea-Bogdan Radac, Emil M. Petriu, Raul-Cristian Roman, Teodor-Adrian Teban, Alexandra-Iulia Szedlak-Stinean

An Interpolation Method Based on Tool Orientation Fitting in Five-Axis CNC Machining
Cong Geng, Yuhou Wu

Multi-motor pressure Management system with minimal energy consumption
Valery Vodovozov, Levon Gevorkov, Zoja Raud

Design of an Application Programming Interface (API) for Commercial Industrial Robots
Sezgin Secili, Cansu Soyleyici, Metin Ozkan, Osman Parlaktuna, Helin Dutagaci, Kaya Turgut, Mustafa Parlaktuna

**SS04 - Monitoring, Diagnostic and Prognostic Methods and Industrial Applications I**

**Room C, Chair/s: Zhiwei Gao**

A GPU-Based Method for Robust and Efficient Fault Detection in Industrial Automation Processes
Stefan Windmann, Oliver Niggemann

Improving Clustering Based Anomaly Detection with Concave Hull: An Application in Condition Monitoring of Wind Turbines
Peng Li, Oliver Niggemann

LPV Modelling and LPV Observer-based Fault Detection for Wind Turbine Systems
Hui Shao, Zhiwei Gao, Krishna Busawon

Implementation of nonintrusive monitoring and fault diagnosis in industrial robot system
Jani Jokinen, Jose L. Martinez Lastra

A New Real-time Fuzzy Logic Based Diagnosis of Stator Faults for Inverter-fed Induction Motor Under Low Speeds
Ilhan Aydin, Mehmet Karakose, Erhan Akin

Monitoring and Diagnostic Methods for Voltage Transformers from a Power Group
Petre-Marian Nicolae, Ileana-Diana Nicolae, Marian-Stefan Nicolae

**SS18 - Advanced Sensor Networks for Harsh Environments**

**Room D, Chair/s: Gerhard Hancke Sr. and Jianwei Niu**

Effective Communicating Optimization for V2G with Electric Bus
Toshichika Shiobara, Guillaume Habault, Hiroaki Nishi, Jean-Marie Bonnin

A Web-based Swimming Pool Information and Management System
Jaco Marais, Deep Bhaff, Gerhard P. Hancke, Tsotsope Ramotsoela

Underwater Event Identification and Determination in UWSNs
Riliang Xing, Zhangbing Zhou, Jianwei Niu, Lei Shu, Lei Wang
PD-010391
Multimodal biometrical authentication in wireless sensor networks
Brendan Galloway, Gerrit Niezen, Bruno Silva, Gerhard Hancke

PD-010693
High Frequency Sensors for Robust Transmission in Telemedicine System
Yi Shen, Kim Fung Tsang, Iasonas F. Triantis, Tony Chi Chung Lee

PD-010723
Design Of Periodic Window Functions In Filter Window Filter Banks For Harsh Environments
Wing-Kuen Ling, Chuqi Yang, Jun Xiao, Yufeng Zeng, Baiwei Deng

SS05 - Cyber-Physical Systems: from Technological Solutions to Real Industrial Applications
Room E, Chair/s: Damien Trentesaux and Paulo Leitão

PD-003573
Balancing preventive and corrective maintenance of aircraft assets: a cyber-physical systems approach
Marco Andreacchio, Abdelghani Bekrar, Rachid Benmansour, Damien Trentesaux

PD-004448
Interaction of Concurrent Processes in Cyber-Physical Systems
Jan T. Bialasiewicz

PD-006904
Cross Benefits from Cyber-Physical Systems and Intelligent Products for Future Smart Industries
José Barbosa, Paulo Leitão, Damien Trentesaux, Armando W. Colombo, Stamatis Karnouskos

PD-007811
Visualising the Digital Twin using Web Services and Augmented Reality
Greyce Schroeder, Natanael Garcia, Ricardo Rodrigues, Charles Steinmetz, Danubia Espindola, Carlos Pereira, Ivan Muller

PD-009741
Holonic Self-Sustainable Systems for Electrical Micro Grids
Adriano Ferreira, Paulo Leitão

PD-001082
A System of Systems Framework for Sustainable Fashion Supply Chain Management in the Big Data Era
Tm Choi, Bin Shen

SS17 - Human-Centric Sensing for Industrial Environments
Room F, Chair/s: Gerhard Hancke

PD-008443
A portable IR-UWB based WSN for personnel tracking in emergency scenarios
Tumelo Mogale, Bruno Silva, Gerhard Hancke

PD-008451
An Occupational Health and Safety Monitoring System
Sandiseni Ngubo, Carel Kruger, Gerhard Hancke, Bruno Silva

PD-009539
Indoor Air Quality Management Control Scheme for Smart Community
Hao Ran Chi, Kim Fung Tsang, Chung Kit Wu

PD-010839
A Framework for User-Centric Key Sharing in Personal Sensor Networks
Lavina Dinca, Gerard Hancke

PD-011142
A Energy Efficient Multi-dimension Model for System Control in Smart Environment Systems
Anlong Ming, Hong Luo, Yanchen Ren, Zhibo Pang, Kim Fung Tsang
A Novel Approach to Orientation Estimation Using Inertial Cues and Visual Feature Locality Constraint
Yinlong Zhang, Wei Liang, Jindong Tan

**Wednesday 20th of July, 14:00 – 15:40**

**SS24 - Embedded Systems and Reconfigurable SoCs**

**Room A, Chair/s: Alfredo Rosado-Muñoz**

**PD-005738**
Efficient OPC UA binary encoding considerations for embedded devices
Chris Paul Iatrou, Leon Urbas

**PD-007609**
Co-simulation Framework for AUTOSAR Multi-Core Processors with Message-based Network-on-Chips
Moisés Urbina, Hamidreza Ahmadian, Roman Obermaisser

**PD-001414**
Event-based Encoding from Digital Magnetic Compass and Ultrasonic Distance Sensor for Navigation in Mobile Systems
Juan Barrios-Aviles, Taras Iakymchuk, Alfredo Rosado-Muñoz, Jose V. Francés-Villora, Manuel Bataller-Mompeán, Juan F. Guerrero-Martínez

**PD-011061**
Model-Based Co-Engineering and NFP Analysis in Embedded Software Sub-Systems Developed Using Heterogeneous Modeling domains
Padma Iyenghar, Arne Noyer, Joachim Engelhardt, Elke Pulvermueller

**PD-009903**
Output observer for fault detection in linear systems
Lamine Mohamadi, Xuewu Dai, Krishna Busawon, Djemai Mohamed

**SS26 - Automotive Communications**

**Room B, Chair/s: Jose-Alfonso Antonino-Daviu and Jan Bialasiewicz**

**PD-004006**
CAN XR: CAN with eXtensible in-frame Reply
Gianluca Cena, Ivan Cibrario Bertolotti, Tingting Hu, Adriano Valenzano

**PD-004952**
On the Applicability of an MILP Solution for Signal Packing in CAN-FD
Marco di Natale, Celso Silva, Max Mauro Santos

**PD-010375**
Realistic Network Performance Analysis for In-Vehicle ADAS Systems
Shrikant Acharya, Shiro Ninomiya

**PD-002046**
Reporting false indications of startup analysis when diagnosing damper damages in synchronous motors
Jose Antonino-Daviu, Vicente Climente-Alarcon, Alfredo Quijano Lopez, Stephen Hornsey

**PD-007641**
A Multi-label Classification Approach for the Detection of Broken Bars and Mixed Eccentricity Faults Using the Start-up Transient
George Georgoulas, Vicente Climente-Alarcon, Jose Antonino-Daviu, Chrysostomos Stylios, Antero Arkkio, George Nikolakopoulos
SS04 - Monitoring, Diagnostic and Prognostic Methods and Industrial Applications II

Room C, Chair/s: Zhiwei Gao

PD-006718
Semantically Enriched Industry Data & Information Modelling: A feasibility study on Shop-floor Incident Recognition
Apostolos Tsolakis, Damiano Arena, Stelios Krinidis, Apostolos Perdikakis, Dimosthenis Ioannidis, Dimitrios Kyritsis, Dimitrios Tzovaras

PD-002402
Takagi-Sugeno Fuzzy Modelling and Robust Fault Reconstruction for Wind Turbine Systems
Xiaoxu Liu, Zhiwei Gao

PD-009717
PLS-Based Memory Control Scheme for Enhanced Process Monitoring
Fouzi Harrou, Ying Sun

SS21 - Information and Communication Technology for Smart Community

Room D, Chair/s: Kim Fung Tsang

PD-000558
Qrs Complex Detection Based Wearable Electrocardiogram Acquisition System Via Computing Regularity Without Evaluating The Modulus Maxima
Yu-Fan Zeng, Wing-Kuen Ling, Qing Liu, Meilin Wang, Jiangzhong Cao

PD-008273
ECORS: Energy Consumption-Oriented Route Selection for Wireless Sensor Network
Tadanori Matsui, Hiroaki Nishi

PD-008591
The IOT Mediated Built Environment: A Brief Survey
Jan Haase, Mahmoud Alahmad, Hiroaki Nishi, Joern Ploennigs, Kim Fung Tsang

PD-008958
Information Extraction Via Singular Spectrum Analysis For Noninvasive Blood Glucose Estimation System Inspired By Empirical Mode Decomposition
Wing-Kuen Ling, Pei-Ru Lin, Weixi Li, Tuhong Zheng, Chi-Kong Li

PD-009466
RSS-based Localization Algorithm for Indoor Patient Tracking
Wah Ching Lee, Faan Hei Hung, Kim Fung Tsang, Chung Kif Wu, Hao Ran Chi

TT09 - Wireless, Cyber-Physical and Cloud Technologies

Room E, Chair/s: Paulo Leitão and Rodolphe Vauzelle

PD-002186
Assessment of Cloud Services: An Economic Perspective
Emre Sezgin

PD-002305
Progress in airborne ultrasonic data communications for indoor applications
Wentao Jiang, William M. D. Wright
Implementation framework for cloud-based holonic control of cyber-physical production systems
Francisco Gamboa Quintanilla, Olivier Cardin, Anne L’Anton, Pierre Castagna

AdapTA: Adaptive Timeslot Allocation scheme for IEEE 802.15.4e LLDN mode
Benedito Bitencort, Ricardo Moraes, Paulo Portugal, Francisco Vasques

SS12 - High Dimensionality Reduction Techniques for Information and Industrial Applications
Room F, Chair/s: Tommy W S Chow and Haijun Zhang

Distributed Diffusion Nonnegative LMS Algorithm Over Sensor Networks
Wei Huang, Xiaolong Deng, Yuzhu Ji, Shengyong Chen

Classifying Vehicles with Convolutional Neural Network and Feature Encoding
Shuang Wang, Zhengqi Li, Haijun Zhang, Yuzhu Ji, Yan Li

A Character-Level Sequence-to-Sequence Method for Subtitle learning
Haijun Zhang, Jingxuan Li, Yuzhu Ji, Heng Yue

Vehicle Route Planning for the Logistics Network Optimization via Multiple Spanning Tree
Mingbo Zhao, Tommy W. S. Chow, K. F. Tsang

Latent Label Consistent K-SVD for Joint Machine Faults Representation and Classification
Zhao Zhang, Weiming Jiang, Lei Jia, Mingbo Zhao, Fanzhang Li

TT10 - Tools and Applications II
Room A, Chair/s: Francisco Vasques

Agile Development of Home Automation System with ThingML
Anatoly Vasilevskiy, Brice Morin, ØYstein Haugen, Pål Evensen

Electric Arc Model in PSCAD - EMTDC as embedded component and the dependency of the desired Active Power
Loredana Ghiormez, Manuela Panoiu, Caius Pan, Raluca Rob

Integrating Performance Modeling in Industrial Automation through AutomationML and PMIF
Luca Berardinelli, Emanuel Maetzler, Tanja Mayerhofer, Manuel Wimmer

Enabling Query Based Failure Detection for EH&S Compliance by a Domain Specific Workflow Meta Data Model
Heiko Thimm

Full Integration of MATLAB/Simulink with Control Application Development using OPC Unified Architecture
Haitham Elfahaam, Florian Palm, Sten Grüner, Ulrich Epple

Integrated Power Management System Based on Efficient LDO-Assisted DC/DC Buck Converter
Vahideh Shirmohammadli, Alireza Saberkari, Herminio Martinez-Garcia, Eduard Alarcon-Cot
TT07 - Mechatronics and Robotics II
Room B, Chair/s: Antoni Grau

PD-009024
A Framework for the Control of a Parallel Manipulator with Several Actuation Modes
Damien Chablat, Ranjan Jha, Stéphane Caro

PD-003808
A New Finger Module for Robotic Hands with Improved Tendon Routing
Mnyusiwalla Hussein, Vulliez Philippe, Gazeau Jean-Pierre, Zeghloul Said

PD-002801
An automatic sealing rings grabbing and putting system
Guojin Ma, Yanting Lou, Zhong Li, Mingyu Gao, Yuxiang Yang, Yuanyuan Liu, Zhiwei He, Hongjuan Zhu

PD-008397
Collaborative Localization for Autonomous Robots in Structured Environments
Antoni Grau, Edmundo Guerra, Rodrigo Munguia, Yolanda Bolea

PD-007129
Multi-objective design optimization of the Delthaptic, a new 6-DOF haptic device.
Margot Vulliez, Said Zeghloul

PD-010863
An industrial standard based control architecture for multi-robot real time coordination
Harrisson Fischer, Philippe Vulliez, Jean-Pierre Gazeau, Said Zeghloul

SS25 - Mathematical Modeling for the Design and Analysis of Industrial Wireless Sensor Networks
Room C, Chair/s: Attahiru Alfa and Gerhard Hancke Sr.

PD-002011
Performance Analysis of Transmission Scheduling in Cognitive Wireless Sensor Networks
Haitham Abu Ghazaleh, Attahiru Sule Alfa

PD-008435
Packets Distribution in a Tree-Based Topology Wireless Sensor Network
Godfrey Apakwu, Gerhard Hancke, Adnan Abu-Mahfouz

PD-008532
Opinion Summarization for Short Texts based on BM25 and Syntactic Parsing
Jianwei Niu, Qingjuan Zhao, Lei Wang, Huan Chen, Shichao Zheng

PD-008923
An Offline Autonomous Vehicular Actuator Control System
Tsotsopo Ramotsoela, Derik le Roux

PD-009008
The Role of Queueing Theory in the Design and Analysis of Wireless Sensor Networks: An Insight
Shruti Lall, Attahiru Sule Alfa, Sunil Maharaj

PD-010464
A Key Distribution Scheme using Elliptic Curve Cryptography in Wireless Sensor Networks
Jacques Louw, Gerrit Niezen, Tsotsopo Ramotsoela, Adnan Abu-Mahfouz

SS07 - Industrial Wireless Networking
Room D, Chair/s: Johan Akerberg

PD-005614
Energy Consumption Estimation for TDMA-based Industrial Wireless Sensor Networks
Ivan Muller, Jean Winter, Carlos Eduardo Pereira, Valner Brusamarello, Joao Cesar Netto
PD-006157
Handling Event-Triggered Traffic of Safety and Closed-loop Control Systems in WSANs
Mehrzad Lavassani, Filip Barac, Mikael Gidlund, Tingting Zhang

PD-008206
An Empirical Study of Industrial Real-Time Wireless Mesh Network in Field Deployments
Mark Nixon, Paul Muston, Shaobo Zheng, Tao Gong, Eric Rotvold, Wally Pratt, Song Han

PD-009474
A New Wireless Sensor Network TDMA Timing Synchronization Protocol
Tomas Lennvall, Johan Åkerberg, Ewa Hansen, Kan Yu

PD-010731
A Framework for MAC Layer Wireless Intrusion Detection & Response for Smart Grid Applications
Batool Talha, Apala Ray

PD-010871
Balancing Network Performance and Network Security in a Smart Grid Application
Apala Ray, Johan Akerberg, Mats Bjorkman, Mikael Gidlund

SS10 - Industrial Internet and Engineering of Automation Systems II
Room E, Chair/s: Birgit Vogel-Heuser

PD-003654
Enabling Smart Maintenance Services: Broker-based Equipment Status Data Acquisition and Backend Workflows
Martin Maritsch, Christian Lesjak, Andreas Aldrian

PD-001902
Hardware-Secured and Transparent Multi-Stakeholder Data Exchange for Industrial IoT
Christian Lesjak, Holger Bock, Daniel Hein, Martin Maritsch

PD-007218
A composite metric for dynamic routing in networked control systems.
Le-Duy-Lai Nguyen, Laurent Lefevre, Denis Genon-Catalot

PD-005541
Plant descriptions for engineering tool interoperability
Oscar Carlsson, Daniel Vera, Jerker Delsing, Bilal Ahmad, Robert Harrison

PD-006521
An approach for integrating legacy systems in the manufacturing industry
Naveen Govindarajan, Borja Ramis Ferrer, Xu Xiangbin, Angelica Nieto, Jose Luis Martinez Lastra

PD-003328
Dynamic Online Reconfiguration in Manufacturing Systems using SOSJ Framework
Udayanto Dwi Atmojo, Zoran Salcic, Kevin I-Kai Wang

Thursday 21st of July, 14:00 – 15:40

TT05 - Factory Automation I
Room A, Chair/s: Marco Stefano Scroppo

PD-000221
The Need for Shaping Non-Time-Critical Data in PROFINET Networks
Sven Kerschbaum, Kai-Steffen Hielscher, Reinhard German

PD-000337
Handling Errors in Dynamic Production Environments
Nadine Keddis, Gerd Kainz, Benjamin Brandenbourger, Milan Vathoopan, Alois Zoitl

PD-004545
Guided Semi-Automatic System Testing In Factory Automation
Sebastian Ulewicz, Birgit Vogel-Heuser
PD-004669
A Framework based on CLR Virtual Machine to deploy IEC 61131-3 programs
Salvatore Cavalieri, Marco Stefano Scroppo, Luca Galvagno

PD-007862
Towards a Common Classification of Changes for Information and Automated Production Systems as Precondition for Maintenance Effort Estimation
Birgit Vogel-Heuser, Thomas Simon, Jens Folmer, Robert Heinrich, Kiana Rostami, Ralf Reussner

**SS22 - Knowledge Based Automated Production Systems and Services-enabled by Data Analytics I**
*Room B, Chair/s:*

PD-003719
Data-Driven Valve Diagnosis to Increase the Overall Equipment Effectiveness in Process Industry
Jens Folmer, Carolin Schrüfer, Julian Fuchs, Christian Vermum, Birgit Vogel-Heuser

PD-003913
Pattern-Based Control-Code Synthesis
Steffen Henning, Oliver Niggemann, Jens Otto

PD-004162
Optimizing Modular and Reconfigurable Cyber-Physical Production Systems by Determining Parameters Automatically
Jens Otto, Birgit Vogel-Heuser, Oliver Niggemann

PD-007498
Ontology based Semantic-Predictive Model for Reconfigurable Automation Systems
Jiayi Zhang, Bilal Ahmad, Daniel Vera, Robert Harrison

PD-007226
A Combined Fault Diagnosis and Test Case Selection Assistant for Automotive End-of-Line Test Systems
Sebastian Abele, Michael Weyrich

**SS30 - Big Data, Advanced Analytics, and Knowledge Management in Manufacturing Ecosystems I**
*Room C, Chair/s: Benjamin Kloepper and Shastri Nimmagadda*

PD-004014
Defining Software Architectures for Big Data Enabled Operator Support Systems
Benjamin Kloepper, Marcel Dix, Martin Atzmüller, David Arnu, Ralf Klinkenberg, Lukas Schorer, Ann Ampofo

PD-006963
Anomaly Detection in Sensor Data provided by Combine Harvesters
Ying Gu, Ansgar Bernardi, Thilo Steckel, Alexander Maier

PD-007838
Proactive and Dynamic Event-Driven Disruption Management in the Manufacturing Domain
Suad Sejdovic, Natalja Kleiner

PD-000205
Anomaly Detection on Data Streams for Machine Condition Monitoring
Tobias Brandt, Marco Grawunder, Hans-Jürgen Appelrath

PD-005568
On Big Data Guided Embedded Digital Ecosystems (EDE) and their Knowledge
Shastri Nimmagadda, Gary Burke, Torsten Reiners
SS15 - Smart Technology for Wearable Health Care Systems I
Room D, Chair/s: Kim Fung Tsang

PD-006076
An Electronic Stethoscope for Heart Diseases Based on Micro-Electro-Mechanical-System Microphone
Demiao Ou, Liping OuYang, Zhijun Tan, Hongqiang Mo, Xiang Tian, Xiangmin Xu

PD-008966
Optimal Design Of Both Rectified Layer And Pooling Layer Of Convolutional Neural Network For Noninvasive Blood Glucose Estimation System
Wing-Kuen Ling, Xin Wu, Yuwei Liu, Ju Su, Chi-Kong Li

PD-009148
A Personal High Voltage Safety System with Wear Monitoring
Adriaan Louw, Gerhard P. Hancke, Bruno Silva

PD-009156
A multi-sensor system for detection of driver fatigue
Albert Beukman, Gerhard P. Hancke, Bruno Silva

PD-003689
Enrichment of Performance for Output-Capacitorless LDO Voltage Regulators
Herminio Martinez-Garcia

SS10 - Industrial Internet and Engineering of Automation Systems III
Room E, Chair/s: João-Paulo Barros

PD-004561
Semantic Integration of Multi-Agent Systems using an OPC UA Information Modeling Approach
Max Hoffmann, Philipp Thomas, Daniel Schütz, Birgit Vogel-Heuser, Tobias Meisen, Sabina Jeschke

PD-006475
Implementation of an Industrial Visualization Model for Collaborative Networks
Mohammad Johirul Islam, Borja Ramis Ferrer, Xu Xiangbin, Angelica Nieto, Jose Luis Martinez Lastra

PD-004073
Parameters Selection in Predictive Online Simulation
Gerardo Santillán Martínez, Tuomas Miettinen, Antti Aikala, Jouni Savolainen, Kalle Kondelin, Tommi Karhela, Valeriy Vyatkin

PD-007196
Cloud based solution enabling collaborative supply network optimization for an Original Equipment Manufacturer
Xu Xiangbin, Angelica Nieto, Borja Ramis Ferrer, Roberto Camp, Jose Luis Martinez Lastra

PD-001465
Towards a Model-Integrated Computing Paradigm for Reconfigurable Motion Control System
Di Li, Nan Zhou, Jiafu Wan, Zhenkun Zhai, Athanasios V. Vasilakos

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Room A, Chair/s: Kang-Hyun Jo

PD-007056
Contract Based Verification of IEC 61499
Per Lindgren, David Pereira, Marcus Linder, Luís Miguel Pinho

PD-007412
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Christos Alexakos, Christos Anagnostopoulos, Athanasios P. Kalogeris
Augmented Reality Experiments with Industrial Robot in Industry 4.0 Environment
Ivo Maly, David Sedlacek, Paulo Leitao

Smoke Detection for Surveillance Cameras Based on Color, Motion, and Shape
Alexander Filonenko, Danilo Cáceres Hernández, Wahyono Wahyono, Kang-Hyun Jo

IIoT based Efficiency monitoring of a Gantry Robot
Francesco Benzi, Stefano Farné, Ezio Bassi, Francesco Compagnoni

SS22 - Knowledge Based Automated Production Systems and Services-enabled by Data Analytics II
Room B, Chair/s: Birgit Vogel-Heuser

Anisotropic Diffusion Map Based Spectral Embedding for 3D CAD Model Retrieval
Xin Lin, Kunpeng Zhu, Qing-Guo Wang

Motion Planning in Crane Simulator Based on Field Acceleration Measurement
Ze Zhu, Hanbin Xiao, Guoxian Wang

Microgrid sizing via profit maximization: a population based optimization approach
Luca Cavanini, Lucio Ciabattoni, Francesco Ferracuti, Gianluca Ippoliti, Sauro Longhi

SS30 - Big Data, Advanced Analytics, and Knowledge Management in Manufacturing Ecosystems II
Room C, Chair/s: Benjamin Kloepper and Shastri Nimmagadda

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Donato Pirozzi, Vittorio Scarano, Steven Begg, Guillaume De Sercey, Andrew Fish, Andrew Harvey

Determining the optimal level of autonomy in cyber-physical production systems
Norbert Gronau, Marcus Grum, Benedict Bender

Integrated Search for Heterogeneous Data in Process Industry Applications - A Proof of Concept
Benjamin Klöpper, Marcel Dix, Dikshith Siddapura, Luke T. Taverne

Requirements for a Big Data capturing and integration architecture in a distributed manufacturing scenario
Mikel Niño, Fernando Sáenz, José Miguel Blanco, Arantza Illarramendi

SS15 - Smart Technology for Wearable Health Care Systems II
Room D, Chair/s: Kim Fung Tsang

A Wearable Drunk Detection Scheme for Healthcare Applications
Chung Kit Wu, Kim Fung Tsang, Hao Ran Chi

Wearable Stress Monitoring System Using Multiple Sensors
Fulufhelo Lebepe, Gerrit Niezen, Gerhard Hancke, Tsotsope Ramotsoela
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How to find Us – Palais des Congrès
Poitiers, step by step

The centre of Poitiers is the home of 2000 years of history, to which over 80 listed buildings bear witness. The major monuments of the regional capital can be explored through three historic heritage trails offered by the Tourist Office, while the Modern City tour offers a different view of the city through the eyes of planners and architects. These four tours, each taking an hour and a half to two hours are a chance to discover the Poitiers you love at your own pace.

THE EPISCOPAL DISTRICT

The best way to discover the several of the city’s major buildings, the cathedral of St-Pierre, the St-Jean-baptiste, it follows the ancient Grand’Rue, lined with half-timbered houses, narrow stone facades and beautiful town houses tumbling down the eastern flank of the spur to the Clain river.

The EPISCOPAL DISTRICT

Selassie Church

The Selassie Church, dedicated to the Melkite Greek Catholic Church, was opened in 1966. It is an architectural and religious center of the community.

St-Pierre Cathedral

The St-Pierre Cathedral is a well-preserved example of Romanesque architecture. It was built between 1137 and 1150 and has a west façade with three doors and a large rose window.

St-Jean-Baptiste Church

The St-Jean-Baptiste Church is a Romanesque church built between 1140 and 1150. It features a large west façade with three doors and a large rose window.

LOCAL HISTORIOGRAPHIC CENTER

The Local Historiographic Center (Centre Historiographique Local) is a museum dedicated to the history of Poitiers. It is located in the former Hôtel de Ville and includes exhibits on the city’s history, culture, and art.

MODERN CITY

A different view of Poitiers! A building’s design is the key to all the history and sociology of its period. This understanding is essential for urban regeneration and reconstruction that respects its heritage. This route introduces you to the iconic buildings and urban improvements undertaken since the nineteenth century.

The media library

The media library is a cultural center offering a wide range of audiovisual resources, including books, music, and videos. It also hosts regular events, such as lectures and workshops.

The modern city

The modern city of Poitiers is a blend of modern and historic architecture. It features a mix of architecture styles, from Art Deco to contemporary designs.

Church of Our Lady of Grace

The Church of Our Lady of Grace is a significant example of Gothic architecture. It was built between 1240 and 1340 and is known for its large west façade with three doors and a large rose window.

Royal Garden

The Royal Garden is a public garden located in the heart of Poitiers. It features a wide range of trees, shrubs, and flowers, as well as a pond and a small pavilion.

The Saint-Hilaire district

The Saint-Hilaire district is a historic neighborhood in Poitiers, known for its narrow streets and half-timbered houses. It features several notable landmarks, including the Church of St-Hilaire and the town hall.

Church of St-Hilaire

The Church of St-Hilaire is a Romanesque church built between 1140 and 1150. It features a large west façade with three doors and a large rose window.

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Palais des Congrès - Level 0
Palais des Congrès - Level 2

### At a Glance - Technical Programme of the Conference

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- SS04: Monitoring, Diagnosis & Prognostic Methods & Industrial Applications
- SS05: Digital Holography for Industrial Applications
- SS06: Industrial Wireless Networking
- SS07: Advanced Methodology and Applications of Industrial Software
- SS08: Human-Centric Sensing for Industrial Environments

**TT02. Cognitive and Computational Intelligence**

- SS09: Cyber-Physical Systems: From Technological Solutions to Real Industrial Applications
- SS10: High Dimensionality Reduction Techniques for Information and Industrial Applications
- SS11: Cyber-Physical Systems: From Technological Solutions to Real Industrial Applications
- SS12: Human-Centric Sensing for Industrial Environments

**TT03. Distributed, Embedded & Networked Control Systems**

- SS13: Knowledge Driven Digital Ecosystems & Technologies (DBN) and their Knowledge Management
- SS14: Industrial Informatics for Future Smart Buildings
- SS15: Advanced Sensor Networks for Harsh Environments
- SS16: Knowledge Based Systems: From Technological Solutions to Real Industrial Applications

**TT04. Real-Time and Embedded Computing**

- SS17: On Big Data Driven Digital Ecosystems & Technologies (DBN) and their Knowledge Management
- SS18: Internet of Things and Embedded Systems: From Technological Solutions to Real Industrial Applications
- SS19: Internet of Things and Embedded Systems: From Technological Solutions to Real Industrial Applications
- SS20: Internet of Things and Embedded Systems: From Technological Solutions to Real Industrial Applications

**TT10. Tools and Applications**

- SS21: On Big Data Driven Digital Ecosystems & Technologies (DBN) and their Knowledge Management
- SS22: Cyber-Physical Systems: From Technological Solutions to Real Industrial Applications
- SS23: Cyber-Physical Systems: From Technological Solutions to Real Industrial Applications
- SS24: Cyber-Physical Systems: From Technological Solutions to Real Industrial Applications

**TT11. Energy & Efficiency**

- SS25: On Big Data Driven Digital Ecosystems & Technologies (DBN) and their Knowledge Management
- SS26: Cyber-Physical Systems: From Technological Solutions to Real Industrial Applications
- SS27: Cyber-Physical Systems: From Technological Solutions to Real Industrial Applications
- SS28: Cyber-Physical Systems: From Technological Solutions to Real Industrial Applications

**TT12. Mechatronics and Robotics**

- SS29: On Big Data Driven Digital Ecosystems & Technologies (DBN) and their Knowledge Management
- SS30: On Big Data Driven Digital Ecosystems & Technologies (DBN) and their Knowledge Management
- SS31: On Big Data Driven Digital Ecosystems & Technologies (DBN) and their Knowledge Management
- SS32: On Big Data Driven Digital Ecosystems & Technologies (DBN) and their Knowledge Management

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**Notes:**

- **Room A:** TT01, TT02, TT03
- **Room B:** SS13 (I), SS13 (II), TT01
- **Room C:** SS29, TT02, SS27, SS04 (I), SS04 (II), SS25, SS30 (I), SS30 (II)
- **Room D:** SS23, SS20, SS16, SS18, SS21, SS07, SS15 (I), SS15 (II)
- **Room E:** SS06 (I), SS06 (II), SS06 (III), SS05, TT09, SS10 (II), SS10 (III)
- **Room F:** T1, T2, SS10 (I), SS17, SS12

**Thursday 21 July 2016**

- **TT05. Factory Automation**
  - SS10: Industrial Internet and Engineering of Automation Systems
  - SS11: High Dimensionality Reduction Techniques for Information and Industrial Applications
  - SS12: Human-Centric Sensing for Industrial Environments
  - SS13: Knowledge Based Systems: From Technological Solutions to Real Industrial Applications

- **TT06. Mechatronics and Robotics**
  - SS14: Cyber-Physical Systems: From Technological Solutions to Real Industrial Applications
  - SS15: Smart Technology for Wearable Health Care Systems
  - SS16: IoT, Physical vs Social Sensing and Data Analytics
  - SS17: Human-Centric Sensing for Industrial Environments

- **TT07. Mechatronics and Robotics**
  - SS18: Advanced Sensor Networks for Harsh Environments
  - SS19: 5G and Beyond: Mobi le Technologies and Applications for IoT
  - SS20: Internet of Things and Embedded Systems: From Technological Solutions to Real Industrial Applications
  - SS21: Cyber-Physical Systems: From Technological Solutions to Real Industrial Applications

- **TT08. Energy & Efficiency**
  - SS22: Automotive Communications
  - SS24: Applied Modelling, Numerical Simulation, Computational and Optimization

- **TT09. Mechatronics and Robotics**
  - SS26: Automotive Communications
  - SS28: Applied Modelling, Numerical Simulation, Computational and Optimization
  - SS29: Advanced Analytical Methods and Knowledge Management in Manufacturing Ecosystems

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**Registration Desk**

- **Registration:**
  - Room A (Monday)
  - Room B (Tuesday)
  - Room C (Wednesday)
  - Room D (Thursday)

**Plenary Sessions**

- **Plenary Session:**
  - TT01: Technologies and Infrastructures
  - TT02: Cognitive and Computational Intelligence
  - TT03: Distributed, Embedded & Networked Control Systems
  - TT04: Real-Time and Embedded Computing
  - TT05: Factory Automation
  - TT06: Mechatronics and Robotics
  - TT07: Energy & Efficiency
  - TT08: Mechatronics and Robotics
  - TT09: Mechatronics and Robotics
  - TT10: Tools and Applications
  - TT11: Energy & Efficiency
  - TT12: Mechatronics and Robotics

**Closing Session**

- **Closing Session:**
  - TT01: Technologies and Infrastructures
  - TT02: Cognitive and Computational Intelligence
  - TT03: Distributed, Embedded & Networked Control Systems
  - TT04: Real-Time and Embedded Computing
  - TT05: Factory Automation
  - TT06: Mechatronics and Robotics
  - TT07: Energy & Efficiency
  - TT08: Mechatronics and Robotics
  - TT09: Mechatronics and Robotics
  - TT10: Tools and Applications
  - TT11: Energy & Efficiency
  - TT12: Mechatronics and Robotics
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