The 28th IEEE International Symposium on Industrial Electronics

FINAL PROGRAM

Pinnacle Hotel Harbourfront
Vancouver, BC, Canada
June 12-14, 2019
# Table of Contents

Welcome Message from General Chairs ................................................................................................................ 2
Organizing Committee .............................................................................................................................................. 3
Technical Track Organizers .................................................................................................................................... 4
Special Session Organizers ..................................................................................................................................... 5
General Information .................................................................................................................................................. 7
Program Information ................................................................................................................................................ 8
Session Chairs ........................................................................................................................................................ 9
Program Overview .................................................................................................................................................. 10
Maps of Pinnacle Hotel Harbourfront .................................................................................................................. 13
   Cordova Floorplan .................................................................................................................................................. 13
   2nd Floor Floorplan ............................................................................................................................................... 14
   3rd Floor Floorplan ............................................................................................................................................... 15
Plenary Sessions ...................................................................................................................................................... 16
   Advanced Alarm Management and Design ........................................................................................................ 16
   New Filterless Power Electronics Converters for Renewable Energy Integration and Electrified Transportation Systems..................................................................................................................... 18
Industry Forum Sessions ....................................................................................................................................... 19
   Artificial Intelligence and its Applications to Robotics and Automation .......................................................... 19
   5G and Smart-X Applications .......................................................................................................................... 19
Workshops ............................................................................................................................................................. 20
   Students and Young Professionals Activity ...................................................................................................... 20
   Reliable and High-Performance Wireless Systems for Factory Automation ......................................................... 21
Oral Sessions ........................................................................................................................................................... 22
   June 12, Wednesday ......................................................................................................................................... 22
   June 13, Thursday .............................................................................................................................................. 32
   June 14, Friday ................................................................................................................................................... 47
Index of Authors and Chairs .................................................................................................................................. 66
It is our most sincere pleasure and honor to welcome you to IEEE-ISIE 2019, the 28th IEEE International Symposium on Industrial Electronics (ISIE), to be held in June 2019 in Pinnacle Hotel Harbourfront, Vancouver, BC, Canada. Throughout the past twenty-seven years, IEEE-ISIE has excelled in showcasing creativity, in providing an ideal environment for technical exchange and networking, and most importantly in highlighting the latest advances in the broad and exciting field of industrial electronics and related areas. To address the latest achievements, IEEE-ISIE 2019 offers a rich and comprehensive menu for professionals.

Vancouver is one of the most beautiful cities in Canada and in the world. There are countless opportunities to explore heritage architecture, colorful gardens, traditions like afternoon tea, and outdoor adventure. We’d love to share the beautiful city and all it offers with you and your family. Welcome to join us at IEEE-ISIE 2019 and help make it yet another wonderful event filled with research discussions, social and networking opportunities and fostering new connections.

Taking this opportunity, we sincerely thank all the individuals who have contributed to the organization and support of IEEE-ISIE 2019. Special thanks are extended to our colleagues in IES, the organizing committee members, session chairs, and the student volunteers for their warm, thoughtful service to all participants. We also would like to express our high appreciation and gratitude to distinguished plenary speakers, and all of the authors and participants. All of your contribution and support will make IEEE-ISIE 2019 a fruitful and memorable event!

We hope you enjoy your time at IEEE-ISIE 2019 in Vancouver.

Y. Shi, M.-Y. Chow, J. Rodriguez-Andina
General Chairs, ISIE 2019
Honorary Chairs
Kamal Al-Haddad
Xinghuo Yu
Leopoldo Garcia Franquelo

Students & Young Professionals (S&YP) Forum Co-Chairs
Marek Jasinski
Christian Rojas
Dmitri Vinnikov

General Chairs
Yang Shi
Mo-Yuen Chow
Juan Jose Rodriguez-Andina

Publicity Co-Chairs
Xinkai Chen
Nihal Kularatna
Huiping Li

Technical Program Chairs
Luis Gomes
Antonio Luque
Milos Manic

Finance Chairs
Peter Palensky
Chao Shen
Allen Chen

Special Session Chairs
Dong Yue
Maria Valla
Roberto Oboe
Makoto Iwasaki
Jinhu Lu

Local Chairs
Ryozo Nagamune
Bingxian Mu
Ana Laura Gonzalez-Rios

Tutorial Chairs
Federio Baronti
Marcian Cirstea
Huazhen Fang
Hao Ma

Publication Chairs
Andres Nogueiras
Daniela Constantinescu

International Advisory Board
Bimal K. Bose
Armando Walter Colombo
Huijun Gao
Joachim Holtz
Marian Kazmierkowski
Okyay Kaynak
Kouhei Ohnishi
The 28th International Symposium on Industrial Electronics (ISIE)
Vancouver, Canada, June 12-14, 2019

Technical Track Organizers

**TT01** Power Systems and Smart Grid
*Pierluigi Siano, Stanimir Valtchev, Mingxi Liu*

**TT02** Electrical Machines and Industrial Drives
*Franck Betin, Andrea Cavagnino, Leila Parsa*

**TT03** Control Systems and Applications
*Michael Ruderman, Zhenwei Cao, Jiahu Qin*

**TT04** Power Electronics and Energy Conversion
*Haitham Abu-Rub, Seddik Bacha, Chandan Chakraborty, Fang Fang*

**TT05** Renewable Electric Energy Conversion, Processing and Storage
*Concettina Buccella, Chengbin Ma, Xinbo Ruan*

**TT06** Mechatronics and Robotics
*Yasuharu Kunii, Peter Korontzi, Toshiyuki Murakami, Kang-Hyun Jo*

**TT07** Distributed and Networked Control Systems for Industrial Applications
*Wangli He, Huazhen Fang, Feng Xiao*

**TT08** Industrial Informatics and Cloud Computing
*Gerhard Petrus Hancke, Mikael Gidlund, Valeriy Vyatkin, Wing Kuen Ling*

**TT09** Factory Automation and Industrial Informatics
*Johan Akerberg, Lucia Lo Bello, Stamatis Karnouskos*

**TT10** Electronic Systems-on-Chip and Embedded Systems
*Michael Hilairet, Marc Perron, Carmen Aracil, Eric Monmasson, Ray Cheung*

**TT11** Computational Intelligence
*Kang-Hyun Jo, Wei He, Chao Shen*

**TT12** Sensors, Actuators and Micro-/Nanotechnology
*Sehoon Oh, Yasutaka Fujimoto, Peter Xu, Aleksander Malinowski*

**TT13** Automotive Technology
*Hui Zhang, Dongpu Cao, Fei Gao*

**TT14** Building Automation, Control and Management
*Jan Haase, Joern Ploennigs, Kim Fund Tsang*

**TT15** Engineering Education
*Oscar Lucía, Joao Martins, Andreja Rojko, Li Qiu*

**TT16** Entrepreneurship and Management – Challenges for Industrial Electronics
*Michael Condry, Robert Bierwolf*

**TT17** Industrial Cyber-Physical Systems
*Armando Walter Colombo, Huiping Li, Jose Lastra*
SS01  Advanced Power Electronics for Resilient Active Networks and Microgrids  
        Amjad Anvari-Moghaddam, Pooya Davari

SS02  Machine Vision, Communication and Control  
        Oleg Sergiyenko, Julio C. Rodríguez-Quíñonez, Wendy Flores-Fuentes, Moises Rivas-Lopez, Lars Lindner

SS03  Advances in Data-Driven Process Monitoring and Control for Complex Industrial Systems  
        Hao Luo, Zhiwen Chen, Yuri A. W. Shardt, Okyay Kaynak

SS04  Distributed Resilience Control, Privacy Protection, and Coordination for Complex Cyber-Physical Networks  
        Guanghui Wen, Haibo Du, Zhi-Wei Liu

SS05  Emerging Technologies for Advanced Motion Control and Mechatronics  
        Michael Ruderman, Sehoon Oh

SS06  Connected and Autonomous Vehicles  
        Max Mauro Dias Santos, Zonghua Gu

SS07  Advanced Control for Energy Efficient Powertrain  
        Hui Zhang, Shaohua Li, Chao Wei, Lipeng Zhang

SS08  New Trends of Electrified Vehicles  
        Hui Zhang, Yi Yang, Weida Wang, Aijuan Li

SS09  Battery Modeling and Control with Industrial Applications  
        Huazhen Fang, Ziang Zhang, Jian Chen, Chengbin Ma

SS10  Advanced Multilevel Converters with DC Capacitors: Topology, Modulation, Voltage Balancing, and Control Strategies  
        Hani Vahedi, Mohamed Trabelsi, Kamal Al-Haddad

SS11  Advances in Battery Charging Techniques for Electric Vehicles  
        R. Sudharshan Kaarthik, Deepak Gunasekaran

SS12  Z-Source Converters: Topologies, Modulation and Control Strategies, and Their Applications  
        Ebrahim Babaei, Kai Sun

SS13  Virtual Synchronous Machines  
        Miguel Torres, Mauricio Aredes, Emanuel van Emmerik, André Ramos de Castro, Bruno França

SS14  Wide Band Gap Devices in Electric Vehicles  
        Carlo Cecati, Gianluca Gatto, Sheldon S. Williamson, Milad Moradpour, Santi Agatino Rizzo

SS15  Advanced Control for Uncertain Systems with Application to Industrial Electronics  
        Huihui Pan, Weichao Sun, Jinyong Yu, Huijun Gao

SS16  Smart Buildings and Prosumers for Management and Energy Sharing  
        Djaffar Ould Abdeslam, Dirk Benyoucef
<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Organizers/Contributors</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS17</td>
<td>Socio-Cyber-Pysical Energy Systems</td>
<td>Peter Palensky, Hiroaki Nishi</td>
</tr>
<tr>
<td>SS18</td>
<td>Impedance Source Converters-Improved Topologies, Advanced Control, and Emerging Applications</td>
<td>Yushan Liu, Nimesh Vamanan, Sheldon Williamson</td>
</tr>
<tr>
<td>SS19</td>
<td>Consumer Wireless Technologies and Associated Intelligent Information Processing for Industrial Applications</td>
<td>Adnan M. Abu-Mahfouz, Dong Yue, Mithun Mukherjee, Gerhard P. Hancke</td>
</tr>
<tr>
<td>SS20</td>
<td>Battery and Super-Capacitor Energy Storage Systems for Renewable Energy Applications</td>
<td>Nicolas Muller, Samir Kouro, Pericle Zanchetta</td>
</tr>
<tr>
<td>SS21</td>
<td>Resilient and Networked Control of Complex Cyber-Physical Systems</td>
<td>Bin Zhang, Yu Zhao, Bohui Wang, Mo-Yuen Chow</td>
</tr>
<tr>
<td>SS22</td>
<td>Human-Assistive Technologies in the Real World</td>
<td>Daisuke Chugo, Sho Yokota, Gabor Sziebig, Mihoko Niitsuma, Hiroshi Hashimoto</td>
</tr>
<tr>
<td>SS23</td>
<td>Solid-State Transformers Technology and Its Applications</td>
<td>Marcelo A. Perez, Mariusz Malinowski, Freddy Flores</td>
</tr>
<tr>
<td>SS25</td>
<td>Digital Holography for Industrial Applications</td>
<td>Peter Wai Ming Tsang, Ting-Chung Poon</td>
</tr>
<tr>
<td>SS26</td>
<td>Energy Storage Systems for Resilience and Robustness Improvement in Smart Grid and Electric Mobility</td>
<td>Alfonso Damiano, Federico Baronti</td>
</tr>
<tr>
<td>SS27</td>
<td>Electric Vehicle Charging Systems and Management</td>
<td>Kim-Fung TSANG, Chengbin Ma, Mo-Yuen Chow</td>
</tr>
<tr>
<td>SS29</td>
<td>Energy Storage Management Systems for Transportation Electrification</td>
<td>Max Mauro Dias Santos, Ritesh Kumar Keshri</td>
</tr>
<tr>
<td>SS30</td>
<td>Planning, Control and Protection for Power Quality and Reliability Improvement in Smart Grids and Microgrids</td>
<td>Farhad Shahnia, Reza Razzaghi, Ho Ching Lu, Xiangjing Su, Mehdi Savaghebi</td>
</tr>
</tbody>
</table>
Official Language
Presentations and conference activities will be conducted in the English language.

Conference Location
The Conference location is the Pinnacle Hotel Harbourfront (PHH). PHH is situated in downtown Vancouver at the following civic address:
1133 West Hastings Street, Vancouver, BC, V6E 3T3
Tel: 1-844-337-3118
https://www.pinnacleharbourfronthotel.com/

Wireless Internet Access
WIFI is complimentary throughout the hotel. The name of the WIFI in meeting rooms is “Pinnacle Conference”. No password is required to connect.

Registration
The Registration desk is located on the lobby of the Pinnacle Harbourfront Ballroom. Registration will be open on Tuesday, June 11, 2019, from 2:00 pm - 8:00 pm and on Wednesday - Friday, June 12 – June 14, 2019, from 7:00 am - 9:00 pm.

Name Badges
Please wear your name badges at all times to allow entry to the plenary sessions, technical sessions, coffee breaks, welcome reception, and banquet.

Proceedings
Each registrant will receive a flash memory drive containing the proceedings.

Instructions for Presentations
Each paper will be allotted a total of 20 minutes, with 15 minutes for oral presentation and 5 minutes for questions and changeover of the speaker. These time limits will be strictly enforced.

Each session room is equipped with a screen projector and the computer with Microsoft PowerPoint and Adobe Reader. It is the responsibility of the presenters to check the compatibility of their presentations with these softwares. Alternatively, the presenters can use their own laptops. It is essential to meet the session Chair and other speakers in the session room 10 minutes before the start of your session.
Program Information

Opening Ceremony
The congress Opening Ceremony will be held on Wednesday, June 12 from 08:00-08:20 in the Pinnacle Harbourfront Ballroom.

Plenary Lectures
Three Plenary Lectures will be held on Wednesday, June 12 from 08:20-09:30 and Thursday, June 13 from 08:00-09:10 and 09:10-10:20.

Industry Forum Sessions
Two Industry Forum sessions will be held on Wednesday, June 12 from 09:30-12:10 in the Pinnacle Harbourfront Ballroom. Industry Forum is an IES program for Industry to engage with research in a productive manner. Industry speakers are invited to discuss industry, technology directions, and, most importantly, challenges for the companies.

Women in Engineering (WiE)
The WiE Workshop will be held on Thursday, June 13 from 13:30-15:30 in Pinnacle Harbourfront Ballroom. This Workshop program will be a Technical Workshop, to foster joint R&D activities between women engaged in research activities, in companies and in academy. This Workshop, that is supported by the Industrial Electronics Society, targets women engineers, from industry and academia, and female students (MD, PhD) working in the fields covered by IES. This Workshop program will offer keynote speeches by prominent female scientists and professionals and a panel discussion with open forum.

Welcome Reception
The Welcome Reception will be held on Wednesday, June 12, from 19:00-21:00, in the Pinnacle Harbourfront Ballroom.

Coffee Breaks and Lunches
Coffee Breaks and Lunches are included in the registration fees. Coffee breaks and lunches will be served in the foyers of the Cordova Floorplan and the 2nd Floor Floorplan.

Banquet and Closing Ceremony
The congress Banquet and Closing Ceremony will be held on Thursday, June 13, from 7:00pm-9:30pm, in Pinnacle Harbourfront Ballroom.

Liquor Laws
The legal drinking age in BC is 18. If someone looks to be under the legal drinking age, the bar tenders will ask for 2 valid pieces of ID. No outside beverages are permitted in Banquet/Reception, all beverages must be supplied by the hotel. The only exception we make is dinner wine, which carries a $20 CAD corkage fee per bottle.
**Manage the Session**
Session Chairs are the managers of their sessions; this is one of their most important duties. If a speaker starts to run over time, the Session Chair should signal a 2-minute warning, and if the speaker does not respond, it is acceptable to politely interrupt the speaker and thank him/her for the presentation. At the beginning of the session, Session Chairs should remind the audience to turn off cell phones as a courtesy to speakers and to leave the room if these devices must be used.

**Introduce the Speakers**
Chairs should properly introduce each speaker, mentioning the name of the presenter, his/her affiliation or organization, and the title of his/her presentation.

**Thank the Speakers**
Once the presentation is completed, the Session Chair should thank the speaker for presenting his/her paper.

**Manage the Question and Answer Period**
The Session Chairs should manage the questions, ensuring that as many audience members as possible have a chance to ask questions within the allotted time period. It is important to end the question and answer period on time, and to allow the next presenter to set up their presentation and be ready to begin on time.

**Select the Best Presentation**
The Session Chairs should select the Best Presentation in your session and return the form to the Registration Desk.
## Wednesday, June 12

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00 - 08:20</td>
<td>Opening Ceremony</td>
</tr>
<tr>
<td>08:20 - 09:30</td>
<td>Plenary Lecture: Advanced Alarm Management and Design</td>
</tr>
<tr>
<td>09:30 - 10:40</td>
<td>Industry Forum: Artificial Intelligence and its Applications to Robotics and Automation</td>
</tr>
<tr>
<td></td>
<td>Coffee Break</td>
</tr>
<tr>
<td>11:00 - 12:10</td>
<td>Industry Forum: 5G and Smart-X Applications</td>
</tr>
</tbody>
</table>

### Lunch 12:30 – 13:30
- Ballroom A, B, C
- Port of San Francisco
- Salon C
- Salon D
- Salon E
- Port of Vancouver
- Salon F
- Port of Hong Kong
- Port of New York
- Port of Singapore

### SY BAW3 - Young Professionals and Students Forum, Part I
- SS24 PFW3 - Modeling, Design and Implementation of Power Electronic Components and Systems for Enhanced Reliability
- TT06 SCW3 - Mechatronics and Robotics, Part I
- TT07 SDW3 - Distributed and Networked Control Systems for Industrial Applications, Part I
- SS25 SEW3 - Digital Holography for Industrial Applications, Part I
- SS10 PVW3 - Advanced Multilevel Converters with DC Capacitors: Topology, Modulation, Voltage Balancing, and Control Strategies, Part I
- TT10 SFW3 - Electronic Systems-on-Chip and Embedded Systems
- TT11 PHW3 - Computational Intelligence, Part I
- TT13 PNW3 - Automotive Technology, Part I
- SY BAW3 - Young Professionals and Students Forum, Part I

### Coffee Break
- 15:40 – 16:20
- 16:00 – 16:20
- 16:00 – 18:20

### TT08 PSW4 - Industrial Informatics and Cloud Computing
- SS02 PFW4 - Machine Vision, Communication and Control
- TT06 SCW4 - Mechatronics and Robotics, Part II
- TT07 SDW4 - Distributed and Networked Control Systems for Industrial Applications, Part II
- SS25 SEW4 - Digital Holography for Industrial Applications
- SS10 PVW4 - Advanced Multilevel Converters with DC Capacitors: Topology, Modulation, Voltage Balancing, and Control Strategies, Part II
- TT11 PHW4 - Computational Intelligence, Part II
- TT13 PNW4 - Automotive Technology, Part II
- TT08 PSW4 - Industrial Informatics and Cloud Computing

### Welcome Reception 19:00 – 21:00
### Thursday, June 13

<table>
<thead>
<tr>
<th>Time</th>
<th>Ballroom A</th>
<th>Ballroom B</th>
<th>Ballroom C</th>
<th>Port of San Francisco</th>
<th>Salon C</th>
<th>Salon D</th>
<th>Salon E</th>
<th>Port of Vancouver</th>
<th>Salon F</th>
<th>Port of Hong Kong</th>
<th>Port of New York</th>
<th>Port of Singapore</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00-09:10</td>
<td>Plenary Lecture: An Advanced Fault-tolerant Control Strategy: Performance-Driven and Plug-and-play Realization</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:50-12:30</td>
<td>Coffee Break</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13:30-15:30</td>
<td>Lunch 12:30 – 13:30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16:00-17:00</td>
<td>Coffee Break</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16:00-18:20</td>
<td>Banquet 19:00–21:00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>Ballroom A</td>
<td>Ballroom B</td>
<td>Ballroom C</td>
<td>Port of San Francisco</td>
<td>Salon C</td>
<td>Salon D</td>
<td>Salon E</td>
<td>Port of Vancouver</td>
<td>Salon F</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>------------</td>
<td>------------</td>
<td>------------</td>
<td>------------------------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
<td>-------------------</td>
<td>---------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>08:00-10:20</td>
<td>TT04 BAF1 - Power Electronics and Energy Conversion, Part I</td>
<td>TT04 BBF1 - Power Electronics and Energy Conversion, Part II</td>
<td>TT01 BCF1 - Power Systems and Smart Grid, Part II</td>
<td>TT02 PFF1 - Electrical Machines and Industrial Drives, Part III</td>
<td>TT03 SCF1 - Control Systems and Applications, Part II</td>
<td>TT03 SDF1 - Control Systems and Applications, Part V</td>
<td>SS26 SEF1 - Energy Storage Systems for Resilience and Robustness Improvement in Smart Grid and Electric Mobility</td>
<td>TT17 PVF1 - Industrial Cyber-Physical Systems</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13:30-15:30</td>
<td>TT03 SCF2 - Control Systems and Applications, Part III</td>
<td>TT09 SDF2 - Factory Automation and Industrial Informatics</td>
<td>SS11 SEF2 - Advances in Battery Charging Techniques for Electric Vehicles</td>
<td>SS13 PVF2 - Virtual Synchronous Machines</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15:40-17:00</td>
<td>SS16 BAF4 - Smart Buildings and Prosumers for Management and Energy Sharing</td>
<td>TT12 BBF4 - Sensors, Actuators and Micro-Nanotechnology</td>
<td>TT04 BCF4 - Power Electronics and Energy Conversion, Part IX</td>
<td>TT02 PFF4 - Electrical Machines and Industrial Drives, Part VI</td>
<td>TT03 SCF4 - Control Systems and Applications, Part V</td>
<td>TT04 SDF4 - Control Systems and Applications, Part VII</td>
<td>TT04 SFF4 - Power Electronics and Energy Conversion, Part VIII</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Map: Cordova Floorplan
Map: 2nd Floor Floorplan
Map: 3nd Floor Floorplan
Plenary Lecture 1:

Advanced Alarm Management and Design

Professor Tongwen Chen

Department of Electrical and Computer Engineering, University of Alberta, Canada
8:20 am – 9:30 am, Wednesday, June 12, Pinnacle Harbourfront Ballroom

Abstract: In operating industrial facilities, alarm systems are configured to notify operators about any abnormal situation. The industrial standards (EEMUA and ISA) suggest that on average an operator should not receive more than six alarms per hour. This is, however, rarely the case in practice as the number of alarms each operator receives is far more than the standard.

There exist strong industrial needs and economic benefits for better interpreting and managing the alarms, and redesigning the alarm systems to reduce false and nuisance alarms, and increase the alarm accuracy. In this talk, we plan to summarize our recent work in this new area, targeting a quantitative and data based approach, called “alarm analytics,” and presenting a new set of tools for alarm visualization, performance evaluation and analysis, and rationalization design, thereby to help industrial processes to comply with the new standards.

Topics to be discussed include:
• How to present alarm information from a unit/plant/area?
• How to quantify and improve alarm accuracy and alarm chattering?
• How to study and cluster historical alarm floods?
• How to capture connectivity and causality from process and alarm data?
• What is recent development on advanced alarm monitoring?

The tools have been tested with real industrial data and used by process engineers in Canada and elsewhere.

Tongwen Chen is currently a Professor and Tier 1 Canada Research Chair in Intelligent Monitoring and Control at the University of Alberta, Canada. He received the BEng degree in Automation and Instrumentation from Tsinghua University (Beijing) in 1984, and the MAsc and PhD degrees in Electrical Engineering from the University of Toronto in 1988 and 1991, respectively. His research interests include computer and network-based control systems, event triggered control, process safety and alarm systems, and their applications to the process and power industries. He is a Fellow of IEEE, IFAC, as well as Canadian Academy of Engineering.
Plenary Lecture 2:

An Advanced Fault-Tolerant Control Strategy: Performance-Driven and Plug-and-Play Realization

Professor Steven X. Ding

Institute for Automatic Control and Complex Systems (AKS), University of Duisburg-Essen, Germany
8:00 am – 9:10 am, Thursday, June 13, Pinnacle Harbourfront Ballroom

It is state of the art that fault-tolerant control algorithms are triggered by a successful diagnosis of faults in system components. Recently, performance-driven fault detection strategies have been proposed and successfully integrated into fault-tolerant-control systems. In combination with play-and-play strategy, the new fault-tolerant control strategy allows a reliable detection of system performance degradation caused by faults or faulty operations, and results in optimal recovery of system performance.

Steven X. Ding received Ph.D. degree in electrical engineering from the Gerhard-Mercator University of Duisburg, Germany. He was a R&D engineer at Rheinmetall GmbH in Germany, became a professor of control engineering at the University of Applied Science Lausitz in Senftenberg, and served as a vice president of this university during 1998 – 2000. Since 2001, he has been a chair professor of control engineering and the head of the Institute for Automatic Control and Complex Systems (AKS) at the University of Duisburg-Essen. His research interests are model-based and data-driven fault diagnosis, control and fault-tolerant systems as well as their applications in industry with a focus on automotive systems, chemical processes, renewable energy systems and distributed automatic control systems.
High penetration of power electronic converters in modern power conversion systems and Microgrids to manage and control the power flow between multiple energy sources and loads cause serious problems to both the energy source and power electronic converter due to the presence of the passive filters such as LC, and LCL and other type of filters. These costly, bulky, heavy, and noisy components with potential to resonance risk are nowadays abundantly used in the actual schemes as temporary energy tanks to smooth energy transfers and attenuate voltage and current fluctuations at low as well as at higher switching frequencies. These reactive components, when used at large scale, will constitute a serious obstacle to the proliferation and use of such a smart grid power devices, mainly because they can create uncontrolled exchange of reactive power, limited bandwidth, and time varying resonance favoring uncontrolled circulating currents that can distort supply voltage and alter the power quality. Moreover, exciting the permanent circulating current emerged by mentioned reactive components leads to increase requisite nominal power of semiconductor devices and power loss, as well as decrease the reliability of the power electronic converters.

The new family of power converters as well as suggested modulation methods will be discussed presented along with case studies showing the impact of such high bandwidth type of converters on enhancing actual topologies. Moreover, the modeling and control of these new topologies will be presented for various industrial applications including renewable energy resources and electrified transportation systems.

Kamal Al-Haddad

Eng. MSc.A. PhD, Fellow of IEEE, since June 1990, has been a professor with the École de Technologie Supérieure (ETS), Montreal, QC, where he has been the holder of the senior Canada Research Chair in Electric Energy Conversion and Power Electronics since 2002. Professor Al-Haddad transferred 24 technologies to the industry dealing with developing power electronics converter technologies for various industrial applications. He supervised 162 Ph.D. and M.Sc. students, co-authored more than 600 papers, two books and several book chapters. He is an associate editor of the IEEE Transactions on Industrial Informatics and IES Distinguished Lecturer of the IEEE-IES; he served as IES president 2016-2017 and actually serving as junior past president and chairman of the nomination and appointment committee (NAC). Professor Kamal Al-Haddad is the recipient of the IEEE IES DR.-ING. EUGENE MITTELSTADT ACHIEVEMENT AWARD. He is a Fellow of the Royal Society of Canada (RSC).
Industry Forum Session 1:

**Artificial Intelligence and its Applications to Robotics and Automation**

*9:30 am – 10:40 am, Wednesday, June 12, Pinnacle Harbourfront Ballroom*

Practical applications of Artificial Intelligence have been increasingly demonstrated the last years especially in the domain of intelligent and autonomous cyber-physical systems. Especially in robotics applications for both industry and consumers, the advances bring us closer than ever to the machine intelligence visions. The aim of this session is to present, demonstrate and discuss key advances in AI and its specific industrial applications in robotics and automation.

Industry Forum Session 2:

**5G and Smart-X Applications**

*11:00 am – 12:10 am, Wednesday, June 12, Pinnacle Harbourfront Ballroom*

New communication paradigms such as 5G are becoming a reality. The new capabilities 5G introduction at scale brings such as Enhanced Mobile Broadband (eMBB), Ultra Reliable Low Latency Communications (URLLC), and Massive Machine Type Communications (mMTC), have the potential to empower a new generation of IoT relevant applications and services, collectively referred to as smart-x e.g. smart cities, smart grid, smart health etc. However, for 5G to succeed, key issues such as infrastructure setup, security, safety, privacy, full-integration of its capabilities to new applications, etc. need to be realized. This session aims at providing a better understanding of the challenges and opportunities that 5G brings.
Workshop on

Students and Young Professionals Activity

13:30 – 17:00, Wednesday, June 12 and Thursday, June 13, Pinnacle Harbourfront Ballroom

The IEEE IES Students and Young Professionals Activity Committee would like to introduce a project of scientific and social Activities Program that support IEEE IES conferences Chairpersons to organize a great event and attract more attendees.

The offer is focused, but not limited to the IEEE Students and Young Professionals. Our support indirectly can help Supervisors, Mentors and Professors that would like to promote interesting work of their younger colleagues. Mentors can support their mentee not only by co-authoring scientific papers but also by advising them to join the IEEE IES to be able to attend IES conferences.

Wednesday, June 12

13:30 - 14:15 Message to Students and Young Professionals from the IES

14:15 - 15:45 Invited speakers under the Students and Young Professionals Tutorial and Industry Link

15:45 - 16:45 3 Minutes Speech Session of IES - Students and Young Professionals recipients

Thursday, June 13

13:30 - 17:00 Students and Young Professionals Forum

19:00 – 21:00 Party and meet-up for Students and Young Professionals
Workshop on

**Reliable and High-Performance Wireless Systems for Factory Automation**

*8:00 am -5:00 pm, Thursday, June 13 and 8:00 am – 12:30 pm, Friday, June 14 at Salon F*

The purpose of this workshop is to provide an opportunity for representatives from industry, academia, and government to work closely together to determine the best approach to develop reliable and high performance wireless systems for factory automation. The output of this workshop will help lead to the development of guidelines for wireless systems that best meet the needs of this industry. Through collaborations between industry, government and academia, high performance and reliability of factory operations can be achieved, while realizing the benefits of deploying wireless technologies in factory environments. Panelists will present their perspectives on wireless performance requirements and key use cases that will be critical to factory automation with audience participation in the discussion.

<table>
<thead>
<tr>
<th>Invited Speakers</th>
<th>Title of Talk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Richard Candell</td>
<td>Trustworthy Wireless Systems for Factory Automation</td>
</tr>
<tr>
<td>Zhibo Pang</td>
<td>Last Mile Connectivity: The Bottleneck of Mission Critical Industrial IoT</td>
</tr>
<tr>
<td>Dave Cavalcanti</td>
<td>Wireless Time Sensitive Networking: Next Generation Wireless for Time-Critical Industrial Systems</td>
</tr>
<tr>
<td>Marty Ryan</td>
<td>Shipbuilding Industry Digital Thread – What it Takes to Move the Data</td>
</tr>
<tr>
<td>Hans-Peter Bernhard</td>
<td>Secure Time Sensitive Wireless Factory Communications Networks</td>
</tr>
<tr>
<td>Iñaki Val</td>
<td>Industrial Wireless Use Cases and their Needs Concerning RF Propagation Environment, Real-Time Operation, and Time Synchronization Requirements</td>
</tr>
<tr>
<td>Nada Golmie</td>
<td>5G for Industrial IoT: Hype or Killer App?</td>
</tr>
<tr>
<td>Justine Shade</td>
<td>Selection of Suitable Wireless Systems for Factory Automation Applications</td>
</tr>
</tbody>
</table>
**Oral Sessions on Wednesday, June 12**

**SS24 - PFW3**

**Modeling, Design and Implementation of Power Electronic Components and Systems for Enhanced Reliability**

*Room: Port of San Francisco*  
*Time: 13:30 – 15:30, June 12*  
*Co-Chair: Deepak Ronanki and Amir Sajjad Bahman*

**A Methodology for Rapid Estimation of Junction Temperature of Power Semiconductors Considering Mission Profiles**

*Mr. Omid Alavi, K.N. Toosi University of Technology, Iran*  
*Prof. Amir Sajjad Bahman, Aalborg University, Denmark*

*Time: 13:30 – 13:50*  
*VD-001732*

**Capacitance Estimation in Modular Multilevel Converters under Nearest Level Modulation Scheme**

*Mr. Deepak Ronanki, University of Ontario Institute of Technology, Canada*  
*Prof. Sheldon Williamson, University of Ontario Institute of Technology, Canada*

*Time: 13:50 – 14:10*  
*VD-011398*

**Bilinear Control of DC-DC Boost Converter in the Presence of Gaussian Disturbance of Load**

*Mr. Youqi Guo, University of Wisconsin-Milwaukee, USA*  
*Dr. Saroj Biswas, Temple University, USA*  
*Dr. Lingfeng Wang, University of Wisconsin-Milwaukee, USA*

*Time: 14:10 – 14:30*  
*VD-009539*

**Multi-Winding Transformer based High Resolution Power Flow Controller**

*Ms. Diksha Kumari, Centre for Energy Studies, IIT Delhi, India*  
*Dr. Sumit Chattopadhyay, Centre for Energy Studies, IIT Delhi, India*  
*Dr. Ashu Verma, Centre for Energy Studies, IIT Delhi, India*

*Time: 14:30 – 14:50*  
*VD-010006*

**Simulation-Based Optimization of a Piezoelectric Energy Harvester Using Artificial Neural Networks and Genetic Algorithm**

*Mr. Shahriar Bagheri, University of Manitoba, Canada*  
*Dr. Nan Wu, University of Manitoba, Canada*  
*Prof. Shaahin Filizadeh, University of Manitoba, Canada*

*Time: 14:50 – 15:10*  
*VD-013242*

**TT06 - SCW3**

**Mechatronics and Robotics, Part I**

*Room: Salon C*  
*Time: 13:30 – 15:30, June 12*  
*Co-Chair: Ya-Jun Pan and Suruz Miah*

*Time: 13:30 – 13:50*  
*VD-000329*

**Semantic Navigation Mapping from Aerial Multispectral Imagery**
TT07 - SDW3
Distributed and Networked Control Systems for Industrial Applications, Part I

Room: Salon D
Time: 13:30 – 15:30, June 12
Co-Chair: Li Qiu and Changxin Liu

Distributed Dual Subgradient Method with Double Averaging: Application to QoS Optimization in Wireless Networks

Dr. Changxin Liu, University of Victoria, Canada
Dr. Haiping Li, Northwestern Polytechnical University, China
Dr. Yang Shi, University of Victoria, Canada

A DMPC-Based Approach to Circular Cooperative Path-following Control of Unmanned Underwater Vehicles

Mr. Juwei Hu, Northwestern Polytechnical University, China
Mr. Bo Jn, Northwestern Polytechnical University, China
Prof. Haiping Li, Northwestern Polytechnical University, China
Prof. Weisheng Yan, Northwestern Polytechnical University, China
Prof. Mingyong Liu, Northwestern Polytechnical University, China
Prof. Rongxin Cui, Northwestern Polytechnical University, China

A Resource-aware Distributed Kalman Filter with Stochastic Communication Based on Site-percolation Model

Prof. Chunxi Yang, Kunming University of Science and Technology, China
Mr. Jie Zhu, Kunming University of Science and Technology, China
Mrs. Jing Zhang, Kunming University of Science and Technology, China
Mr. Lingyun Huang, Kunming University of Science and Technology, China

Integrity Attack with Takeover Local Object for Multi-agent Cluster System

Mr. Jiniao Lai, College of Mechatronics and Control Engineering, Shenzhen University, China
Prof. Bo Zhang, College of Mechatronics and Control Engineering, Shenzhen University, China
Prof. Li Qiu, College of Mechatronics and Control Engineering, Shenzhen University, China
Dr. Shiyu Chen, College of Mechatronics and Control Engineering, Shenzhen University, China
Prof. Rong Yang, College of Mechatronics and Control Engineering, Shenzhen University, China
Prof. Jianping Yuan, College of Mechatronics and Control Engineering, Shenzhen University, China

Stability Analysis of Networked Multi Station Cooperative Motion System

Prof. Li Qiu, College of Mechatronics and Control Engineering, Shenzhen University, China
The 28th International Symposium on Industrial Electronics (ISIE)
Vancouver, Canada, June 12-14, 2019

Mr. Lun He, College of Mechatronics and Control Engineering, Shenzhen University, China
Prof. Jf Pan, College of Mechatronics and Control Engineering, Shenzhen University, China
Prof. Chengxiang Liu, College of Mechatronics and Control Engineering, Shenzhen University, China
Prof. Bo Zhang, College of Mechatronics and Control Engineering, Shenzhen University, China

Mr. Xiaofei Guan, Shanghai University, China
Prof. Yingjie Ye, Shanghai University, China
Dr. Hongbo Zhang, Virginia Military Institute, United States
Prof. Ting-Chung Poon, Virginia Tech, United States

**SS25 - SEW3**

**Digital Holography for Industrial Applications, Part I**

Room: Salon E
Time: 13:30 – 15:30, June 12
Co-Chair: Peter Wai Min Tsang

**Time: 13:30 – 13:50**

**Optical Scanning Holography: From Tilt Holography to Curve Holography**

Prof. Jung-Ping Liu, Feng Chia University, Taiwan
Mr. Hisuan-Hsuan Wen, Feng Chia University, Taiwan
Mr. Wen-Ting Chen, Feng Chia University, Taiwan

**Time: 13:50 – 14:10**

**Signal Decoupling in Digital Holography via Compressive Sensing**

Mr. Wenhui Zhang, State Key Lab of Precision Measurement Technology and Instruments, China
Dr. Liangcai Cao, State Key Lab of Precision Measurement Technology and Instruments, China
Mr. Hua Zhang, State Key Lab of Precision Measurement Technology and Instruments, China
Prof. Guofan Jin, State Key Lab of Precision Measurement Technology and Instruments, China
Prof. David Brady, Department of Electrical and Computer Engineering, Duke University, United States

**Time: 14:10 – 14:30**

**Rotation and Scale Invariant Three-dimensional Recognition Using Optical Scanning Holography**

Mr. Eung Joon Lee, Department of Optical Engineering, Sejong University, Korea (South)
Mr. Taekyoung Kim, Department of Optical Engineering, Sejong University, Korea (South)
Mr. Dong Hwan Im, Department of Optical Engineering, Sejong University, Korea (South)
Mr. Kyung Beom Kim, Department of Optical Engineering, Sejong University, Korea (South)
Mr. Seung Ram Lim, Department of Optical Engineering, Sejong University, Korea (South)
Prof. Taegyeun Kim, Department of Electrical Engineering, Sejong University, Korea (South)

**Time: 14:30 – 14:50**

**Simulation Analysis on Phase Retrieval Using Transport of Intensity with An Off-axis Hologram**

Dr. Wen-Jing Zhou, Shanghai University, China
Ms. Hongxia Shen, Shanghai University, China

Co-Chair: Peter Wai Min Tsang

**Time: 14:50 – 15:10**

**New Topology of Modular Multilevel Cascade Converter with Model Predictive Control**

Mrs. Lais Ferreira Crispino Prenca, Federal University of Rio de Janeiro, Brazil

IEEE Industrial Electronics Society
Applying A Virtual Prototyping Process to Generate Pareto Optimal Solutions for A Modular Multi-Level MVAC to MVDC Converter

Mr. Rounak Siddaiah, University of Wisconsin Milwaukee, USA
Dr. Robert Cazner, University of Wisconsin Milwaukee, USA
Mr. Thomas Nguyen, University of Wisconsin Madison, USA

Development of A Low Cost 15-Gsps Analog-to-Digital Converter Board by Using A Field Programmable Gate Array Mezzanine Card Connector for FPGA-Based Backends

Mr. Homin Jiang, Asiaa, Taiwan

HDL FSM Code Generation Using A MIPS-based Assembler

Dr. Dominik Meyer, Helmut Schmidt University Hamburg, Germany
Dr. Marcel Eckert, Helmut Schmidt University Hamburg, Germany
Dr. Jan Haase, University of Luebeck, Germany
Prof. Bernd Klauer, Helmut Schmidt University Hamburg, Germany

Memristors as Adjustable Boundaries for An Analog Implementation of Decision Trees

Mr. Philipp Grothe, University of Luebeck, Germany
Dr. Jan Haase, University of Luebeck, Germany

Reliability-Enhanced High-Level Synthesis Using Memory Profiling and Fault Injection

Mr. Christian Fibich, University of Applied Sciences Technikum Wien, Austria
Mr. Martin Horauer, University of Applied Sciences Technikum Wien, Austria
Mr. Roman Obermaisser, University of Siegen, Germany

Virtual Platform of FPGA based SoC for Power Electronics Applications

Mr. Edel Diaz-Llerena, University of Alcala, Spain
Dr. Raul Mateos-Gil, University of Alcala, Spain
Dr. Emilio Bueno-Peña, University of Alcala, Spain

A New Hybrid Multilevel Voltage Source Inverter Topology

Mr. Abdullah Noman, King Saud University, Saudi Arabia
Prof. Abdulrahman Alsala, King Saud University, Saudi Arabia
Prof. Khaled Addeweech, King Saud University, Saudi Arabia
Prof. Ayman Alabduljabbar, King Abdulaziz City for Science and Technology, Saudi Arabia

LSTM-based Short-term Load Forecasting for Building Electricity Consumption

Mr. Xin Wang, Control and Computer Engineering, North China Electric Power University, China
Prof. Fang Fang, Control and Computer Engineering, North China Electric Power University, China
Mr. Xiaoning Zhang, Control and Computer Engineering, North China Electric Power University, China
Mr. Christian Fibich, University of Applied Sciences Technikum Wien, Austria
Mr. Martin Horauer, University of Applied Sciences Technikum Wien, Austria
Mr. Roman Obermaisser, University of Siegen, Germany
Prof. Le Wei, Control and Computer Engineering, North China Electric Power University, China
Prof. Yang Shi, Mechanical Engineering, University of Victoria, Canada

Data Clustering Using Variational Learning of Finite Scaled Dirichlet Mixture Models

Mr. Hieu Nguyen, Concordia University, Canada
Mr. Muhammad Azam, Concordia University, Canada
Prof. Nizar Bouguila, Concordia University, Canada

Image Quality Assessment through Segmentation

Mr. Shuo Liu, University of British Columbia - Okanagan, Canada
Mr. Xiang Peng, University of British Columbia - Okanagan, Canada
Dr. Zheng Liu, University of British Columbia, Canada

The Differences between Completely Connected Cells and Incompletely Connected Cells on Controllability

Mr. Ji Jian Qu, Qingdao University, China
Prof. Zhijian Ji, Qingdao University, China
Prof. Zhihai Ma, Shandong University, China
Prof. Qingyan Qi, Qingdao University, China

Finite Two-Dimensional Beta Mixture Models: Model Selection and Applications

Ms. Narges Manouchehri, Concordia University, Canada
**Speckle Noise Removal Technique in SAR Images Using SRAD and Weighted Least Squares Filter**

Mr. Hyunho Choi, Hanyang University, Korea (South)
Mr. Seungwon Yu, Hanyang University, Korea (South)
Prof. Jechang Jeong, Hanyang University, Korea (South)

**Measurement and Control of A Linear Electromagnetic Actuator Driven Camless Valve Train for Internal Combustion Engines**

Dr. Xiaofeng Yang, University of Jiangsu, China
Dr. Kun Liang, University of Sussex, United Kingdom
Mr. Muhammad Farhan, United Kingdom

**Adaptive Dual-Loop Hydraulic Pressure Controller Design for Electric Booster Brake System**

Mr. Jialei Shi, State Key Laboratory of Automotive Safety and Energy, Tsinghua University, China
Mr. Chao Huang, State Key Laboratory of Automotive Safety and Energy, Tsinghua University, China
Prof. Liang Li, State Key Laboratory of Automotive Safety and Energy, Tsinghua University, China

**Real Time Trajectory Re-planning for Autonomous Vehicle Lane Changing in Uncertain Traffic**

Mr. Bangqian Qiao, Shanghai Jiao Tong University, China
Dr. Xiaodong Wu, Shanghai Jiao Tong University, China

**Rule-filter-integrated Control of LFP/LTO Hybrid Energy Storage System for Vehicular Application**

Mr. Jianwei Ye, Southeast University, China
Dr. Weichao Zhang, Southeast University, China
Prof. Guodong Yin, Southeast University, China

**An Improved Rollover Time Prediction Algorithm of Transport Vehicelles**

Ms. Bing Zhang, Shandong Jiaotong University, China
Dr. Xuyun Qiu, Shandong Jiaotong University, China
Dr. Xin Huang, Shandong Jiaotong University, China
Dr. Aijuan Li, Shandong Jiaotong University, China
Dr. Yumin Song, Shandong Jiaotong University, China

**Low-Cost Navigation Based on Reinforcement Learning for Autonomous Vehicles**

Mr. Tong Wang, Zhejiang University, China
Ms. Huarong Zheng, Zhejiang University, China
Ms. Weihua Xu, Zhejiang University, China
Prof. Weimin Wu, Zhejiang University, China

**Laser Differential Cloudy Triangulation with Video Flow Synchronization**

Dr. Sergey V. Dvoynishnikov, Kutateladze Institute of thermophysics SB RAS, Russian Federation
Prof. Vladimir G. Meledin, Kutateladze Institute of thermophysics SB RAS, Russian Federation

**Defining the Final Angular Position of DC Motor Shaft Using A Trapezoidal Trajectory Profile**

Mr. Miguel Reyes-García, Instituto de Ingeniería UABC, Mexico
Dr. Oleg Sergiyenko, Instituto de Ingeniería UABC, Mexico
Prof. Mykhailo Ivanov, Instituto de Ingeniería UABC, Mexico
Dr. Lars Lindner, Instituto de Ingeniería UABC, Mexico
Dr. Julio C. Rodríguez-Quinonez, Facultad de Ingeniería UABC, Mexico
Dr. Daniel Hernandez-Balbuena, Facultad de Ingeniería UABC, Mexico
Dr. Wendy Flores-Fuentes, Facultad de Ingeniería UABC, Mexico
Dr. Fera Tyrsa, Facultad de Ingeniería UABC, Mexico
Dr. Luis O. Moreno-Abedo, Facultad de Ingeniería UABC, Mexico
Dr. Fabian N. Muñoz-Rico, Facultad de Ingeniería, Arquitectura y Diseño UABC, Mexico

**A Method to Classify Digital Images by Means of Statistics of A Wavelet Decomposition**

Prof. Wilmar Hernandez, Universidad de Las Americas, Ecuador
Prof. Alfredo Mendez, Universidad Politecnica de Madrid, Spain
Prof. Francisco Ballesteros, Universidad Politecnica de Madrid, Spain
Prof. Vicente Gonzalez-Pousada, Universidad Politecnica de Madrid, Spain
Prof. Jose Luis Jimenez, Universidad Politecnica de Madrid, Spain
Prof. Hector Chinchero, Universidad de Las Americas, Ecuador
Prof. Patricia Acosta-Vargas, Universidad de Las Americas, Ecuador
Prof. Rasa Zalakeviciute, Universidad de Las Americas, Ecuador
TT06 - SCW4

Mechatronics and Robotics, Part II

Room: Salon C
Time: 16:00 – 18:20, June 12
Co-Chair: Daxiong Ji and Mihoko Niitsuma

Multi-Modal Human-Aware Image Caption System for Intelligent Service Robotics Applications
Prof. Ren-C. Luo, NTU International Center of Excellence on Intelligent Robotics and Automation Research, Taiwan
Mr. Yu-Ting Hsu, NTU International Center of Excellence on Intelligent Robotics and Automation Research, Taiwan

Pose Presentation of End Effector Using Vibrotactile Interface for Assistance in Motion Sharing of Industrial Robot Remote Operation
Mr. Toshiki Hashizume, Chuo University, Japan
Prof. Mihoko Niitsuma, Chuo University, Japan

Multi DoF Robotic Platform Using Large Circular Linear Motors for Haptic Surgical Robots
Dr. Takuya Matsuomaga, Kanagawa Institute of Industrial Science and Technology, Japan
Dr. Hiroshi Asai, Yokohama National University, Japan
Prof. Tomoyuki Shimono, Yokohama National University, Japan
Prof. Kouhei Ohnishi, Keio University, Japan

A Prototype of Newly Dynamic Underwater Vehicle Using Fuzzy PID Control
Dr. Daxiong Ji, Zhejiang University, China
Mr. Shuai Zhou, Zhejiang University, China
Mr. Jie Ren, Zhejiang University, China
Mr. Mingzhe Sun, Zhejiang University, China

A Wheeled Wall Climbing Robot by Using Bio-Inspired Adhesive Material
Dr. Hongkai Li, Nanjing University of Aeronautics and Astronautics, China
Mr. Lei Zhang, Nanjing University of Aeronautics and Astronautics, China
Prof. Zhendong Dai, Nanjing University of Aeronautics and Astronautics, China

Quantification of Contributing Degree to Braking Operation of Driver based on the Hidden Markov Model
Dr. Kohjiro Hashimoto, Suwa University of Science, Japan
Prof. Tadashi Miyosawa, Suwa University of Science, Japan
Prof. Tetsuya Tamada, Suwa University of Science, Japan
Dr. Takeshi Tsuchiya, Suwa University of Science, Japan
Dr. Kae Doki, Aichi Institute of Technology, Japan
Prof. Shinji Doki, Nagoya University, Japan

Wireless Current Monitoring for Autonomous Robot Navigation
Mr. Javier Romero-Perigault, Universidad Tecnológica de Panamá, Panama
Dr. Wendy Flores-Fuentes, Universidad Autónoma de Baja California, Mexico
Dr. Kang-Hyun Jo, University of Ulsan, Korea (South)
Dr. Danilo Cáceres Hernández, Universidad Tecnológica de Panamá, Panama

A Novel Parameterization Method to Estimate the Relative State and Inertia Parameters for Non-Cooperative Targets
Dr. Qian Feng, Northwestern Polytechnical University, China
Prof. Quan Pan, Northwestern Polytechnical University, China
Prof. Xiaolei Hou, Northwestern Polytechnical University, China
Prof. Yong Liu, Northwestern Polytechnical University, China
Ms. Congzhe Zhang, Northwestern Polytechnical University, China

New Approach for Pixelization of Big Astronomical Data for Machine Vision Purpose
Dr. Volodymyr Akhmetov, V. N. Karazin Kharkiv National University, Ukraine
Dr. Sergii Khlamov, V. N. Karazin Kharkiv National University, Ukraine
Dr. Iryna Tabukova, Kharkiv National University of Radio Electronics, Ukraine
Prof. Wilmar Hernandez, Universidad de Las Americas, Ecuador
Dr. Juan Ivan Nieto Hipolito, Universidad Autónoma de Baja California, Mexico
Prof. Peter Fedorov, V. N. Karazin Kharkiv National University, Ukraine

Azimuth Estimation of Landmarks by Mobile Autonomous Robots Using One Scanning Antenna
Prof. Oleksandr Poliarus, Kharkiv National Automobile and Highway University, Ukraine
Dr. Advhen Poliakov, Kharkiv National Automobile and Highway University, Ukraine
Prof. Oleg Sergiyenko, Universidad Autonoma de Baja California, Mexico
Dr. Vera Tyrsa, Universidad Autonoma de Baja California, Mexico
Dr. Wilmar Hernández, Universidad de Las Americas, Ecuador
Mrs. Julia Nechitailo, Kharkiv Petro Vasyleanko National Technical University of Agriculture, Ukraine

Time: 16:40 – 17:00

The 28th International Symposium on Industrial Electronics (ISIE)
Vancouver, Canada, June 12-14, 2019

IEEE Industrial Electronics Society
The 28th International Symposium on Industrial Electronics (ISIE)  
Vancouver, Canada, June 12-14, 2019

Time: 17:40 – 18:00  
VD-006297

A Novel Trajectory Generation Algorithm for Robot Manipulators with Online Adaptation and Singularity Management  
Mr. Matteo Mazzanti, Loccioni, Italy  
Dr. Cristina Cristalli, Loccioni, Italy  
Dr. Lorenzo Gagliardi, Loccioni, Italy  
Dr. Luca Carbonari, Università Politecnica delle Marche, Italy  
Mr. Luca Lattanzi, Università di Modena e Reggio Emilia, Italy  
Dr. Daniele Massa, Loccioni, Italy

Time: 17:00 – 17:20  
VD-009261

Mr. Daniel Behnke, Weidmüller Group, Germany  
Mr. Marcel Müller, Weidmüller Group, Germany  
Dr. Patrick-Benjamin Bök, Weidmüller Group, Germany

Time: 17:20 – 17:40  
VD-010472

Highly Synchronous Modulation Scheme for Multidrop Real-Time Control  
Mr. Alexander Gercikow, OTH Amberg-Weiden, Germany  
Prof. Hans-Peter Schmidt, OTH Amberg-Weiden, Germany

Time: 17:40 – 18:00  
VD-006505

From Non-autonomous Petri Net Models to Executable State Machines  
Prof. João Barros, UNINOVA-CTS, Instituto Politécnico de Beja, Portugal  
Prof. Luís Gomes, UNINOVA-CTS, Universidade Nova de Lisboa, Portugal

Time: 18:00-18:20  
VD-016632

Performance Optimization on LoRa Networks through Assigning Radio Parameters  
Mr. Eduardo Sallum, Utfpr-Pg, Brazil  
Prof. Nuno Pereira, Isep/Ipp, Portugal  
Prof. Mário Alves, Isep/Ipp, Portugal  
Prof. Max Mauro Santos, Utfpr-Pg, Brazil

Time: 17:00 – 17:20  
VD-009261

Digital Holography for Industrial Applications, Part II  
Room: Salon E  
Time: 16:00 – 18:20, June 12  
Co-Chair: Peter Wai Ming Tsang

Time: 16:00 – 16:20  
VD-005576

Edge Extraction of Multi-Section Objects in Optical Scanning Holography  
Dr. Rende Wang, Kunming University of Science and Technology, China  
Prof. Yaping Zhang, Kunming University of Science and Technology, China  
Prof. Ting-Chung Poon, Bradley Dept. of Electrical & Computer Engineering Virginia Tech, USA  
Prof. Peter Tsang, Dept. of Electronic Engineering City University of Hong Kong, China

Time: 16:20 – 16:40  
VD-006653

Enhancement of Depth Range in LED-based Holographic Near-Eye Display Using Focus Tunable Device  
Mr. Dongyeon Kim, Seoul National University, Korea (South)  
Mr. Seungjae Lee, Seoul National University, Korea (South)  
Mr. Jaehum Cho, Seoul National University, Korea (South)  
Mr. Dukho Lee, Seoul National University, Korea (South)  
Mr. Kiseung Bang, Seoul National University, Korea (South)  
Prof. Byoungcho Lee, Seoul National University, Korea (South)
Multiple-Plane Object Reconstruction Using Single-Pixel Digital Holography

Mr. Yin Xiao, The Hong Kong Polytechnic University, Hong Kong
Ms. Lina Zhou, The Hong Kong Polytechnic University, Hong Kong
Dr. Wen Chen, The Hong Kong Polytechnic University, Hong Kong

Point Spread Function Engineering for Wavelet-Based Hologram Calculation

Prof. Tomoyoshi Shimohaba, Chiba University, Japan
Mr. Shota Yamada, Chiba University, Japan
Prof. Takashi Kakeue, Chiba University, Japan
Prof. Tomoyoshi Ito, Chiba University, Japan

Invariant Classification of Holograms of Deformable Objects Based on Deep Learning

Mr. Hoson Lam, City University of Hong Kong, Hong Kong
Dr. Peter Tsang, City University of Hong Kong, Hong Kong

SS10 - PWV4
Advanced Multilevel Converters with DC Capacitors: Topology, Modulation, Voltage Balancing, and Control Strategies, Part II

Room: Port of Vancouver
Time: 16:00 – 18:20, June 12
Co-Chair: Mostafa Abarzadeh

A Novel Single Carrier PWM Method for 5L ANPC Converter with Capacitor Voltage Self-Balancing and Improved Output Voltage Spectrum

Dr. Mostafa Abarzadeh, Ecole de Technologie Superieure (ETS), University of Quebec, Canada
Dr. Alireza Jawadi, Ecole de Technologie Superieure (ETS), University of Quebec, Canada
Prof. Kamal Al-Haddad, Ecole de Technologie Superieure (ETS), University of Quebec, Canada

Photovoltaic System Based on the PUC9 Inverter

Mr. Ayoub El Gaddari, Université Moulay Ismail, Morocco
Mx. Hind El Ouahidi, Université Moulay Ismail, Morocco
Mr. Salaheddine Alibou, Université Moulay Ismail, Morocco
Dr. Mohammad Sharifzadeh, Ecole de Technologie Supérieure de Montréal, Canada
Dr. Kiavash Askari, Ecole de Technologie Supérieure de Montréal, Canada
Prof. Youcef Oumejgar, Ecole Supérieure de Technologie de Meknès, Morocco
Prof. Kamal Al-Haddad, Ecole de Technologie Supérieure de Montréal, Canada

Reduced Multilevel Converter: A Novel Back-to-Back Converter with Reduced Switch Count

Dr. Margarita Norambuena, Universidad Tecnica Federico Santa Maria, Chile
Prof. Joe Rodriguez, Universidad Andres Bello, Chile

New Reduced Back-to-Back Multilevel Converter Based on Switched-Diodes

Mr. Mohammad Ali Hosseinzadeh, Faculty of Engineering, University of Talca, Chile
Ms. Maryam Sarehbanzadeh, Faculty of Engineering, University of Talca, Chile
Prof. Marco Rivera, Faculty of Engineering, University of Talca, Chile
Prof. Patrick Wheeler, Faculty of Engineering, University of Nottingham, United Kingdom

Active Fault Clearing on Long-Distance Overhead Lines Using A Hybrid Modular Multilevel Converter

Prof. Qiang Song, Department of Electrical Engineering, Tsinghua University, China
Dr. Shukai Xu, Electric Power Research Institute of China Southern Grid, China
Dr. Yuebin Zhou, Electric Power Research Institute of China Southern Grid, China
Mr. Yunboem Gim, Department of Electrical Engineering, Tsinghua University, China
Mr. Zhenguan Li, Department of Electrical Engineering, Tsinghua University, China
Mr. Zexi Zheng, Department of Electrical Engineering, Tsinghua University, China

Model-based Hierarchical Clustering for Categorical Data

Ms. Fakhdah Alalyan, Concordia University, Canada
Ms. Nuha Zamzami, Concordia University, Canada
Prof. Nizar Bouguila, Concordia University, Canada

Variational Learning for Finite Generalized Inverted Dirichlet Mixture Models with A Component Splitting Approach

Mr. Kamal Maanicshah Mathin Henry, Concordia University, Canada
Prof. Nizar Bouguila, Concordia University, Canada
Dr. Wentao Fan, Huaqiao University, China

Deep Learning for Ground Reaction Force Data Analysis: Application to Wide-Area Floor Sensing

Mr. Abdullah Alharthi, The University of Manchester, United Kingdom
Prof. Krikor Ozanyan, The University of Manchester, United Kingdom
Color Image Segmentation Using Generalized Inverted Dirichlet Finite Mixture Models by Integrating Spatial Information

Mr. Jaspreet Singh Kalsi, Concordia University, Canada
Prof. Nizar Bouguelia, Concordia University, Canada

Cooperative Game-based Multi-Agent Path Planning with Obstacle Avoidance

Ms. Yaning Guo, Northwestern Polytechnical University, China
Dr. Quan Pan, Northwestern Polytechnical University, China
Mr. Qi Sun, University of Victoria, Canada
Dr. Chunhui Zhao, Northwestern Polytechnical University, China
Mr. Dong Wang, Northwestern Polytechnical University, China
Mrs. Min Feng, Shanghai Electro-Mechanical Engineering Institute, China

Deep Foreground Segmentation Using Convolutional Neural Network

Mr. Ajmal Skahbaz, University of Ulsan, Korea (South)
Prof. Kang-Hyun Jo, University of Ulsan, Korea (South)

Hybrid State of Charge Estimation Approach for Lithium-ion Batteries using k-Nearest Neighbour and Gaussian Filter-based Error Cancellation

Mr. Manjot Singh Sidhu, University of Ontario Institute of Technology, Canada
Mr. Deepak Ronanki, University of Ontario Institute of Technology, Canada
Prof. Sheldon Williamson, University of Ontario Institute of Technology, Canada

Longitudinal Acceleration Allocation for Cooperative Adaptive Cruise Control Including Platoon Kinematics

Prof. Xinjie Zhang, State Key Laboratory of Automotive Simulation and Control, Jilin University, China
Mr. Wentao Li, State Key Laboratory of Automotive Simulation and Control, Jilin University, China

Real-Time Modeling and Simulation of Electric Vehicle Battery Charger on FPGA

Mr. Hao Bai, University of Technology of Belfort Montbeliard, France
Ms. Huan Luo, University of Technology of Belfort Montbeliard, France
Dr. Chen Liu, University of Technology of Belfort Montbeliard, France
Dr. Damien Paire, University of Technology of Belfort Montbeliard, France
Prof. Fei Gao, University of Technology of Belfort Montbeliard, France

Controller Design for An Automobile Steer-By-Wire System

Mr. Guangyu Zhu, Shanghai Jiao Tong University, China
Mr. Haohan Yang, Shanghai Jiao Tong University, China

Design and Analysis of A Radial Flux Electrically Excited Eddy Current Brake

Mr. Mustafa Barsi Topcu, FEV Turkey, Turkey
Prof. Zafer Bingül, Kocaeli Üniversitesi, Turkey
Mr. Mehmet Guleç, Kocaeli Üniversitesi, Turkey

Real-time Display Method for Mining Vehicle Simulation Based on Virtual reality

Dr. Jianlin Tang, Jiangsu XCMG Construction Machinery Research Institute LTD., China
Dr. Yu Gao, Vehicle Intelligence Pioneers Inc., China
Dr. Huihong Yu, Department of Mechanical and Mechatronics Engineering, University of Waterloo, Canada
Mr. Yile Wang, Vehicle Intelligence Pioneers Inc., China
Pref. Yunfeng Ai, School of Artificial Intelligence, University of Chinese Academy of Sciences, China
Mr. Dongpu Cao, Department of Mechanical and Mechatronics Engineering, University of Waterloo, Canada

Improved Genetic Algorithm for the Fuzzy Flowshop Scheduling Problem with Predictive Maintenance Planning

Dr. Asma Ladj, Laboratoire des Méthodes de Conception de Systèmes (LMCS), Ecole nationale Supérieure d’Informatique (ESI), Algeria
Prof. Fatima Benouazid-Si Tayeb, Laboratoire des Méthodes de
Energy Consumption Challenges in Clustered Cognitive Radio Sensor Networks: A Review
Mr. Koketso Ntshabele, North-West University, South Africa
Dr. Bassey Isong, North-West University, South Africa
Dr. Adnan Abu-Mahfouz, CSIR, South Africa
Ms. Nosipho Dladlu, North-West University, South Africa

Time: 16:40 – 17:00 VD-007455

Analysis of SDN-based Security Challenges and Solution Approaches for SDWSN Usage
Mr. Risimati Mathebula, North-West University, South Africa
Mr. Bassey Isong, North-West University, South Africa
Mr. Naison Gasela, North-West University, South Africa
Mr. Adnan M. Abu-Mahfouz, Council for Scientific and Industrial Research, South Africa

Time: 17:00 – 17:20 VD-012947

A Review of Artificial Intelligence Based Intrusion Detection for Software-Defined Wireless Sensor Networks
Mr. Shimbi Masengo Wa Umba Papa Levi, University of Pretoria, South Africa
Dr. Adnan Abu-Mahfouz, Council for Scientific and Industrial Research, South Africa
Mr. Daniel Ramotsoela, University of Pretoria, South Africa
Prof. Gerhard Hancke, University of Pretoria, South Africa

Time: 17:20 – 17:40 VD-013978

On Portability of IEC 61499 Compliant Structures and Systems
Mr. Alexander Hopsu, Department of Electrical Engineering and Automation, Aalto University, Finland
Dr. Udayanto Dwi Atmojo, Department of Electrical Engineering and Automation, Aalto University, Finland
Prof. Valeriy Vyatkin, Dept. of Computer Science, Electrical and Space Engineering, Luleå University of Technology, Sweden

Time: 17:40 – 18:00 VD-010057

An Advanced Quality Control System Based on RFID and Data Mining Using Heuristic Approaches
Prof. Yung-Shun Tsai, Neusoft Institute Guangdong, China
Mr. Cheng-You Tsai, National Taiwan University, Taiwan

Time: 16:20 – 16:40 VD-004502

The 28th International Symposium on Industrial Electronics (ISIE)
Vancouver, Canada, June 12-14, 2019

Conception de Systèmes (LMCS), Ecole nationale Supérieure d’Informatique (ESI), Algeria
Dr. Christophe Varnier, Institut FEMTO-ST UMR 6174, ENS2M, CNRS, France
Mr. Ali Ayoub Dridi, Laboratoire des Méthodes de Conception de Systèmes (LMCS), Ecole nationale Supérieure d’Informatique (ESI), Algeria
Mr. Nacer Selmane, Laboratoire des Méthodes de Conception de Systèmes (LMCS), Ecole nationale Supérieure d’Informatique (ESI), Algeria

IEEE Industrial Electronics Society
**Oral Session on**

**Thursday, June 13**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
<th>Presenters</th>
</tr>
</thead>
</table>
| 10:50 – 11:10 | **Architecture for Safe Human-Robot Collaboration:** Multi-Modal Communication in Virtual Reality for Efficient Task Execution | Mr. Beibei Shu, UiT The Arctic University of Norway, Norway  
Dr. Gabor Sziebig, Department of Production Technology, SINTEF Manufacturing, Norway  
Dr. Roel Pieters, Tampere University, Finland |
| 11:10 – 11:30 | **CAD-based System for Programming of Robotic Assembly Processes with Human-in-the-loop** | Mr. Ådne Solhaug Linnerud, SINTEF Manufacturing, Norway  
Mr. Rune Sandøy, SINTEF Manufacturing, Norway  
Mr. Lars Erik Wetterwald, SINTEF Manufacturing, Norway |
| 11:30 – 11:50 | **Environmental Map Building to Describe Walking Dynamics for Determination of Spatial Feature of Walking Activity** | Mr. Takumi Nishio, Chuo University, Japan  
Prof. Mihoko Niitsuuma, Chuo University, Japan |
| 11:50 – 12:10 | **Sitting Assistance Considering with Posture Tolerance of Its User** | Mr. Masayu Koyama, Kwansei Gakuin University, Japan  
Mr. Masahiro Yokota, Kwansei Gakuin University, Japan  
Mr. Shohei Kawazoe, Kwansei Gakuin University, Japan  
Prof. Daisuke Chugo, Kwansei Gakuin University, Japan  
Prof. Satoshi Muramatsu, Tokai University, Japan  
Prof. Sho Yokota, Toyo University, Japan  
Prof. Hiroshi Hashimoto, Advanced Institute of Industrial Technology, Japan  
Mr. Takahiro Katayama, Rt.Works Co., Ltd, Japan  
Mr. Yasushi Mizuma, Rt.Works Co., Ltd, Japan  
Mr. Atsushi Kojima, Rt.Works Co., Ltd, Japan |
| 12:10 – 12:30 | **Development of Coffee Grinder with Servo Mechanism and Relationship Analysis between Processing Conditions and Particle Size** | Mr. Naouki Oka, Keio University, Japan  
Prof. Seitchiro Katnara, Keio University, Japan |
The 28th International Symposium on Industrial Electronics (ISIE)  
Vancouver, Canada, June 12-14, 2019

**TT05 - SCT2**  
Renewable Electric Energy Conversion, Processing and Storage, Part I

**Room: Salon C**  
**Time: 10:50 – 12:30, June 13**  
**Co-Chair: Amir Ebrahimi and Sumit K Chattopadhyay**

**Time: 10:50 – 11:10**  
**VD-007765**

A Study on the Lifetime Estimation of Photovoltaic Modules under Accelerated Environmental Conditions  
*Mrs. Jing-Yi Wang, Beihang University, China*  
*Dr. Zheng Qian, Beihang University, China*  
*Ms. Jing-Yue Wang, Beihang University, China*  
*Dr. Yan Fei, China Electric Power Research Institute, China*

**Time: 11:10 – 11:30**  
**VD-008052**

Reducing Transient Active- and Reactive-power Coupling in Virtual Synchronous Generators  
*Mr. Shuan Dong, The University of British Columbia, Canada*  
*Prof. Yu Christine Chen, The University of British Columbia, Canada*

**Time: 11:30 – 11:50**  
**VD-009849**

Challenges of Developing A Digital Twin Model of Renewable Energy Generators  
*Prof. Amir Ebrahimi, Leibniz University Hannover, Germany*

**Time: 11:50 – 12:10**  
**VD-014516**

**SS29 – SDT2**  
Energy Storage Management Systems for Transportation Electrification

**Room: Salon D**  
**Time: 10:50 – 12:30, June 13**  
**Co-Chair: Chandan Chakraborty and Akshay K Rathore**

**Time: 10:50 – 11:10**  
**VD-008133**

Design Methodology for A Bidirectional DC-DC Converter with the Energy Storage System for Aircraft Application  
*Dr. Hassan Cheaito, University of Lyon 1, France*  
*Mr. Joris Pallier, CentumAdeno, France*  
*Mr. Pascal Pommier-Peit, CentumAdeno, France*  
*Prof. Bruno Allard, INSA de Lyon, France*  
*Prof. Pascal Venet, UCB de Lyon, France*  
*Prof. Ali Sari, UCB de Lyon, France*  
*Prof. Guy Clerc, UCB de Lyon, France*

**Time: 11:10 – 11:30**  
**VD-014508**

Small Signal Modeling, Closed Loop Design, and Transient Results of Snubberless Naturally-Clamped Soft-Switching Current-Fed Half-bridge DC/DC Converter  
*Ms. Kayelia Khatun, Concordia University, Canada*  
*Prof. Akshay K. Rathore, Concordia University, Canada*

**Time: 11:30 – 11:50**  
**VD-015121**

Modeling Hydro Power System Frequency Dynamics for Virtual Inertia Emulation  
*Mr. Aravind Ingalalli, South Dakota State University, USA*  
*Mr. Ujjwol Tamrakar, South Dakota State University, USA*  
*Dr. Timothy M. Hansen, South Dakota State University, USA*  
*Dr. Reinaldo Tonkoski, South Dakota State University, USA*

**Time: 11:50 – 12:10**  
**VD-015954**

Loss Analysis of Resonant Inductive Power Transfer System for Wireless Charging of e-Rickshaw  
*Mr. RaviKrishan Vaka, VIT Nagpur, India*  
*Dr. Ritesh Kumar Kesluri, VIT Nagpur, India*  
*Dr. Akshay Kumar Rathore, Concordia University, Canada*  
*Prof. Chandan Chakraborty, Indian Institute of Technology, Kharagpur, India*

**Time: 12:10 – 12:30**  
**VD-016179**

**SS15 - SET2**  
Advanced Control for Uncertain Systems with Application to Industrial Electronics, Part I

**Room: Salon E**  
**Time: 10:50 – 12:30, June 13**  
**Co-Chair: Weiyang Lin and Qian Zhang**

**Time: 10:50 – 11:10**  
**VD-016373**

Self-Triggered Robust MPC with ISM for Constrained Nonlinear Input-Affine Systems  
*Ms. Qian Zhang, University of Victoria, Canada*  
*Dr. Yang Shi, University of Victoria, Canada*  
*Dr. Kui Wu, University of Victoria, Canada*

**Time: 11:10 – 11:30**  
**VD-016322**

Robust H-Infinity Control for Disturbance Rejection in A Magnetic Levitation Device  
*Mr. Haoyue Song, Harbin Institute of Technology, China*  
*Prof. Weiyang Lin, Harbin Institute of Technology, China*  
*Mr. Maoqiang Zhou, Harbin Institute of Technology, China*  
*Dr. Gang Liu, Harbin Institute of Technology, China*  
*Dr. Huihui Pan, Harbin Institute of Technology, China*  
*Dr. Mingsi Tong, Harbin Institute of Technology, China*
### SS30 - PVT2
#### New Trends of Electrified Vehicles, Part I

**Room:** Port of Vancouver  
**Time:** 10:50 – 12:30, June 13  
**Co-Chair:** Farhad Shahnia and Run Dong

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
</table>
| A Memory-Optimized and Energy-Efficient CNN Acceleration Architecture Based on FPGA | Dr. Xuepeng Chang, Harbin Institute of Technology, China  
Dr. Haihui Pan, Harbin Institute of Technology, China  
Mr. Dan Zhang, Harbin Institute of Technology, China  
Mr. Qiming Sun, Harbin Institute of Technology, China  
Dr. Weiyang Lin, Harbin Institute of Technology, China |
| Path-Following Control of Power Kites: An Economic Model Predictive Control Perspective | Mr. Zhang Zhang, University of Victoria, Canada  
Prof. Yang Shi, University of Victoria, Canada |
| Online Identification Method of Nonlinear Ship Motion Mathematical Models from Free-Running Tests | Dr. Jian Zheng, Shanghai Maritime University, China  
Dr. Yon Li, Shanghai Maritime University, China  
Dr. Fei Meng, University of Shanghai for Science and Technology, China |
| Robust Driver-Automation Shared Control for A Lane Keeping System Using Interval Type-2 Fuzzy Method | Ms. Yue Liu, Beihang University, China  
Prof. Hui Zhang, Beihang University, China |
| An Effective Regenerative Braking Strategy Based on the Combination of Particle Swarm Optimization and Ant Colony Optimization for Electrical Vehicle | Mr. Yuanbo Zhang, School of Mechanical Engineering, Beijing Institute of Technology, China  
Dr. Weida Wang, School of Mechanical Engineering, Beijing Institute of Technology, China  
Dr. Chao Yang, School of Mechanical Engineering, Beijing Institute of Technology, China  
Dr. Lijin Han, School of Mechanical Engineering, Beijing Institute of Technology, China  
Dr. Zhongguo Zhang, Shandong Toget Brake System Co. Ltd., China  
Prof. Jingang Liu, School of Mechanical Engineering, Xiangtan University, China |
| EV/HEV Industry Trend of Wide-bandgap Power Semiconductor Devices for Power Electronics Converters | Dr. Amin Ghasanfari, Hydro-Québec’s Center of Excellence in Transportation Electrification and Energy Storage (CETEES), Canada  
Mr. Christian Perreault, Hydro-Québec’s Center of Excellence in Transportation Electrification and Energy Storage (CETEES), Canada  
Dr. Karim Zaghib, Hydro-Québec’s Center of Excellence in Transportation Electrification and Energy Storage (CETEES), Canada |

**SS30 - PHT2**

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
</table>
| Planning, Control and Protection for Power Quality and Reliability Improvement in Smart Grids and Microgrids, Part I | Mr. Julius Susanto, Murdoch University, Australia  
Dr. Farhad Shahnia, Murdoch University, Australia |
| trend predicting of distribution network operation states based on PMU | Mr. Zhixiong Shi, State Grid Shanghai Municipal Electric Power Company State Grid Corporation of China, China  
Mr. Shexin Tian, Electric Engineering College Shanghai University of Electric Power, China  
Mr. Chao Sima, Electric Engineering College Shanghai University of Electric Power, China  
Mr. Kunpeng Li, Electric Engineering College Shanghai University of Electric Power, China  
Mr. Pengchen Nie, State Grid Shanghai Pudong Electric Power Supply Company State Grid Corporation of China, China  
Mr. Ren Chen, State Grid Shanghai Electric Power Research Institute State Grid Corporation of China, China  
Mr. Xiangmin Su, Electric Engineering College Shanghai University of Electric Power, China  
Ms. Shurong Wei, Electric Engineering College Shanghai University of Electric Power, China  
Mr. Yang Fu, Electric Engineering College Shanghai University of Electric Power, China |
| A Potential Field Load Scheduling Approach for Self-Sustainable Electrical Microgrids | Mr. Adriano Ferreira, Polytechnic Institute of Bragança, Portugal  
Prof. Paulo Leitão, Polytechnic Institute of Bragança, Portugal  
Prof. José Barata, New University of Lisbon, Portugal |
| Fault Mechanism and Protection Strategy for DC Microgrid | Mr. Mingming Wan, Northwestern Polytechnical University, China  
Mr. Run Dong, Northwestern Polytechnical University, China  
Mr. Jingru Yang, Northwestern Polytechnical University, China  
Ms. Zixiao Xu, Northwestern Polytechnical University, China  
Mr. Bowen Zhang, Northwestern Polytechnical University, China  
Mr. Kun He, Northwestern Polytechnical University, China  
Prof. Weilin Li, Northwestern Polytechnical University, China |
SS09 - PNT2
Battery Modeling and Control with Industrial Applications, Part I

Room: Port of New York
Time: 10:50 – 12:30, June 13
Co-Chair: Massimo Guarnieri and Jian Chen

Time: 10:50 – 11:10
Real-Time Optimal Charging for Lithium-Ion Batteries via Explicit Model Predictive Control
Mr. Ning Tian, University of Kansas, USA
Dr. Huazhen Fang, University of Kansas, USA
Dr. Yebin Wang, Mitsubishi Electric Research Laboratories, USA

Time: 11:10 – 11:30
A Behind-the-Meter Battery Control Algorithm with the Consideration of Li-ion Battery Degradation
Mr. Zhenhuan Ding, Binghamton University, United States
Dr. Ziang Zhang, Binghamton University, United States

Time: 11:30 – 11:50
Maximizing Vanadium Redox Flow Battery Efficiency: Strategies of Flow Rate Control
Dr. Andrea Trovò, University of Padua, Italy
Prof. Francesco Picano, University of Padua, Italy
Prof. Massimo Guarnieri, University of Padua, Italy

Time: 11:50 – 12:10
Optimal Multi-Objective Cell Balancing for Battery Packs with Quadratic Programming
Mr. Hao Chen, Zhejiang University, China
Mr. Xiaodong Fan, Anhui Xinxi Power Source Co., Ltd, China
Mr. Jian Zheng, Zhejiang University, China
Mr. Yuan Fu, Anhui Xinxi Power Source Co., Ltd, China
Prof. Jian Chen, Zhejiang University, China

TT14 - PST2
Building Automation, Control and Management

Room: Port of Singapore
Time: 10:50 – 12:30, June 13
Co-Chair: Gerhard P. Hancke and Thilo Sauter

Time: 10:50 – 11:10
A Comparison of Data Aggregation Techniques in Software-Defined Wireless Sensor Network
Mr. Pinedas Egidius, University of Pretoria, South Africa
Dr. Adnan M. Abu-Mahfouz, University of Pretoria, South Africa
Dr. Gerhard P. Hancke, City University of Hong Kong, Hong Kong

Time: 11:10 – 11:30
Comparison of Localization Estimation Algorithms in Software Defined Wireless Sensor Networks
Advanced Power Management Algorithm in DC Microgrid Subsystem Controlled by Smart Transformer
Dr. Adam Milczarek, Institute of Control and Industrial Electronics, Warsaw University of Technology, Poland
Mr. Michal Głowczyz, Institute of Control and Industrial Electronics, Warsaw University of Technology, Poland
Dr. Sebastian Siyński, Institute of Control and Industrial Electronics, Warsaw University of Technology, Poland

Optimal Topology Recovery Scheme for Multi-robot Formation Control
Mr. Yaoshan Li, Dept. of Automation, Shanghai Jiao Tong University, China
Mr. Han Wang, Dept. of Automation, Shanghai Jiao Tong University, China
Prof. Jianping He, Dept. of Automation, Shanghai Jiao Tong University, China
Prof. Xiping Guan, Dept. of Automation, Shanghai Jiao Tong University, China

Using Blockchain to Enhance the Security of Fog-Assisted Crowdsensing Systems
Ms. Xin Gu, Central South University, China
Prof. Jun Peng, Central South University, China
Dr. Wentao Yu, Central South University of Forestry and Technology, China
Ms. Yijun Cheng, Central South University, China
Prof. Fu Jiang, Central South University, China
Prof. Xiaoyang Zhang, Central South University, China
Prof. Zhiwu Huang, Central South University, China
Prof. Lin Cai, University of Victoria, Canada

Remotely Accessible Open Test Platform for CPS Transportation and CAV Research
Mr. Eren Calmak, Istanbul Technical University, Turkey
Mr. Serhat Tekin, Istanbul Technical University, Turkey
Mr. Aykut Ozdemir, Istanbul Technical University, Turkey
Dr. Orion Lawlor, University of Alaska Fairbanks, USA
Prof. Seta Boşyan, Istanbul Technical University, Turkey

Cooperative Localization of Satellite Cluster via Factor Graphs Theory
Mr. Xiwei Wu, Northwestern Polytechnical University, China
Prof. Bing Xiao, Northwestern Polytechnical University, China
Prof. Yuqiang Gu, Northwestern Polytechnical University, China

A New Basic Unit for Symmetric and Asymmetric Cascaded Multilevel Inverters with Reduced Power Electronic Devices
Mrs. Maryam Sarebanzadeh, Faculty of Engineering, University of Talca, Chile
Mr. Mohammad Ali Hosseinzadeh, Faculty of Engineering, University of Talca, Chile
Mr. Ebrahim Babaei, Faculty of Electrical and Computer Engineering, University of Tabriz, Iran
Prof. Marco Rivera, Faculty of Engineering, University of Talca, Chile
Prof. Patrick Wheeler, Faculty of Engineering, University of Nottingham, United Kingdom

Genetic Algorithm Technique for 7-Level Cascaded H-Bridge Multilevel Converter THD Minimization
Mrs. Maryam Sarebanzadeh, Faculty of Engineering, University of Talca, Chile
Mr. Mohammad Ali Hosseinzadeh, Faculty of Engineering, University of Talca, Chile
Mr. Ali Salehi, Faculty of Engineering, University of Sirjan, Iran
Prof. Marco Rivera, Faculty of Engineering, University of Talca, Chile
Prof. Patrick Wheeler, Faculty of Engineering, University of Nottingham, United Kingdom

Impact of Feed-forward and Decoupling Terms on Stability of Grid-Connected Inverters
Mr. Sushil Siwal, Mississippi State University, USA
Dr. Masoud Karimi-Ghartemani, Mississippi State University, USA
Dr. Houshang Karimi, Polytechnique Montreal, Canada
Mr. Roshan Sharma, Mississippi State University, USA
TT02 – PFT3
Electrical Machines and Industrial Drives, Part I
Room: Port of San Francisco
Time: 13:30 – 15:30, June 13
Co-Chair: Oliver Wallscheid and Chenwei Ma

Design of A 24-slot/22-pole Permanent Magnet Synchronous Motor for Quadruped Robot
Ms. Yuting Xu, Zhejiang University, China
Prof. Xiaoyan Huang, Zhejiang University, China
Mr. Zhuo Chen, Zhejiang University, China
Prof. You tong Fang, Zhejiang University, China
Time: 13:30 – 13:50

Development of A Black-Box Two-Level IGBT Three-Phase Inverter Compensation Scheme for Electrical Drives
Mr. Marius Stender, Germany
Dr. Oliver Wallscheid, Germany
Prof. Joachim Böcker, Germany
Time: 13:50 – 14:10

Analysis of Neutral Position, Magnet - Spacer of Tubular Permanent Magnet Linear Generator for FPE Applications
Mr. Jayaram Subramanian, West Virginia University, United States
Prof. Parviz Famouri, West Virginia University, USA
Time: 14:10 – 14:30

A Comparison of Different Models for Permanent Magnet Synchronous Machines: Finite Element Analysis, D-Q Lumped Parameter Modeling, and Magnetic Equivalent Circuit
Mr. Ahmad Shah Mohammadi, University of Sherbrooke, Canada
Prof. Joao Pedro Trovao, University of Sherbrooke, Canada
Time: 14:30 – 14:50

Reference Voltage Vector based Model Predictive Torque Control with RMS Solution for PMSM
Mr. Chenwei Ma, Ghent University; Flanders Make, Belgium
Prof. Xudang Yao, Harbin Engineering University, China
Mr. Huayu Li, Ghent University; Flanders Make, Belgium
Prof. Frederik De Belie, Ghent University; Flanders Make, Belgium
Time: 14:50 – 15:10

TT05 – SCT3
Renewable Electric Energy Conversion, Processing and Storage, Part II
Room: Salon C
Time: 13:30 – 15:30, June 13
Co-Chair: Juanting Xu and Stefan Soter

SOC and SOH Estimation for A Lithium-Ion Battery Using A Novel Transfer Function based Approach
Mr. Mehdi Gholizadeh, Dept. of Electrical Engineering, Shahid Beheshti University, Iran
Dr. Alireza Sadizadeh, Dept. of Electrical Engineering, Shahid Beheshti University, Iran
Time: 13:30 – 13:50

Wear Reduction Control Method in A Blade Pitch System of Wind Turbines
Mr. Benjamin Krueger, University of Wuppertal, Germany
Mr. Sascha Kratz, University of Wuppertal, Germany
Dr. Tobias Theopold, embeX GmbH, Germany
Dr. Stefan Soter, University of Wuppertal, Germany
Time: 13:50 – 14:10

Dr. Bin Liu, Shijiazhuang Tiedao University, China
Prof. Shaohua Li, Shijiazhuang Tiedao University, China
Time: 14:10 – 14:30

A High Speed Solar MPPT Controller Design
Mr. Kyus Hwang, Korea National University of Transportation, Korea (South)
Mr. Kyumin Lee, Korea National University of Transportation, Korea (South)
Prof. Ilsong Kim, Korea National University of Transportation, Korea (South)
Time: 14:30 – 14:50

Game-theoretic Energy Management with Velocity Prediction in Hybrid Electric Vehicle
Ms. Juanting Xu, Shanghai Jiaotong University, China
Mr. Amro Alshabagh, Shanghai Jiaotong University, China
Mr. Dongzisang Yan, Shanghai Jiaotong University, China
Dr. Chengbin Ma, Shanghai Jiaotong University, China
Time: 14:50 – 15:10
SS04 – SDT3
Distributed Resilience Control, Privacy Protection, and Coordination for Complex Cyber-Physical Networks, Part I

Room: Salon D
Time: 13:30 – 15:30, June 13
Co-Chair: Peter Palensky and Hong-Xiang Hu

Time: 13:30 – 13:50

Generic Model of PEM Fuel Cells and Performance Analysis in Frequency Containment Period in Systems with Decreased Inertia

Mr. Feras A. Alshehri, Delft University of Technology, Netherlands
Dr. José L. Rueda Torres, Delft University of Technology, Netherlands
Mr. Arcadio Perilla, Delft University of Technology, Netherlands
Dr. Bart W. Tuinema, Delft University of Technology, Netherlands
Prof. Mart A.M.M. van der Meijden, Delft University of Technology, Netherlands
Prof. Peter Palensky, Delft University of Technology, Netherlands
Dr. Francisco Gonzalez-Longatt, Loughborough University, United Kingdom

Time: 13:50 – 14:10

A Consensus-State-Aware Adaptive Algorithm for Tuning CSMA Parameters in Multi-Agent Networks

Ms. Mengdan Lei, School of Automation, Southeast University, China
Mr. Xianghui Cao, School of Automation, Southeast University, China
Mr. Gongpu Chen, School of Automation, Southeast University, China
Mr. Changyin Sun, School of Automation, Southeast University, China

Time: 14:10 – 14:30

Guidance Design for Ensuring Simultaneous Attacks of Multiple Missiles Against A Maneuvering Target

Mr. Zhaohui Liu, Southeast University, China
Dr. Jialing Zhou, Nanjing University of Science and Technology, China
Ms. Dan Zhao, Southeast University, China
Dr. Yuezu Lv, Southeast University, China

Time: 14:30 – 14:50

Distributed Adaptive Anti-windup Consensus Tracking of Networked Systems with Switching Topologies

Dr. Yuezu Lv, Southeast University, China
Dr. Junjie Fu, Southeast University, China
Dr. Jialing Zhou, Nanjing University of Science and Technology, China
Prof. Guanghui Wen, RMIT University, Australia
Prof. Xinghuo Yu, RMIT University, Australia

Time: 14:50 – 15:10

An Adaptive Approach to the Stochastic Leader-Following Consensus of Multi-Agent Systems

Dr. Jingyao Wang, Xiamen University, China
Prof. Zhisheng Duan, Peking University, China
Dr. Yuezu Lv, Southeast University, China
Dr. Yuqiong Hao, Beihang University, China

SS15 – SET3
Advanced Control for Uncertain Systems with Application to Industrial Electronics, Part II

Room: Salon E
Time: 13:30 – 15:30, June 13
Co-Chair: Zhan Li and Kunwu Zhang

Time: 13:30 – 13:50

Computationally Efficient Adaptive Model Predictive Control for Constrained Linear Systems with Parametric Uncertainties

Mr. Kunwu Zhang, University of Victoria, Canada
Mr. Changxin Liu, University of Victoria, Canada
Prof. Yang Shi, University of Victoria, Canada

Time: 13:50 – 14:10

Adaptive Fuzzy Fault-Tolerant Control for A Class of Strict-Feedback Nonlinear Systems with Unknown Dead-Zone

Dr. Xinghu Yu, Harbin Institute of Technology, China
Prof. Tong Wang, Harbin Institute of Technology, China
Prof. Huijun Gao, Harbin Institute of Technology, China
Dr. Zhan Li, Harbin Institute of Technology, China

Time: 14:10 – 14:30

A Deep Reinforcement Learning Method for Mobile Robot Collision Avoidance Based on Double DQN

Mr. Xidi Xue, Harbin Institute of Technology, China
Dr. Zhan Li, Harbin Institute of Technology, China
Mr. Dongsheng Zhang, Harbin Institute of Technology, China
Dr. Yingxin Yan, Science and Technology on Space Physics Laboratory, China

Time: 14:30 – 14:50

A Novel Motion Control for Ground Vehicles with 4 Independent Wheel Agents

Mr. Jinhua Zhang, Harbin Institute of Technology, China
Mr. Xinghu Yu, Harbin Institute of Technology, China
Prof. Ming Zeng, Harbin Institute of Technology, China
Prof. Weichao Sun, Harbin Institute of Technology, China
Prof. Zhiyuan Liu, Harbin Institute of Technology, China

IEEE Industrial Electronics Society
Dependable Industrial Crypto Computing

Mr. Abhilash Kancharla, Oklahoma State University, United States
Mr. Indy Park, Oklahoma City University, United States
Ms. Nicole Park, Carnegie Mellon University, United States

Co-Chair: Aijuan Li and Weida Wang

Time: 13:30 – 15:30, June 13
Room: Port of Hong Kong

SS08 – PVT3
New Trends of Electrified Vehicles, Part II

Local Smooth Path Planning for Turning Around in Narrow Environment

Dr. Xiaohui Tian, Beijing Institute of Technology, China
Prof. Mening Yu, Beijing Institute of Technology, China
Prof. Yi Yang, Beijing Institute of Technology, China
Prof. Meiling Wang, Beijing Institute of Technology, China
Dr. Dongyu Liu, Beijing Institute of Technology, China

Time: 13:30 – 13:50

Traffic Control System Based on 5G Communication Network

Dr. Aijuan Li, Shandong Jiaotong University, China
Mr. Wenchang Yuan, Shandong Jiaotong University, China
Dr. Xin Huang, Shandong Jiaotong University, China
Prof. Xuyun Qiu, Shandong Jiaotong University, China
Mr. Xiaodong Ban, Shandong Jiaotong University, China
Mr. Yuxing Zhang, Qingdao Yinggu Education Science and Technology Co., LTD, Qingdao, China

Time: 13:50 – 14:10

Direct Instantaneous Torque Control of A Multiport Solar-assisted SRM Drive for HEV Driving and Charging Applications

Mr. Jose Thankachan, Indian Institute of Technology Roorkee, India
Prof. S P Singh, Indian Institute of Technology Roorkee, India

Time: 14:10 – 14:30

Research on the Friction and Wear Properties of Surface Micro-Texture Steel Ring of CVT Metal Belt

Prof. Jingang Liu, Xiangtan University, China
Ms. Hongwei Xiang, Xiangtan University, China
Dr. Bing Fu, Xiangtan University, China
Prof. Youhong Zhang, Xiangtan University, China
Mr. Zhongguo Zhang, Shandong Taoteng Brake System Co., Ltd, China
Ms. Ming Mou, Xiangtan University, China

IEEE Industrial Electronics Society
SS09 - PNT3
Battery Modeling and Control with Industrial Applications, Part II

Room: Port of New York
Time: 13:30 – 15:30, June 13
Co-Chair: Huazhen Fang and Ziang Zhang

Time: 13:30 – 13:50
Process Noise Quantification in Kalman Filters with Application to Electrochemical Lithium-ion Battery State Estimation
Mr. Ross Weber, Stanford University, United States
Mr. Robert Spragg, Stanford University, United States
Mr. Kenneth Hoffmann, Stanford University, United States
Prof. Simona Onori, Stanford University, United States

Time: 13:30 – 13:30
FOA-Based SVM Parameter Optimization and its Application in Landslide Displacement Prediction
Mr. Ling Yang, Guizhou University, China
Prof. Xiao Wang, Guizhou University, China
Prof. Jing Xiang, Guizhou University, China
Mr. Yao Long, Guizhou University, China

Time: 13:30 – 13:50
Comparative Study of Artificial Intelligence based Intrusion Detection for Software-Defined Wireless Sensor Networks
Mr. Shimbi Masengo Wa Umba Papa Levi, University of Pretoria, South Africa
Dr. Adnan Abu-Mahfouz, Council for Scientific and Industrial Research, South Africa
Mr. Daniel Ramotsoela, University of Pretoria, South Africa
Prof. Gerhard Hancke, University of Pretoria, South Africa

Time: 13:30 – 13:50
Technology Coexistence in LPWANs-A Comparative Analysis for Spectrum Optimization
Mr. Johnson Fadeyi, Cst, South Africa
Dr. Elisha Markus, Cst, South Africa
Dr. Adnan Abu-Mahfouz, Csir, South Africa

Time: 13:30 – 13:50
A Stackelberg Game Modelling Approach for Aggregator Pricing and Electric Vehicle Charging
Dr. Zhuo Wang, Huazhong University of Science and Technology, China
Prof. Dong Yue, Nanjing University of Post and Telecommunications, China
Ms. Jiajia Liu, Huazhong University of Science and Technology, China
Mr. Zhengzhe Xu, Huazhong University of Science and Technology, China

Time: 13:30 – 13:50
An Escape Guidance Path Developing Method on Sparse Anchors for Underground Disaster Rescue
Dr. Shuo Li, Changsha University of Science & Technology, China
Mr. Tianchenge Guo, Changsha University of Science & Technology, China
Mr. Ran Mo, Central South University, China
Mr. Xiaoshuai Zhao, Central South University, China
Mr. Feng Zhou, Changsha University of Science & Technology, China
Prof. Weirong Liu, Central South University, China
Indoor Localization Using Wireless Fidelity (WiFi) and Bluetooth Low Energy (BLE) Signals

Mr. Umair Mujtaba Qureshi, City University of Hong Kong, Hong Kong
Ms. Zuneera Umair, City University of Hong Kong, Hong Kong
Dr. Gerhard Petrus Hancke, City University of Hong Kong, Hong Kong

Parameterizing Magnetic Flux Leakage Data for Pipeline Corrosion Defect Retrieval

Mr. Xiang Peng, University of British Columbia, Canada
Mr. Chengkai Zhang, University of British Columbia, Canada
Mr. Uchenna Anyaoha, University of British Columbia, Canada
Mr. Kevin Siggers, Rosen Canada Ltd., Canada
Dr. Zheng Liu, University of British Columbia, Canada


Mrs. Shima Sadaf, Qatar University, Qatar
Dr. Nasser Al-emadi, Qatar University, Qatar
Dr. Atif Iqbal, Qatar University, Qatar
Dr. Mahajan Sagar Bhaskar, Qatar University, Qatar
Mr. Mohammad Meraj, Qatar University, Qatar

High Precision Off-line Parameters Identification of PMSM Considering Dead-time Effect

Dr. Mohamed Ayeb, Automotive EE Systems, University of Kassel, Germany

Calculation and Analysis of Symmetrical Short Circuit Currents in Permanent Magnet Synchronous Machines

Mr. Lukas Dedeleit, Automotive EE Systems, University of Kassel, Germany
Prof. Ludwig Brabetz, Automotive EE Systems, University of Kassel, Germany
Dr. Mohamed Ayeb, Automotive EE Systems, University of Kassel, Germany

Optimization of the PI Controller Used in Model Predictive Torque Control through Differential Evolution

Mr. Arthur Nascimento Rosa Lima, Federal University of Technology - Parana, Brazil
Mr. Guilherme Adriano Juliani Storti, Federal University of Technology - Parana, Brazil
Dr. Marcelo Goddel, Federal University of Technology - Parana, Brazil
Dr. Emerson Ravazzi Pires Silva, Federal University of Technology - Parana, Brazil

Initial Evaluation of Permanent Magnet Synchronous Motor Structures for Light Electric Vehicle Applications

Dr. Claudia Alexandru Oprea, Technical University of Cluj-Napoca, Romania
Dr. Calin Iclodean, Technical University of Cluj-Napoca, Romania
Mr. Mihai Chiara, Technical University of Cluj-Napoca, Romania

IEEE Industrial Electronics Society
Control Architecture of Solar PV AC-Bus Microgrid with Battery Storage System

Mr. Rupak Kanti Dhar, Division of Engineering, Saint Mary’s University, Canada
Dr. Adel Merabet, Division of Engineering, Saint Mary’s University, Canada
Dr. Amer M.Y.M Ghias, Nanyang Technological University, Singapore
Dr. Zheng Qin, Nova Scotia Power, Canada

Time: 16:00 – 16:20

Central Power Management System for Hybrid PV/Battery AC-Bus Microgrid Using Typhoon HIL

Mr. Hooman Ekhteraei Toosi, Division of Engineering, Saint Mary’s University, Canada
Prof. Adel Merabet, Division of Engineering, Saint Mary’s University, Canada
Prof. Amer M.Y.M Ghias, School of Electrical & Electronic Engineering, Nanyang Technological University, Singapore
Prof. Andrew Swingler, Faculty of Sustainable Design Engineering, University of Prince Edward Island, Canada

Time: 16:20 – 16:40

Battery Energy Storage Systems for Mitigating Fluctuations Caused by Pulse Loads and Propulsion Motors in Shipboard Microgrids

Mr. Muhammad Umair Mutarraf, Department of Energy Technology, Aalborg University, Denmark
Mr. Yacine Terriche, Department of Energy Technology, Aalborg University, Denmark
Mr. Kameran Ali Khan Niazi, Department of Energy Technology, Aalborg University, Denmark
Dr. Chan-Lien Su, Department of Marine Engineering, National Kaohsiung University of Science and Technology, Taiwan
Dr. Juan C. Vasquez, Department of Energy Technology, Aalborg University, Denmark
Dr. Josep M. Guerrero, Department of Energy Technology, Aalborg University, Denmark

Time: 16:40 – 17:00

Control Strategy for A Battery Energy Storage System with Parallel Paths

Ms. Xiaoquan Xu, University of Manitoba, Canada
Prof. Shaahin Filizadeh, University of Manitoba, Canada

Time: 17:00 – 17:20

A Brief Review on State-of-the-art Grid-connected Inverters for Renewable Energy Sources

Mr. Amirhosein Akbari, Queen’s University, Canada
Ms. Fereshteh Poloei, Queen’s University, Canada
Prof. Alireza Bakhshai, Queen’s University, Canada

Time: 17:20 – 17:40

Supercapacitors Characterization Using Impedance Spectroscopy

Mr. Cheikh Tidiane Sarr, GREAH laboratory, France
Prof. Mamadou Bailo Camara, GREAH laboratory, France
Prof. Brayima Dakyo, GREAH laboratory, France

Time: 17:40 – 18:00

Distributed Impulsive Consensus Control for General Second-Order Multi-agent Systems

Mr. Min Li, Huazhong University of Science and Technology, China
Dr. Zhi-Wei Liu, Huazhong University of Science and Technology, China
Prof. Zhi-Hong Guan, Huazhong University of Science and Technology, China
Dr. Xiong Hu, Huazhong University of Science and Technology, China

Time: 16:00 – 16:20

Group Consensus of Networking Heterogeneous Agents with Parametric Uncertainties

Mr. Yingxia Zhou, Hangzhou Dianzi University, China
Mr. Jintao Gong, Hangzhou Dianzi University, China
Dr. Guang Chen, Taizhou University, China
Prof. Hong-Xiang Hu, Hangzhou Dianzi University, China

Time: 16:20 – 16:40

Normalization Performance Evaluation Method for Distribution Automation Terminal

Mr. Ruijiang Zeng, Electric Power Research Institute, Guangdong Power Grid Co., Ltd., China
Ms. Yeyuan Xu, School of Electrical Engineering and Automation, Hefei University of Technology, China
Mr. Di Wu, School of Electrical Engineering and Automation, Hefei University of Technology, China

Time: 17:00 – 17:20

Consensus Tracking of Second-order Multi-agent Systems with Input Saturation under General Directed Communication Graph

Dr. Junjie Fu, Southeast University, China
Dr. Yuez Fei, Southeast University, China

IEEE Industrial Electronics Society
Time: 17:20 – 17:40  
**Intelligent Station Area Recognition Technology Based on NB-IoT and SVM**  
Mr. Zhizhong Liu, Henan XJ Metering Co., Ltd., China  
Mr. Zhiyao Dai, Henan XJ Metering Co., Ltd., China  
Mr. Pengpeng Yu, Henan XJ Metering Co., Ltd., China  
Mr. Qingchun Jin, Heifei University of Technology, China  
Dr. Haibo Du, Heifei University of Technology, China  
Dr. Zhaobi Chu, Heifei University of Technology, China  
Mr. Di Wu, Heifei University of Technology, China

Time: 17:40 – 18:00  
**Distributed Adaptive Neural Consensus Control for Cooperative Nonlinear Systems with Unknown Dynamics and Switching Topology**  
Ms. Chunyu Zhang, Heilongjiang University, China  
Dr. Xin Wang, Heilongjiang University, China  
Dr. Jianing Lyu, Heilongjiang University, China  
Dr. Xinxing Yang, Heilongjiang University, China

**Room: Salon E**  
**Time: 16:00 – 18:20, June 13**  
**Co-Chair: Peter Palensky and Zhouhua Peng**  
**TT01 - SET4**  
**Power Systems and Smart Grid, Part I**

Time: 16:00 – 16:20  
**A Novel Phase-Locked Loop for Grid Synchronization under Unbalanced and Harmonic Conditions**  
Mr. Raide Hua, Dalian Maritime University, China  
Prof. Wang Dan, Dalian Maritime University, China  
Prof. Zhourou Peng, Dalian Maritime University, China  
Dr. Lu Liu, Dalian Maritime University, China  
Dr. Xin Zhou, Dalian Maritime University, China

Time: 16:20 – 16:40  
**Integration of Renewable DGs to Radial Distribution System for Loss Reduction and Voltage Profile Improvement**  
Mrs. Usha Rani Vinjamuri, Koneru Lakshmaiah Education Foundation, Gokaraju Rangaraju Institute of Engineering and Technology, India  
Dr. Lovewara Rao B, Koneru Lakshmaiah Education Foundation, India  
Dr. Sridevi J, Gokaraju Rangaraju Institute of Engineering and Technology, India

Time: 16:40 – 17:00  
**Design and Implementation of Model Predictive Control for Parallel Distributed Energy Resource in Islanded AC Microgrids**  
Mr. Hussain Sarwar Khan, Bahria University Islamabad, Pakistan  
Dr. Muhammad Asimir, Bahria University Islamabad, Pakistan  
Mr. Muhammad Ali, Bahria University Islamabad, Pakistan  
Mr. Mohsin Murtaza, Bahria University Islamabad, Pakistan  
Mr. Zubair Asif, Islamia University of Bahawalpur, Pakistan

Time: 17:00 – 17:20  
**Application of Battery Storage System to Improve Transient Responses in A Distribution Grid**  
Mr. Thaer Qunais, Mississippi State University, USA  
Dr. Roshan Sharma, Mississippi State University, USA  
Dr. Masoud Karimi-Ghartemani, Mississippi State University, USA  
Dr. Sayed Ali Khajehoddin, University of Alberta, Canada  
Mr. Sushil Silwal, Mississippi State University, USA

Time: 17:40 – 18:00  
**Improving the Diagnosis of Incipient Faults in Power Transformers Using Dissolved Gas Analysis and Multilayer Perceptron**  
Ms. Sivu Nkossi, University of Johannesburg, South Africa  
Dr. Pitshou Bokoro, University of Johannesburg, South Africa

Time: 18:00 – 18:20  
**Analysis of the Spatial Uncertainty of Line Rating Monitoring Systems in Smart Grids**  
Mr. Rafael Alberdi, University of the Basque Country, Spain  
Dr. Igor Albitza, University of the Basque Country, Spain  
Dr. Elvira Fernandez, University of the Basque Country, Spain  
Dr. Miren T. Bedalaceta, University of the Basque Country, Spain  
Dr. Roberto Fernandez, University of the Basque Country, Spain  
Prof. A. Javier Mazon, University of the Basque Country, Spain

Time: 16:00 – 16:20  
**Design and Implementation of Fractional-Order Sliding Mode Control for Parallel Distributed Generations Units in Islanded Microgrid**  
Mr. Mohammad Ali, Bahria University Islamabad, Pakistan  
Dr. Muhammad Asim, Bahria University Islamabad, Pakistan  
Mr. Hussain Sarwar Khan, Bahria University Islamabad, Pakistan  
Mr. Abdul Aziz Khan, Bahria University Islamabad, Pakistan  
Mr. Faheem Haroon, Bahria University Islamabad, Pakistan

Time: 16:20 – 16:40  
**Resilient and Networked Control of Complex Cyber-Physical Systems**  
Room: Port of Vancouver  
**Time: 16:00 – 18:20, June 13**  
**Co-Chair: Bin Zhang and Bin Xu**  
**SS21 - PVT4**  
**Neural-Network Adjustable Admittance Control for the**
Human-Robot Interaction System

Mr. Han Zhuang, State Key Laboratory for Turbulence and Complex Systems, Department of Mechanics and Aerospace Engineering, College of Engineering, Peking University, China
Mr. Qishao Wang, State Key Laboratory for Turbulence and Complex Systems, Department of Mechanics and Aerospace Engineering, College of Engineering, Peking University, China
Mr. Zhao Zhang, State Key Laboratory for Turbulence and Complex Systems, Department of Mechanics and Aerospace Engineering, College of Engineering, Peking University, China
Prof. Zhisheng Duan, State Key Laboratory for Turbulence and Complex Systems, Department of Mechanics and Aerospace Engineering, College of Engineering, Peking University, China
Time: 16:20 – 16:40 VD-096165

Model-free Neural-Network-Based Control for A 6-DOF Uncertain Robot Manipulator

Mr. Guannan Lv, Department of Mechanics and Aerospace Engineering, College of Engineering, Peking University, China
Mr. Peihu Duan, Department of Mechanics and Aerospace Engineering, College of Engineering, Peking University, China
Prof. Zhisheng Duan, Department of Mechanics and Aerospace Engineering, College of Engineering, Peking University, China
Time: 16:40 – 17:00 VD-08838

Two-Player Stackelberg Game for Linear System via Value Iteration Algorithm

Ms. Man Li, Department of Automation, University of Science and Technology of China, China
Prof. Jiahu Qin, Department of Automation, University of Science and Technology of China, China
Dr. Lei Ding, Institute of Advanced Technology, Nanjing University of Posts and Telecommunications, China
Time: 17:00 – 17:20 VD-088672

Resilient Event-Triggered H∞ Load Frequency Control of Isolated Hybrid Power System under Periodic DoS Jamming Attacks

Ms. Huimin Chen, Nanjing University of Posts and Telecommunications, China
Dr. Songlin Hu, Nanjing University of Posts and Telecommunications, China
Prof. Dong Yue, Nanjing University of Posts and Telecommunications, China
Mrs. Xiaoli Chen, Nanjing University of Posts and Telecommunications, China
Time: 17:20 – 17:40 VD-010197

Robust Model Predictive Control of the Cutterhead System in Tunnel Boring Machines

Dr. Langwen Zhang, South China University of Technology, China
Prof. Jinfeng Liu, University of Alberta, Canada
Prof. Wei Xie, South China University of Technology, China
Dr. Xuyuan Yin, University of Alberta, Canada
Time: 17:40 – 18:00 VD-013234

Stable Consensus for Heterogeneous Nonlinear Multi-agent Systems with Non-zero Inputs

Prof. Bohui Wang, Xidian University, China
Prof. Bin Zhang, University of South Carolina, USA
Time: 18:00 – 18:20 VD-013293

Discrete Sliding Mode Adaptive Control of HF with Prediction Model

Mr. Yixin Cheng, Northwestern Polytechnical University, China
Ms. Shu Yang, Xi’an Hengtian Control Technology Co. LTD, China
Prof. Dong Zhang, Northwestern Polytechnical University, China
Prof. Yu Zhang, Zhejiang University, China
Time: 16:00 – 16:20 VD-00133

EMD-Kalman Filter Design for Wind Turbine Condition Monitoring

Mr. Salameh Jack P., Lias-Lasie, France
Dr. Canut Sebastien, Lias-Ensip, France
Dr. Etien Erik, Lias-Ensip, France
Prof. Sakout Anas, Lasie, France
Dr. Rambault Laurent, Lasie-Ensip, France
Time: 16:20 – 16:40 VD-012874

Analogue Implementation of A Fractional-Order PI^λ Controller for DC Motor Speed Control

Dr. Norbert Herencsar, Brno University of Technology, Czech Republic
Ms. Ashihan Karici, Brno University of Technology, Czech Republic
Dr. Jaroslav Koton, Brno University of Technology, Czech Republic
Dr. Roman Sotner, Brno University of Technology, Czech Republic
Dr. Baris Baykant Alegoz, Inonu University, Turkey
Dr. Celaleddin Yeroglu, Inonu University, Turkey
Time: 16:40 – 17:00 VD-007544

Switching LPV Control of A Floating Offshore Wind Turbine on A Semi-Submersible Platform

Dr. Pan Zhao, University of Illinois at Urbana-Champaign, USA
Prof. Ryozo Nagamune, University of British Columbia, Canada
Time: 17:00 – 17:20 VD-009075

Design of PCA-based Data-Driven Adaptive Output Feedback Control for Nonlinear Systems

Dr. Zhe Guan, Hiroshima University, Japan
Prof. Ikaro Mizumoto, Kumamoto University, Japan
Prof. Toru Yamamoto, Hiroshima University, Japan
Time: 17:20 – 17:40 VD-009342

Optimization of Two-channel Bilateral Control Based on Sensitivity Function through Transparency Analysis

Mr. Pablo Rene Lopez Deras, Yokohama National University, Japan
Prof. Yasutaka Fujimoto, Yokohama National University, Japan
Time: 17:40 – 18:00 VD-013234

IEEE Industrial Electronics Society
SS03 - PNT4
Advances in Data-Driven Process Monitoring and Control for Complex Industrial Systems
Room: Port of New York
Time: 16:00 – 18:20, June 13
Co-Chair: Hao Luo and Zhiwen Chen

A Study of PnP Process Monitoring Technique on Three-Tank System
Mr. ZhengBang Yang, Harbin Institute of Technology, China
Mr. Kuan Li, Harbin Institute of Technology, China
Mr. Hao Zhao, Harbin Institute of Technology, China
Prof. Hao Luo, Harbin Institute of Technology, China
Prof. Shen Yin, Harbin Institute of Technology, China
Prof. Okray Kaynak, Bogazici University, Turkey
Time: 16:20 – 16:40

MRAS-based Sensorless Control of PMSM with BPN in Prediction Mode
Dr. Hao Lin, Harbin Institute of Technology, China
Dr. Abraham Marquez, Universidad de Sevilla, Spain
Prof. Feng Wu, Shanghai Aerospace Control Technology Institute, China
Dr. Jianxing Liu, Harbin Institute of Technology, China
Dr. Hao Luo, Harbin Institute of Technology, China
Prof. Leopoldo G. Franquelo, Universidad de Sevilla, Spain
Prof. Ligang Wu, Harbin Institute of Technology, China
Time: 16:40 – 17:00

Converter Lifetime Modeling Based on Online Rainflow Counting Algorithm
Dr. Zhiwen Chen, Central South University, China
Mr. Fei Gao, Central South University, China
Mr. Chao Yang, Central South University, China
Ms. Lu Zhou, Central South University, China
Prof. Chunhua Yang, Central South University, China
Time: 17:00 – 17:20

A Voltage-based Open-Circuit Fault Diagnosis Approach for Single Phase Two-Level Converters
Ms. Jingrong Zhang, School of Automation, Central South University, China
Prof. Tao Peng, School of Automation, Central South University, China
Mr. Chao Yang, School of Automation, Central South University, China
Dr. Zhiwen Chen, School of Automation, Central South University, China
Prof. Chunhua Yang, School of Automation, Central South University, China
Mr. Haoqiao Wen, School of Automation, Central South University, China
Time: 17:20 – 17:40

Cross-process Alarm Flood Similarity Analysis Based on Abstracted Alarm Descriptors
Mr. Boyuan Zhou, University of Alberta, Canada
Dr. Wenkai Hu, China University of Geosciences, China
Dr. Tongwen Chen, University of Alberta, Canada
Time: 17:40 – 18:00

Semisupervised Refrigeration Plant Cooling Disaggregation by Means of Deep Neural Network Ensemble
Dr. Josep Cirera Balcells, Technical University of Catalonia, Spain
Dr. Jesus Adolfo Carino Corrales, Technical University of Catalonia, Spain
Dr. Daniel Zurita Millan, Technical University of Catalonia, Spain
Prof. Juan Antonio Ortega Redondo, Technical University of Catalonia, Spain
Time: 18:00 – 18:20

SS07 - PST4 - Advanced Control for Energy Efficient Powertrain
Room: Port of Singapore
Time: 16:00 – 18:20, June 13
Co-Chair: Hui Zhang and Chao Wei

Innovative Design and Coordinated Control of Multimode Coupling Drive System with A Speed-up Clutch for Plug-in Hybrid Electric Vehicles
Mrs. Bingnan Qi, Yanshan University, China
Mr. Wei Liu, Yanshan University, China
Prof. Lipeng Zhang, Yanshan University, China
Mr. Dikang Jia, Yanshan University, China
Prof. Shaohua Li, Shijiazhuang Tiedao University, China
Mr. Bin Liu, Shijiazhuang Tiedao University, China
Time: 16:00 – 16:20
Advanced Modulation Scheme of Dual Active Bridge for High Conversion Efficiency

Mr. Majid Farhangi, University of Sydney, Australia
Prof. Weidong Xiao, University of Sydney, Australia
Prof. Huiqing Wen, Xi’an Jiaotong-Liverpool University, China

Time: 16:20 – 16:40
VD-002518

Simulation Analysis of Vehicle Trajectory Tracking Based on Model Predictive Control

Mr. Haoyang Fan, Shijiazhuang Tiedao University, China
Prof. Shaohua Li, Shijiazhuang Tiedao University, China

Time: 16:40 – 17:00
VD-002216

Research on Nonlinear Robust Control of Steering/Braking System of Heavy-duty Vehicle

Mr. Junning Zhang, Shijiazhuang Tiedao University, China
Prof. Shaopu Yang, Shijiazhuang Tiedao University, China

Time: 17:00 – 17:20
VD-002194

Research on Longitudinal Slip Ratio H∞ Control of Electric Wheel Considering Time-varying Parameters

Prof. Chao Wei, Beijing Institute of Technology, China
Mr. Yubo Ye, Beijing Institute of Technology, China
Dr. Xitao Wu, Beijing Institute of Technology, China
Mr. Yi Sun, Beijing Institute of Technology, China

Time: 17:20 – 17:40
VD-002038

Study on MPC-based Energy Management for A Series Tracked Vehicle

Prof. Wei Chao, Beijing Institute of Technology, China
Dr. Wu Xitao, Beijing Institute of Technology, China
Ms. Liu Sicheng, Beijing Institute of Technology, China

Time: 17:40 – 18:00
VD-001996

Defects detection of Vehicle Steering Knuckle Based on Magnetic-acoustic Multi-physical Field Coupling Technology

Dr. Xin Huang, Shandong Jiaotong University, China
Dr. Xuyun Qiu, Shandong Jiaotong University, China
Dr. Aijuan Li, Shandong Jiaotong University, China
Dr. Yumin Song, Shandong Academy of Agricultural Machinery Sciences, China

Time: 18:00 – 18:20
VD-002852
Oral Session on
Friday, June 14

**TT04 - BAF1**
Power Electronics and Energy Conversion, Part I

Room: Ballroom A
Time: 08:00 – 10:20, June 14
Co-Chair: R. M. Nelms and Natalia Santos

**The HVDC Dual Transmission System under DC Short-Circuit Faults**
Prof. Natalia Santos, ESTSetubal/IPS, Portugal
Prof. Vitor Fernao Pires, ESTSetubal/IPS, Portugal
Prof. Jose Fernando Silva, Ist/UL, Portugal
Time: 08:00 – 08:20

**Resonant Converter for High-Voltage and High-Frequency Output to Generate OZONE**
Mr. Marlon Jesus Albarqueque Valdivia, Sao Paulo State University - UNESP, Brazil
Mr. Luis de Oro Arenas, Sao Paulo State University, Brazil
Prof. Guillerme de Azevedo e Melo, Sao Paulo State University - UNESP, Brazil
Prof. Carlos Alberto Canesin, Sao Paulo State University - UNESP, Brazil
Time: 08:20 – 08:40

**Cuk Integrated Inverter Applied to Grid-Connected PV Systems**
Mr. Jhon Brajhan Benites Quipe, São Paulo State University, Brazil
Mr. Luis De Oro Arenas, São Paulo State University, Brazil
Prof. Guilherme De Azevedo e Melo, São Paulo State University, Brazil
Prof. Carlos Alberto Canesin, São Paulo State University, Brazil
Time: 08:40 – 09:00

**A Modified IRPT Control Method for A Shunt Active Power Filter for Unbalanced Conditions**
Dr. Saad F. Al-Gahtani, Electrical Engineering Department, King Khalid University, Saudi Arabia
Prof. R. M. Nelms, Electrical and Computer Engineering Department, Auburn University, USA
Time: 09:00 – 09:20

**A Novel Adaptive Control of Three-Phase Inverter for Standalone Distributed Generation System Using Modified Super-Twisting Algorithm with Time Delay Estimation**
Mr. Mohamed-Hamza Laraki, Electrical Department-ETS, Canada
Dr. Brahim Brahimi, Electrical department-ETS, Canada
Prof. Chandra Ambrish, Electrical Department-ETS, Canada
Prof. Kodjo Agbossou, Electrical Department-UQTR, Canada
Dr. Alben Cardenas Gonzalez, Electrical Department-UQTR, Canada
Time: 09:20 – 10:00

**Modified Lyapunov-based Model Predictive Direct Power Control of an AC-DC Converter with Power...**
Ripple Reduction
Mr. Nishant Kashyap, McMaster University, Canada
Dr. Mehdi Narimani, McMaster University, Canada
Dr. Jennifer Bauman, McMaster University, Canada
Time: 10:00 – 10:20  
VD-001821

Three-Phase Scalar PWM with Zero Averaged Common-Mode Voltage
Prof. Hung-Chi Chen, National Chiao Tung University, Taiwan
Mr. Chun-Ting Yeh, National Chiao Tung University, Taiwan
Time: 08:00 – 08:20  
VD-006971

Fault Diagnosis of Cascaded H-bridge Multilevel Inverter by DWPT Multiresolution and ANN
Mr. Anilkumar Chappa, National Institute of Technology, Raipur, India
Prof. Shubhrata Gupta, National Institute of Technology, Raipur, India
Dr. Lalit Kumar Sahu, National Institute of Technology, Raipur, India
Dr. Shivam Prakash Gautam, Indian Institute of Technology, Bombay, India
Time: 08:20 – 08:40  
VD-006998

Nine-Level Fault Tolerant MLI with Reduced Device Count
Mr. Anilkumar Chappa, National Institute of Technology, Raipur, India
Prof. Shubhrata Gupta, National Institute of Technology, Raipur, India
Dr. Lalit Kumar Sahu, National Institute of Technology, Raipur, India
Dr. Shivam Prakash Gautam, Indian Institute of Technology, Bombay, India
Time: 08:40 – 09:00  
VD-007102

Investigation of Different Controllers and Observers Combinations for Grid-Tied LCL Filter
Mr. Abdel Gafoor Haddad, Khalifa University, United Arab Emirates
Mr. Muhammad Ahmed Humais, Khalifa University, United Arab Emirates
Dr. Ahmed Al-Durra, Khalifa University, United Arab Emirates
Time: 09:00 – 09:20  
VD-007188

Fault Detection in Hybrid Multilevel Inverter
Mr. Tushar Janarao Nistane, NIT Raipur, India
Dr. Lalit Kumar Sahu, NIT Raipur, India
Mr. Manik Jhalothra, NIT Raipur, India
Dr. Shivam Prakash Gautam, IIT Bombay, India
Time: 09:20 – 09:40  
VD-015156

Series Connection of VSC Modules for Offshore Wind Farm Application
Dr. Xiaoqian Fu, École de Technologie Supérieure, Canada
Prof. Kamal Al-Haddad, École de Technologie Supérieure, Canada
Prof. Louis-A. Dessaint, École de Technologie Supérieure, Canada
Dr. Hamadi Abdelhamid, École de Technologie Supérieure, Canada
Time: 09:40 – 10:00  
VD-015369

Applications of Artificial Intelligence in Power Electronics
Mr. Pouria Qashqai, École de technologie supérieure (ÉTS), Canada
Dr. Hani Vahedi, Ossiaco Inc., Quebec, Canada
Prof. Kamal Al-Haddad, École de technologie supérieure (ÉTS), Canada
Time: 10:00 – 10:20  
VD-003077

Nine-Level Packed U-Cell (PUC9) Inverter Topology with Single-DC-Source and Effective Voltage Balancing of Auxiliary Capacitors
Mr. Saeed Arazm, Ecole de Technologie Superieure, University of Quebec, Montreal, Quebec, Canada
Dr. Hani Vahedi, Power Electronics Dep., Ossiaco Inc., Montreal, Quebec, Canada
Prof. Kamal al-Haddad, Ecole de Technologie Superieure, University of Quebec, Montreal, Quebec, Canada
Time: 09:40 – 10:00  
VD-006483

Online Static Load Model Estimation in Distribution Systems
Mr. Hongda Ren, Washington State University, United States
Dr. Venkat Krishnan, National Renewable Energy Laboratory, United States
Dr. Yingchen Zhang, National Renewable Energy Laboratory, United States
Prof. Noel Schulz, Washington State University, United States
Time: 08:20 – 08:40  
VD-006459

A Robust and Simple Phase-Locked Loop for Unbalanced Power Grid Applications
Prof. Houushag Karimi, Polytechnique Montreal, Canada
Dr. Tarnes Seyedi, Polytechnique Montreal, Canada
Prof. Masoud Karimi-Ghartemani, Mississippi State University, USA
Time: 08:40 – 09:00  
VD-005258

An Efficient Approach Improving Load Adaptability for Limited Volume DC System
Mr. Rui Zhang, Northwestern Polytechnical University, China
Prof. Yanjun Dong, Northwestern Polytechnical University, China
Prof. Xiaobin Zhang, Northwestern Polytechnical University, China
Time: 09:00 – 09:20  
VD-005126

Modeling and Analysis of Transient Interactions in AC/DC Interconnected Microgrid
Prof. Kamal Al-Haddad, École de Technologie Supérieure, Canada
Prof. Louis-A. Dessaint, École de Technologie Supérieure, Canada
Dr. Hamadi Abdelhamid, École de Technologie Supérieure, Canada
Localized Fault Protection in the DC Microgrids with Ring Configuration

Mr. Navid Bayati, Aalborg University, Energy Technology Department, Denmark
Dr. Amin Hajizadeh, Aalborg University, Energy Technology Department, Denmark
Dr. Mohsen Soltani, Aalborg University, Energy Technology Department, Denmark

Time: 09:20 – 09:40

Using Revealed-bidding in Power Markets: A Paradigmatic Model

Mr. Sebastian Lange, RMIT University, Australia
Dr. Peter Sokolowski, RMIT University, Australia
Prof. Eckehard Schöll, TU Berlin, Germany
Prof. Xinghuo Yu, RMIT University, Australia

Time: 09:40 – 10:00

Single-phase Standalone Inverter with An Integrated Control Structure

Mr. Jose Luis Mata, Instituto Politecnico Nacional, Mexico
Dr. Oscar Caranza, Instituto Politecnico Nacional, Mexico
Dr. Ruben Ortega, Instituto Politecnico Nacional, Mexico
Dr. Jaime Jose Rodriguez, Instituto Politecnico Nacional, Mexico
Mr. Daniel Memije, Instituto Politecnico Nacional, Mexico

Time: 10:00 – 10:20

Different Iron Loss Models for Electrical Steel Sheets Considering Harmonic Flux Signals

Mr. Matthias Stiller, Friedrich-Alexander University Erlangen-Nuremberg, Institute of Electrical Drives and Machines, Germany
Prof. Ingo Hahn, Friedrich-Alexander University Erlangen-Nuremberg, Institute of Electrical Drives and Machines, Germany

Time: 08:20 – 08:40

Dynamic Model Predictive Current Control Based on Deviation for Permanent Magnet Synchronous Motor

Prof. Yuyao He, Northwestern Polytechnical University, China
Dr. Yuhao Xu, Northwestern Polytechnical University, China

Time: 08:40 – 09:00

TT03 - SCF1
Control Systems and Applications, Part II

Room: Salon C
Time: 08:00 – 10:20, June 14
Co-Chair: Zhen Shao and Yimin Zhou

TT02 - PFF1
Electrical Machines and Industrial Drives, Part III

Room: Port of San Francisco
Time: 08:00 – 10:20, June 14
Co-Chair: Nobuyuki Kasa and Matthias Stiller

Optimum Design of Double Sided Linear Switched Reluctance Motor Based on Taguchi Method

Dr. Alireza Siadatan, Department of Electrical Eng., College of Technical and Engineering, West Tehran Branch, Islamic Azad University, Tehran, Iran
Ms. Mahsa Karami, Department of Electrical Eng., Science and Research Branch, Islamic Azad University Tehran, Iran

Time: 09:40 – 10:00

Proximity-Based Sensorless Control Methods for a PM-assisted Synchronous Reluctance Machine with A Ribless Rotor

Prof. Nobuyuki Kasa, Okayama University of Science, Japan
Dr. Tomonori Katsuta, Industrial Technology Center of Okayama Prefecture, Japan

Time: 09:00 – 09:20

Optimum Design of Double Sided Linear Switched Reluctance Motor Based on Taguchi Method

Dr. Alireza Siadatan, Department of Electrical Eng., College of Technical and Engineering, West Tehran Branch, Islamic Azad University, Tehran, Iran
Ms. Mahsa Karami, Department of Electrical Eng., Science and Research Branch, Islamic Azad University Tehran, Iran

Time: 09:40 – 10:00

Short-Circuited Rotor Windings for Improving the Electromagnetic Saliency for Inductance- and Resistance-based Self-Sensing Control

Mr. Christoph Hittinger, Friedrich-Alexander University Erlangen-Nuremberg, Institute of Electrical Drives and Machines, Germany
Prof. Ingo Hahn, Friedrich-Alexander University Erlangen-Nuremberg, Institute of Electrical Drives and Machines, Germany

Time: 10:00 – 10:20

Designing and Optimization of 9/12 Stator Permanent Magnet SRM to Improve Torque Ripple

Mr. Farhad Mashhadifarahan, West Tehran Branch, Islamic Azad University, Iran
Dr. Alireza Siadatan, University of Toronto, Canada
Dr. Davood Karamalizadeh, Najafabad Branch, Islamic Azad University, Iran
Dr. Behrooz Majidi, Najafabad Branch, Islamic Azad University, Iran
Dr. Azadeh Ghatami, York University, AirGemunity Inc., Canada

Time: 09:00 – 09:20

Dynamic Model Predictive Current Control Based on Deviation for Permanent Magnet Synchronous Motor

Prof. Yuyao He, Northwestern Polytechnical University, China
Dr. Yuhao Xu, Northwestern Polytechnical University, China

Time: 08:40 – 09:00

TT03 - SCF1
Control Systems and Applications, Part II

Room: Salon C
Time: 08:00 – 10:20, June 14
Co-Chair: Zhen Shao and Yimin Zhou

A Non-singular Terminal Recursive Surface Structure Design for Higher-order Systems

Mr. Jyoti Mishra, Australia
Prof. Xinghuo Yu, Australia
Dr. Mahdi Jalili, Australia

Time: 08:00 – 08:20

IEEE Industrial Electronics Society
Interpreting Sampled-Data Systems with Time-Delayed Descriptor State-Space Expressions
Prof. Jun Zhou, Hohai University, China
Dr. Zhen Shao, Hohai University, China

Ship Weather Routing Based on Grid System and Modified Genetic Algorithm
Mr. Peng Zhou, State Key Laboratory of Integrated Optoelectronics, College of Electronic Science and Engineering, Jilin University, Changchun, Jilin Province, China
Ms. Hongbo Wang, State Key Laboratory of Integrated Optoelectronics, College of Electronic Science and Engineering, Jilin University, Changchun, Jilin Province, China
Ms. Zhiying Guan, State Key Laboratory of Integrated Optoelectronics, College of Electronic Science and Engineering, Jilin University, Changchun, Jilin Province, China

Synchronization of Chaotic Electronic Circuits Using Nonlinear Optimal Control
Dr. Gerasimos Rigatos, Unit of Industrial Automation, Industrial Systems Institute, Greece
Dr. Masoud Abbaszadeh, GE Global Research, General Electric Co, USA

Model of Hybrid Speed and Throttle Control for Centrifugal Pump System Enhancement
Dr. Levon Gevorkov, University of West Bohemia, Czech Republic
Dr. Václav Šmidl, University of West Bohemia, Czech Republic
Dr. Martin Širový, University of West Bohemia, Czech Republic

Optimal Active Disturbance Rejection Controller Design of Quadrotor Based on Adaptive Particle Swarm Optimization
Mr. Bo Han, Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China
Dr. Yimin Zhou, Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China
Dr. Chaofang Hu, Tianjin University, China

Explicit Consideration of Inverter Losses in the Cost Function for Finite Control Set Model Predictive Control of Induction Machine, Experimental Results
Mr. Ali Montazeri, Technische Universität Darmstadt, Germany
Prof. Gerd Griepentrog, Technische Universität Darmstadt, Germany

Control of Master-Slave System Using Optimal NPID and FOPID
Ms. Sara A. Rashad, Heliospolis University, Egypt
Dr. Mohamed Sallam, Helwan University, Egypt
Prof. A. M. Bassam, Helwan University, Egypt
Prof. A. M. Abdelghany, October 6 University, Egypt

A Waste Metal Sorting System Using LIBS Classification
Mr. Minjae Cho, Gwangju Institute of Science and Technology, Korea (South)
Mr. Seongyu Park, Gwangju Institute of Science and Technology, Korea (South)
Ms. Eunsung Kwon, Gwangju Institute of Science and Technology, Korea (South)
Prof. Seongho Jeong, Gwangju Institute of Science and Technology, Korea (South)
Prof. Kyihwan Park, Gwangju Institute of Science and Technology, Korea (South)

MPCC-based Path Following Control for A Quadrotor with Collision Avoidance Guaranteed in Constrained Environments
Mr. Dong Wang, Northwestern Polytechnical University, China
Prof. Quan Pan, Northwestern Polytechnical University, China
Prof. Jimwen Hu, Northwestern Polytechnical University, China
Dr. Chunhui Zhao, Northwestern Polytechnical University, China
Ms. Yaning Guo, Northwestern Polytechnical University, China

A Backstepping Control Strategy for Fixed Wing UAV under Actuator Failure
Mr. Yufei Fu, Concordia University, Canada
Prof. Youmin Zhang, Concordia University, Canada
Mr. Ziquan Yu, Concordia University, Canada
Dr. Zhixiang Liu, Concordia University, Canada

Image-based Visual Servoing of A Quadrotor with Improved Visibility Using Model Predictive Control
Mr. Huaiyuan Sheng, University of Victoria, Canada
Mr. Eric Shi, Mount Douglas Secondary School, Canada
Mr. Kunwu Zhang, University of Victoria, Canada

Dynamic Sliding Mode Attitude Tracking Control for Flexible Spacecraft
SS26 - SEF1
Energy Storage Systems for Resilience and Robustness Improvement in Smart Grid and Electric Mobility

Room: Salon E
Time: 08:00 – 10:20, June 14
Co-Chair: Federico Baronti and Alfonso Damiano

Power-Heat Generation Sources Planning in Microgrids to Enhance Resilience against Islanding due to Natural Disasters

Mr. Javad Najafi, Department of Electrical Engineering, Ferdowsi University of Mashhad, Iran
Prof. Ali Peiravi, Department of Electrical Engineering, Ferdowsi University of Mashhad, Iran
Dr. Amjad Anvari-Moghaddam, Department of Energy Technology, Aalborg university, Denmark
Prof. Josep Guerrero, Department of Energy Technology, Aalborg university, Denmark

Time: 08:20 – 08:40

A Multi-microgrid Aging Cost Optimization of Battery Storage Systems in Presence of Fluctuating Renewable Energy Sources

Dr. Angelo Facchini, IMT School for Advanced Studies Lucca, Italy
Dr. Saam Korjani, University of Cagliari, Italy
Prof. Alfonso Damiano, University of Cagliari, Italy

Time: 08:40 – 09:00

Wavelet-based ESS Sizing Strategy to Enable Power Peak-shaving in PV Systems

Mr. Nicolas Muller, Universidad Tecnica Federico Santa Maria, Chile
Dr. Samir Kouro, Universidad Tecnica Federico Santa Maria, Chile
Prof. Pericle Zanchetta, University of Nottingham, United Kingdom
Prof. Patrick Wheeler, University of Nottingham, United Kingdom
Dr. Aitor Marzo, Universidad de Antofagasta, Chile

Time: 09:00 – 09:20

Implementation and Test of A 48V Smart Battery System with Integrated DC/DC Converter

Dr. Rocco Morello, University of Pisa, Italy
Dr. Raluca Porcu, Fraunhofer IISB, Germany
Dr. Erik Hoedemaeker, TNO, Netherlands
Dr. Florian Habenschaden, AVL Software and Functions, Germany
Dr. Roberto Di Rienzo, University of Pisa, Italy
Prof. Roberto Roncella, University of Pisa, Italy

Time: 09:00 – 10:20

IEEE Industrial Electronics Society
Cyber Physical System in Context with System Level Engineering Model  
Prof. László Horváth, Óbuda University, Hungary  
Time: 08:40 – 09:00  
Integration of 3D-Printing Processes with A Cloud Manufacturing Platform  
Dr. Wilfried Lepuschitz, Practical Robotics Institute Austria, Austria  
Mr. Manuel Mayerhofer, Practical Robotics Institute Austria, Austria  
Mr. Timon Hoebert, Practical Robotics Institute Austria, Austria  
Dr. Munir Merdan, Practical Robotics Institute Austria, Austria  
Time: 09:00 – 09:20  
Development of Ergonomic User Interfaces for the Human Integration in Cyber-Physical Systems  
Ms. Ana Cachada, CeDRI - Research Centre in Digitalization and Intelligent Robotics, Portugal  
Dr. José Barbosa, CeDRI - Research Centre in Digitalization and Intelligent Robotics, Portugal  
Prof. Paulo Leitão, CeDRI - Research Centre in Digitalization and Intelligent Robotics, Portugal  
Mr. Leonel Deusdado, Instituto Politécnico de Bragança, Portugal  
Mr. Pedro Miguel Moreira, ARC4DigiT, Portugal  
Time: 09:20 – 09:40  
Improving Attack Trees Analysis Using Petri Net Modeling of Cyber-Attacks  
Mrs. Shabnam Pasandideh, Universidade Nova de Lisboa - FCT - DEEC & UNINOVA - CTS, Portugal  
Prof. Luis Gomes, Universidade Nova de Lisboa - FCT - DEEC & UNINOVA - CTS, Portugal  
Prof. Pedro Maio, Universidade Nova de Lisboa - FCT - DEEC, Portugal  
Time: 09:40 – 10:00  
TT04 - BAF2  
Power Electronics and Energy Conversion, Part III  
Room: Ballroom A  
Time: 10:50 – 12:30, June 14  
Co-Chair: Alireza Siadatan and Tomas Komrska  
Time: 10:50 – 11:10  
A New LLC Converter with Wide Output Voltage Range and Improved Efficiency at Medium or Low Output Voltage  
Mr. Jiuxuan Zhou, Zhejiang University, China  
Prof. Hao Ma, Zhejiang University, China  
Time: 11:10 – 11:30  
Dual Current Feedback Active Damping for Improving Transient Performance of LCL-filter-based Grid-connected Inverter  
Mr. Minhan Dong, Zhejiang University, China  
Prof. Zhuhong Bai, Zhejiang University, China  
Prof. Hao Ma, Zhejiang University, China  
Time: 11:30 – 11:50  
TT04 - BBF2  
Power Electronics and Energy Conversion, Part IV  
Room: Ballroom B  
Time: 10:50 – 12:30, June 14  
Co-Chair: Lotfi Beghou and Stefan Soter  
Time: 10:50 – 11:10  
Verification of the Current Load Capacity of the MOSFET Transistor for Low-Voltage Application Using Temperature Estimation  
Mr. Jan Stepanek, Czech Republic  
Mr. Bedrich Bednar, Czech Republic  
Dr. Pavel Drabek, Czech Republic  
IEEE Industrial Electronics Society
Hybrid Single Phase Wide Range Amplitude and Frequency Detection with Fast Reference Tracking

Mr. Lucas Mattiuzzi Kunzler, Concordia University, Canada
Prof. Luiz A. C. Lopes, Concordia University, Canada

Symmetrical Bidirectional CLLC-Converter with Simplified Synchronous Rectification for EV-Charging in Isolated DC Power Grids

Mr. Tobias Schneider, University of Wuppertal, Germany
Mr. Sascha Kratz, University of Wuppertal, Germany
Mr. Ralf Wegener, University of Wuppertal, Germany
Mr. Stefan Soter, University of Wuppertal, Germany

Design of Variable Inductor for Powertrain DC-DC Converter

Mr. Mebrahtom Beraki, University of Sherbrooke, Canada
Prof. Joao Pedro Trovao, University of Sherbrooke, Canada
Prof. Marina Perdigao, Isec/ISEC, Portugal

Sequential Switch Association in An N-Stage Interleaved Boost Converter for High Efficiency AC-DC Conversion

Dr. Lotfi Beghou, University of Batna 2, Algeria
Prof. François Costa, ENS de Cachan, France

Hybrid Dynamic Model of SCR Denitrification System for Coal-Fired Power Plant

Prof. Tingting Yang, North China Electric Power University, China
Mr. Kangfeng Ma, North China Electric Power University, China
Prof. You Lv, North China Electric Power University, China
Prof. Pang Fang, North China Electric Power University, China
Prof. Chang Taihua, North China Electric Power University, China

A Study on Markovian and Deep Learning based Architectures for Household Appliance-level Load Modeling and Recognition

Mr. Saeed Hosseini, University of Québec at Trois-Rivières, Canada
Dr. Nilson Henao, University of Québec at Trois-Rivières, Canada
Prof. Kojiyo Agbossou, University of Québec at Trois-Rivières, Canada
Dr. Alben Cardenas, University of Québec at Trois-Rivières, Canada

Enhancing PowerFactory Dynamic Models with Python for Rapid Prototyping

Mr. Claudio David López, Delft University of Technology, Netherlands
Dr. Milos Cvetkovic, Delft University of Technology, Netherlands
Prof. Peter Palensky, Delft University of Technology, Netherlands

Multi-Objective Optimized Operating Strategy of BTB-VSC for Grid Service

Mr. Changhee Han, Korea University, Korea (South)
Mr. Jaeyeong Lee, Korea University, Korea (South)
Dr. Sangchul Hwang, Korea University, Korea (South)
Prof. Gilsoo Jang, Korea University, Korea (South)

Design of Real-time Energy Management System for Medium Voltage Grid-connected Customer

Mr. Arthur Correia, Federal University of Ceará (UFC), Brazil
Mr. Adao Muniz, Infrastructure Secretary (SEINFRA), Brazil
Dr. Fernando Antunes, Federal University of Ceará (UFC), Brazil

A Novel Dual Slot Permanent Magnet Machine with Complementary Rotors for Electric Vehicle Propulsion

Dr. Qingsong Wang, University of British Columbia, Canada
Prof. Martin Ordonez, University of British Columbia, Canada
Prof. Junnian Wang, Jilin University, China
Mr. Mohammad Saket, University of British Columbia, Canada
Dr. Rouhollah Shafaei, University of British Columbia, Canada

Fault Tolerant Control of Dual Three-Phase Permanent Magnet Synchronous Motor Based on Double DQ Theory

Mr. Weichao Li, State Key Lab of Automotive Safety and Energy, Tsinghua University, China
Prof. DaWei Gao, State Key Lab of Automotive Safety and Energy, Tsinghua University, China
Mr. Lijun Luo, DIAS Automotive Electronic Systems Co, China
Mr. Xiangang Meng, DIAS Automotive Electronic Systems Co, China

Position Sensorless Direct Torque Control for PMSM Based on Pulse High Frequency Stator Flux Injection at Low Speed

Dr. Xiaogang Lin, Nanjing University of Aeronautics and Astronautics, China
Prof. Wenxin Huang, Nanjing University of Aeronautics and Astronautics, China
The 28th International Symposium on Industrial Electronics (ISIE)
Vancouver, Canada, June 12-14, 2019

**Time: 11:50 – 12:10**

**Higher-Order Sliding Mode Based High-Resistance Fault-Control in PMSM Drives**
Dr. Suneel Kumar Kommu, Korea University, Korea (South)
Mr. Yonghyun Park, Korea University, Korea (South)
Prof. Sang Bin Lee, Korea University, Korea (South)

**Time: 12:10 – 12:30**

**Autonomous 3-D Aerial Navigation System for Precision Agriculture**
Mr. Luís do O, Cts-Uninova, Portugal
Mr. Pedro Prates, Cts-Uninova, Portugal
Mr. Ricardo Mendonça, Cts-Uninova, Portugal
Mr. André Lourenço, Cts-Uninova, Portugal
Mr. Francisco Marques, Cts-Uninova, Portugal
Prof. Jose Barata, Cts-Uninova, Portugal

**TT09 - SDF2**
Factory Automation and Industrial Informatics
Room: Salon D
Time: 10:50 – 12:30, June 14
Co-Chair: Richard Candell and Bo Pang

**Time: 11:50 – 12:10**

**Stream-IT: Continuous and Dynamic Processing of Production Systems Data - Throughput Bottlenecks as A Case-study**
Mrs. Hannaneh Najdataei, Chalmers University, Sweden
Mr. Mukund Subramaniam, Chalmers University, Sweden
Prof. Vincenzo Gulisano, Chalmers University, Sweden
Prof. Anders Skoogh, Chalmers University, Sweden
Prof. Marina Papaefthymiou, Chalmers University, Sweden

**Time: 11:50 – 12:10**

**Design of 3D Detection System Based on Line-scan for Anchor Wedge**
Mr. Mingming Zhou, School of Electrical and Electronic Engineering, Hubei University of Technology, China

**Time: 11:00 – 11:30**

**Optimal Continuous Glucose Monitoring Sensor Calibration for Patients with Type 1 Diabetes**
Mr. Xiaoran Zhang, Beijing Institute of Technology, China
Ms. Wan Zhang, China-Japan Friendship Hospital, China
Dr. Yongtong Liu, Nist, USA
Dr. Mohamed Kashef, Nist, USA
Prof. Sebti Foufou, University of Burgundy, France

**Time: 11:30 – 11:50**

**Wireless Interference Estimation Using Machine Learning in A Robotic Force-seeking Scenario**
Mr. Richard Candell, Nist, USA
Mr. Karl Montgomery, Nist, USA
Dr. Mohamed Kashef, Nist, USA
Dr. Yongkang Liu, Nist, USA
Prof. Sebti Foufou, University of Burgundy, France

**Time: 11:00 – 11:30**

**Wireless Interference Estimation Using Machine Learning in A Robotic Force-seeking Scenario**
Mr. Richard Candell, Nist, USA
Mr. Karl Montgomery, Nist, USA
Dr. Mohamed Kashef, Nist, USA
Dr. Yongkang Liu, Nist, USA
Prof. Sebti Foufou, University of Burgundy, France

**Time: 11:30 – 11:50**

**A Collaborative Work Cell Testbed for Industrial Wireless Communications - The Baseline Design**
Dr. Yongkang Liu, Nist, USA
Mr. Richard Candell, Nist, USA
Dr. Mohamed Kashef, Nist, USA
Mr. Karl Montgomery, Nist, USA

**Time: 11:30 – 11:50**

**Nonlinear Optimal Control for Multilevel Inverters**
Dr. Gerasimos Rigatos, Unit of Industrial Automation, Industrial Systems Institute, Greece
Dr. Pierluigi Siano, University of Salerno, Italy
Dr. Carlo Cecati, University of L’Aquila, Italy
Dr. Masoud Abbaspour, GE Global Research, USA

**Time: 11:30 – 11:50**

**A Collaborative Work Cell Testbed for Industrial Wireless Communications - The Baseline Design**
Dr. Yongkang Liu, Nist, USA
Mr. Richard Candell, Nist, USA
Dr. Mohamed Kashef, Nist, USA
Mr. Karl Montgomery, Nist, USA

**Time: 11:00 – 11:30**

**Adaptive Identification and Compensation of Nonlinear Friction in A Voice-Coil Linear Servomotor**
Mr. Mohannad Takrouni, American University of Sharjah, United Arab Emirates
Prof. Rachid Dhaouadi, American University of Sharjah, United Arab Emirates

**Time: 11:30 – 11:50**

**Nonlinear Optimal Control for Multilevel Inverters**
Dr. Gerasimos Rigatos, Unit of Industrial Automation, Industrial Systems Institute, Greece
Dr. Pierluigi Siano, University of Salerno, Italy
Dr. Carlo Cecati, University of L’Aquila, Italy
Dr. Masoud Abbaspour, GE Global Research, USA

**Time: 11:00 – 11:30**

**Optimal Continuous Glucose Monitoring Sensor Calibration for Patients with Type 1 Diabetes**
Mr. Xiaoran Zhang, Beijing Institute of Technology, China
Ms. Wan Zhang, China-Japan Friendship Hospital, China
Dr. Yongtong Liu, Nist, USA
Dr. Mohamed Kashef, Nist, USA
Prof. Sebti Foufou, University of Burgundy, France

**Time: 11:30 – 11:50**

**Adaptive Identification and Compensation of Nonlinear Friction in A Voice-Coil Linear Servomotor**
Mr. Mohannad Takrouni, American University of Sharjah, United Arab Emirates
Prof. Rachid Dhaouadi, American University of Sharjah, United Arab Emirates

**Time: 11:30 – 11:50**

**TT03 - SCF2**
Control Systems and Applications, Part IV
Room: Salon C
Time: 10:50 – 12:30, June 14
Co-Chair: Dawei Shi and Rached Dhaouadi

**Time: 10:50 – 11:10**

**Wireless Interference Estimation Using Machine Learning in A Robotic Force-seeking Scenario**
Mr. Richard Candell, Nist, USA
Mr. Karl Montgomery, Nist, USA
Dr. Mohamed Kashef, Nist, USA
Dr. Yongkang Liu, Nist, USA
Prof. Sebti Foufou, University of Burgundy, France

**Time: 11:10 – 11:30**

**A Collaborative Work Cell Testbed for Industrial Wireless Communications - The Baseline Design**
Dr. Yongkang Liu, Nist, USA
Mr. Richard Candell, Nist, USA
Dr. Mohamed Kashef, Nist, USA
Mr. Karl Montgomery, Nist, USA

**Time: 11:30 – 11:50**

**Stream-IT: Continuous and Dynamic Processing of Production Systems Data - Throughput Bottlenecks as A Case-study**
Mrs. Hannaneh Najdataei, Chalmers University, Sweden
Mr. Mukund Subramaniam, Chalmers University, Sweden
Prof. Vincenzo Gulisano, Chalmers University, Sweden
Prof. Anders Skoogh, Chalmers University, Sweden
Prof. Marina Papatriantafilou, Chalmers University, Sweden

**Time: 11:30 – 11:50**

**Design of 3D Detection System Based on Line-scan for Anchor Wedge**
Mr. Mingming Zhou, School of Electrical and Electronic Engineering, Hubei University of Technology, China

**Time: 11:50 – 12:10**

**Higher-Order Sliding Mode Based High-Resistance Fault-Control in PMSM Drives**
Dr. Suneel Kumar Kommu, Korea University, Korea (South)
Mr. Yonghyun Park, Korea University, Korea (South)
Prof. Sang Bin Lee, Korea University, Korea (South)

**Time: 12:10 – 12:30**

**Autonomous 3-D Aerial Navigation System for Precision Agriculture**
Mr. Luís do O, Cts-Uninova, Portugal
Mr. Pedro Prates, Cts-Uninova, Portugal
Mr. Ricardo Mendonça, Cts-Uninova, Portugal
Mr. André Lourenço, Cts-Uninova, Portugal
Mr. Francisco Marques, Cts-Uninova, Portugal
Prof. Jose Barata, Cts-Uninova, Portugal

**Time: 10:50 – 11:10**

**Wireless Interference Estimation Using Machine Learning in A Robotic Force-seeking Scenario**
Mr. Richard Candell, Nist, USA
Mr. Karl Montgomery, Nist, USA
Dr. Mohamed Kashef, Nist, USA
Dr. Yongkang Liu, Nist, USA
Prof. Sebti Foufou, University of Burgundy, France

**Time: 11:10 – 11:30**

**A Collaborative Work Cell Testbed for Industrial Wireless Communications - The Baseline Design**
Dr. Yongkang Liu, Nist, USA
Mr. Richard Candell, Nist, USA
Dr. Mohamed Kashef, Nist, USA
Mr. Karl Montgomery, Nist, USA

**Time: 11:30 – 11:50**

**Stream-IT: Continuous and Dynamic Processing of Production Systems Data - Throughput Bottlenecks as A Case-study**
Mrs. Hannaneh Najdataei, Chalmers University, Sweden
Mr. Mukund Subramaniam, Chalmers University, Sweden
Prof. Vincenzo Gulisano, Chalmers University, Sweden
Prof. Anders Skoogh, Chalmers University, Sweden
Prof. Marina Papatriantafilou, Chalmers University, Sweden

**Time: 11:50 – 12:10**

**Design of 3D Detection System Based on Line-scan for Anchor Wedge**
Mr. Mingming Zhou, School of Electrical and Electronic Engineering, Hubei University of Technology, China
SS11 - SEF2

Advances in Battery Charging Techniques for Electric Vehicles

Room: Salon E
Time: 10:50 – 12:30, June 14
Co-Chair: R. Sudharshan Kaarthik and Cong-Long Nguyen

Time: 10:50 – 11:10
A 30-sided Polygonal Space Vector Structure with Modular Low Voltage Capacitor Fed Cascaded H Bridge for IM Drive

Mr. Rakesh R, Indian Institute of Science, India
Mr. Apurv Kumar Yadav, Indian Institute of Science, India
Mr. Krishna Raj R, University of Houston, USA
Prof. Gopakumar K, Indian Institute of Science, India
Prof. Umanand L, Indian Institute of Science, India

Time: 11:10 – 11:30
Switched Reluctance Motor Drive with Three-phase Integrated Battery Charger for Electric Vehicle Applications

Mr. John Reimers, McMaster University, Canada
Prof. Ali Emadi, McMaster University, Canada

Time: 11:30 – 11:50
A Low-cost Battery Charger Usable with Sinusoidal Ripple-Current and Pulse Charging Algorithms for E-Bike Applications

Dr. Cong-Long Nguyen, École de Technologie Supérieure, Canada
Mr. Paolo Primiani, Alizeti Ubimobil Inc., Canada
Mr. Louis Viglione, Alizeti Ubimobil Inc., Canada
Prof. Lyne Woodward, École de Technologie Supérieure, Canada

Time: 11:50 – 12:10
Performance Evaluation of LLC-SRC and LCC-T Resonant Tanks in Low-voltage High-current Applications

Mr. Yavkacha Venkata Ratnam, Concordia University, Canada
Dr. Akshay Kumar Rathore, Concordia University, Canada

SS13 - PVF2

Virtual Synchronous Machines

Room: Port of Vancouver
Time: 10:50 – 12:30, June 14
Co-Chair: Deepak Ronanki and Reinaldo Tonkoski

Time: 10:50 – 11:10
A Novel Low Voltage Ride Through Control Strategy Based on Virtual Synchronous Generator

Mr. Yangming Wang, College of Electrical Engineering, Zhejiang University, China
Prof. Dan Sun, College of Electrical Engineering, Zhejiang University, China
Mr. Xiaohua Wang, College of Electrical Engineering, Zhejiang University, China
Mr. Li Zhang, State Key Laboratory of Operation and Control of Renewable Energy & Storage Systems, China Electric Power Research Institute, China

Time: 11:10 – 11:30
Model Predictive Frequency Control of Low Inertia Microgrids

Mr. Ujjwol Tamrakar, South Dakota State University, United States
Dr. David Copp, Sandia National Laboratories, United States
Dr. Timothy Hansen, South Dakota State University, United States
Dr. Reinaldo Tonkoski, South Dakota State University, United States

Time: 11:30 – 11:50
Probabilistic-based Transient Stability Assessment of Power Systems with Virtual Synchronous Machines

Mr. Zhao Liu, State University of New York at Binghamton, USA
Dr. Sheng Zhang, State University of New York at Binghamton, USA

Time: 11:50 – 12:10
Virtual Synchronous Generator with Simplified Single-Axis Damper Winding

Mr. Fabio Mandrile, Politecnico di Torino, Italy
Prof. Enrico Carpaneto, Politecnico di Torino, Italy
Prof. Radu Bojoi, Politecnico di Torino, Italy

TT04 - BAF3

Power Electronics and Energy Conversion, Part V

Room: Ballroom A
Time: 13:30 – 15:30, June 14
Co-Chair: Sertac Bayhan

Time: 13:30 – 13:50
Intelligent Fault Diagnosis of Wind Turbine Gearbox Based on Long Short-term Memory Networks

Ms. Lixiao Cao, Beihang University, China
Ms. Jingyi Zhang, Beihang University, China
Ms. Jingyue Wang, Beihang University, China
Prof. Zheng Qian, Beihang University, China
A Lyapunov-Function-Based Control Strategy for Distributed Generations in Hybrid AC/DC Microgrids

Dr. Sertac Bayhan, Qatar Environment and Energy Research Institute, Qatar

Prof. Hasan Komurcuoglu, Eastern Mediterranean University, Turkey

Time: 13:50 – 14:10

Model Predictive Control Based Dual-Mode Controller for Multi-Source DC Microgrid

Dr. Sertac Bayhan, Qatar Environment and Energy Research Institute, Qatar

Prof. Haitham Abu-Rub, Texas A&M University at Qatar, Qatar

Time: 14:10 – 14:30

Revised Perturb and Observe Approach for Maximum Power Point Tracking of Photovoltaic Module Using Finite Control Set Model Predictive Control

Mr. Afaq Hussain, Ghulam Ishaq Khan Institute of Engineering Sciences and Technology, Pakistan

Dr. Hadeed Ahmed Sher, Ghulam Ishaq Khan Institute of Engineering Sciences and Technology, Pakistan

Dr. Ali Faisal Murtaza, University of Central Punjab, Pakistan

Prof. Kamal Al-Haddad, Ecole de Technologie Superieure, Canada

Time: 14:30 – 14:50

A Micro Loss Combined Type DC Circuit Breaker Based on Power Electronics

Dr. Weijie Wen, the Key Laboratory of Smart Grid of Ministry of Education, Tianjin University, China

Mr. Shilei Ye, the Key Laboratory of Smart Grid of Ministry of Education, Tianjin University, China

Ms. Hong Cao, State Key Laboratory for Security and Energy Saving, China Electric Power Research Institute, China

Time: 13:50 – 14:10

A Comparison Study of Compensation Topologies for Capacitive Power Transfer

Dr. Feng Gao, Beijing Institute of Technology, China

Prof. Zhenpo Wang, Beijing Institute of Technology, China

Prof. Junjun Deng, Beijing Institute of Technology, China

Dr. Shuo Wang, Beijing Institute of Technology, China

Dr. Yachao Wang, State Grid Jibei Electric Power Co. Ltd, China

Time: 14:10 – 14:30

Model Predictive Control Method with NP Voltage Balance by Offset Voltage Injection for Single-Phase Three-Level NPC Converters

Mr. Eun-su Jun, Chung-ang University, Korea (South)

Prof. Sangshin Kwak, Chung-ang University, Korea (South)

Prof. Jaehoon Baek, Koresetech, Korea (South)

Time: 14:30 – 14:50

Design and Control of Non-isolated, Multi-input DC/DC Converter for Effective Energy Management

Mr. Hassan AboReada, University of Ontario-Institute of Technology, Canada

Mr. A.V.J.S Praneeth, University of Ontario-Institute of Technology, Canada

Dr. Nimesh Vamanan, University of Ontario-Institute of Technology, Canada

Prof. Sheldon S. Williamson, University of Ontario-Institute of Technology, Canada

Prof. Vijay Sood, University of Ontario-Institute of Technology, Canada

Time: 14:50 – 15:10

Design of Coupled Common-Differential Inductors for EMI Filters

Dr. Carlos Cuellar, SAGRAN Group, France

Prof. Nadir Idir, University of Lille, France

Time: 15:10 – 15:30

A DC Grid Access Solution Based on Series-connected Distributed Full-bridge Submodule-based MMCs

Mr. Zhengxuan Li, Tsinghua University, China

Dr. Qiang Song, Tsinghua University, China

Prof. Rong Zeng, Tsinghua University, China

Dr. Biao Zhao, Tsinghua University, China

Mr. Jingwei Meng, Tsinghua University, China

Mr. Zexi Deng, Tsinghua University, China

Time: 15:30 – 15:50

T I M E :  1 3 : 5 0  –  1 4 : 1 0                                   V D - 0 0 7 0 6 4

An Improved Control of D_STATCOM under Unbalanced Grid and Load Conditions

Dr. Xuefeng Wang, Huazhong University of Science and Technology, China

Prof. Li Peng, Huazhong University of Science and Technology, China

Time: 13:50 – 14:10

TT04 - BBF3

Power Electronics and Energy Conversion, Part VI

Room: Ballroom B

Time: 13:30 – 15:30, June 14

Co-Chair: Nadir Idir

Time: 13:30 – 15:50

A Multi Path Feedforward Control of Load Current for Three-Phase Inverter with Transformer

Mr. Bowei Lin, Huazhong University of Science and Technology, China

Prof. Li Peng, Huazhong University of Science and Technology, China

Prof. Ke Xu, Huazhong University of Science and Technology, China

Time: 14:50 – 15:10

A DC Grid Access Solution Based on Series-connected Distributed Full-bridge Submodule-based MMCs

Mr. Zhengxuan Li, Tsinghua University, China

Dr. Qiang Song, Tsinghua University, China

Prof. Rong Zeng, Tsinghua University, China

Dr. Biao Zhao, Tsinghua University, China

Mr. Jingwei Meng, Tsinghua University, China

Mr. Zexi Deng, Tsinghua University, China

Time: 15:30 – 15:50

TT04 - BBF3

Power Electronics and Energy Conversion, Part VI

Room: Ballroom B

Time: 13:30 – 15:30, June 14

Co-Chair: Nadir Idir

Time: 13:30 – 15:50
Coordinated Storage and Flexible Loads as A Network Service Provider: A Resilience-Oriented Paradigm

Mr. Mahdi Habibi, SOHA Smart Energy Systems Laboratory, Department of Electrical Engineering, Abbaspour School of Engineering, Shahid Beheshti University, Tehran, Iran, Iran
Dr. Vahid Vahidinasab, 1) SOHA Smart Energy Systems Laboratory, Department of Electrical Engineering, Abbaspour School of Engineering, Shahid Beheshti University, Tehran, Iran, 2) School of Engineering, Newcastle University, Newcastle upon Tyne, UK, United Kingdom
Dr. Adith Allahham, School of Engineering, Newcastle University, Newcastle upon Tyne, UK, United Kingdom
Dr. Damian Giuora, School of Engineering, Newcastle University, Newcastle upon Tyne, UK, United Kingdom
Dr. Sara Walker, School of Engineering, Newcastle University, Newcastle upon Tyne, UK, United Kingdom
Prof. Phil Taylor, School of Engineering, Newcastle University, Newcastle upon Tyne, UK, United Kingdom

Time: 13:30 – 13:50

Energy Savings Estimation Considering Volt/VAr Optimization and Distributed Generation

Mr. Saran Satsangi, IIT Roorkee, India
Dr. Ganesh Kumbhar, IIT Roorkee, India

Time: 14:00 – 14:20

Overview of Power Converter Modelling Approaches and of Their Suitability for Harmonic Analysis

Dr. Senthoooran Balasubramaniam, Swansea University, United Kingdom
Dr. Grazia Tedeschi, Swansea University, United Kingdom
Prof. Lijie Li, Swansea University, United Kingdom

Time: 14:30 – 14:50

Forecasting in Small Smart Grid

Mr. Majed Shakir, University of New Brunswick, Canada
Dr. Yevgen Biletskiy, University of New Brunswick, Canada

Time: 14:50 – 15:10
TT03 - SCF3
Control Systems and Applications, Part V

Room: Salon C
Time: 13:30 – 15:30, June 14
Co-Chair: Yuki Yokokura and M. Hossein Roohi

Time: 13:30 – 13:50  
Nonlinear Optimization of Energy Consumption in Trajectory Planning of A Single-axis Electrical Drive
Ms. Sara Hosseini, University of Erlangen-Nuremberg, Germany
Prof. Ingo Hahn, University of Erlangen-Nuremberg, Germany

Time: 13:50 – 14:10  
A Generalized Moving Average Filter for Active Power Filter Applications
Ms. Yalan Gu, Hohai University, China
Mr. Shengchao Liu, Hohai University, China
Mr. Dong Wang, Hohai University, China
Prof. Li Zhang, Hohai University, China

Time: 14:10 – 14:30  
Modified Model Predictive Control for the Aerospace PWM Rectifiers
Prof. Tao Lei, Northwestern Polytechnical University, China
Mr. Delin Kong, Northwestern Polytechnical University, China
Mr. Zhihao Min, Northwestern Polytechnical University, China

Time: 14:30 – 14:50  
H2 Controller Synthesis with An Alarm Performance Constraint
Mr. M. Hossein Roohi, PhD student, University of Alberta, Canada
Dr. Tongwen Chen, Professor, University of Alberta, Canada
Dr. Iman Izadi, Assistant professor, Isfahan University of Technology, Iran

Time: 14:50 – 15:10  
Realization of Resonance Ratio Control Focusing on Duality of Torque and Velocity for Two-Inertia System with Environment
Mr. Yasuke Kawai, Nagoya University of Technology, Japan
Prof. Yuki Yokokura, Nagoya University of Technology, Japan
Prof. Kyoshi Ohishi, Nagoya University of Technology, Japan
Prof. Toshimasa Miyazaki, Nagoya University of Technology, Japan

Time: 15:10 – 15:30  
Motor Control Model Predictive Visual Trajectory-Tracking Control of Wheeled Mobile Robots

SS28 - SDF3
Advancement in DC-DC Power Electronics Converter for Renewable Energy Applications

Room: Salon D
Time: 13:30 – 15:30, June 14
Co-Chair: Rashid Alammari and Pavel Drabek

Time: 13:30 – 13:50  
A Novel High Gain Configurations of Modified SEPIC Converter for Renewable Energy Applications
Mr. Kiran Pandav, Qatar University, Qatar
Dr. Rashid Alammari, Qatar University, Qatar
Dr. Atif Iqbal, Qatar University, Qatar
Dr. Sanjeevikumar Padmanaban, Aalborg University, Denmark
Prof. Lazhar Ben-Brahim, Qatar University, Qatar
Prof. Hatisham Abu-Rub, Texas A&M University at Qatar, Qatar

Time: 13:50 – 14:10  
New DC-DC Multilevel Configurations of 2L-Y Boost Converters with High Voltage Conversion Ratio for Renewable Energy Applications
Dr. Mahajan Sagar Bhaskar, Qatar University, Qatar
Mr. Mohammed Mervaj, Qatar University, Qatar
Dr. Rashid Alammari, Qatar University, Qatar
Dr. Atif Iqbal, Qatar University, Qatar
Dr. Sanjeevikumar Padmanaban, Aalborg, Denmark

Time: 14:10 – 14:30  
Advanced Control Scheme for DC Microgrid via Dual Active Bridge and Bus Signaling
Mr. Jacky Han, The University of Sydney, Australia
Dr. Weidong Xiao, The University of Sydney, Australia

Time: 14:30 – 14:50  
A Novel Active Stabilizer Method for DC/DC Power Converter Systems Feeding Constant Power Loads
Mr. Omid Lorzadeh, Department of Energy Technology, Aalborg University, Denmark
Dr. Iman Lorzadeh, Department of Electrical Engineering, Salman Farsi University of Kazerun, Iran
Dr. Mohsen N. Soltani, Department of Energy Technology, Aalborg University, Denmark
Dr. Amin Hajizadeh, Department of Energy Technology, Aalborg University, Denmark

Time: 14:50 – 15:10  
Novel ZCS Transformerless High Gain DC-DC Converters for Renewable Energy Conversion Systems
Dr. V.V.Subrahmanyam Kumar Bhajana, KIIT University, India
Dr. Pavel Drabek, University of West Bohemia, Czech Republic
Virtual Negative Cable Resistance for Power Sharing Accuracy Enhancement in DC Microgrids

Mr. Fulong Li, Aston University, United Kingdom
Dr. Zhengu Liu, Aston University, United Kingdom
Dr. Jiande Wu, Zhejiang University, China
Prof. Wuhua Li, Zhejiang University, China

Coordinated Stability Assessment of Power Converter in Electric Vehicle Charging Station Using Predictive Control Reconfiguration

Dr. Hamed Nademi, Rensselaer Polytechnic Institute, USA
Prof. Kourosh Sedghisigarchi, California State University, Northridge, USA
Prof. Luigi Vanfretti, Rensselaer Polytechnic Institute, USA

An Efficient Authentication Mechanism Based on Software-Defined Networks for Electric Vehicles

Mr. Arthur A. Z. Soares, MidiaCom Labs, Brazil
Dr. Digo M. F. Mattos, MidiaCom Labs, Brazil
Prof. Yona Lopez, MidiaCom Labs, Brazil
Dr. Diannes S. V. Medeiros, MidiaCom Labs, Brazil
Dr. Natalia C. Fernandes, MidiaCom Labs, Brazil
Dr. Debora C. Muchaluat-Saude, MidiaCom Labs, Brazil

A Temperature Prediction Method of Valve-regulated Lead-acid Battery

Mr. Tsz Chun Lai, City University of Hong Kong, Hong Kong
Dr. Kim Fung Tsang, City University of Hong Kong, Hong Kong
Mr. Ya Cheng Liu, City University of Hong Kong, Hong Kong
Prof. Loi Lei Lai, Guangdong University of Technology, China

Analytical Topology Comparison for a Single Stage On-Board EV-Battery Converter

Mr. Philipp Rehlaender, Paderborn University / LEA, Germany
Dr. Tobias Grote, Delta Energy Systems (Germany) GmbH, Germany
Dr. Frank Schaffmeister, Paderborn University / LEA, Germany
Prof. Joachim Böcker, Paderborn University / LEA, Germany

Battery-Free Wi-Fi: Making Wi-Fi Transmission Simpler and Practical

Dr. Xiaoping Tang, Wuhan Second Ship Design and Research Institute, China
Dr. Yajun She, Wuhan Second Ship Design and Research Institute, China
Ms. Xin Liu, Wuhan Second Ship Design and Research Institute, China
Dr. Shaohui Zhang, Wuhan Second Ship Design and Research Institute, China

Virtual Platform of Field Oriented Control of Induction Motor to Assist in Education of Undergraduate Students

Dr. Gustavo Henrique Bazan, Federal Institute Parana, Brazil
Dr. Marcelo Favoretto Castoldi, Federal University of Technology - Parana, Brazil
Dr. Alessandro Goediel, Federal University of Technology - Parana, Brazil
Dr. William Cesar Andrade Pereira, University of Sao Paulo, Brazil
Dr. Manoel Luis Aguiar, University of Sao Paulo, Brazil

Virtual Reality Based Maintenance Training Effectiveness Measures - A Novel Approach for Rail Industry

Mr. Nalin Randeniya, Swinburne University of Technology, Australia
Dr. Sagheer Ranjha, Swinburne University of Technology, Australia
Dr. Ammaril Kulkarni, Swinburne University of Technology, Australia
Prof. Gwoxing Lu, Swinburne University of Technology, Australia
Towards Smart Teaching and Learning: A Study in A South African Institution of Higher Learning

Dr. Pitshou Bokoro, University of Johannesburg, South Africa
Prof. Babu Sena Paul, University of Jhannesburg, South Africa
Dr. Wesley Doorsamy, University of Johannesburg, South Africa

Investigating the Impact of Ferrite Magnetic Cores on the Performance of Supercapacitor Assisted Surge Absorber (SCASA) Technique

Mr. Sadeeshvara Silva Thotabaddadurage, University of Waikato, New Zealand (Aotearoa)
Prof. Nihal Kularatna, University of Waikato, New Zealand (Aotearoa)
Prof. Alistair Steyn-Ross, University of Waikato, New Zealand (Aotearoa)

Indices Relating to Variable Renewable Penetration Level for Preliminary Microgrid Stability Assessment

Mr. Kevin Marrjahan Banjar-Nahor, Univ. Grenoble Alpes, CNRS, Grenoble INP, G2Elab, France
Dr. Laurie Garbiso, Univ. Grenoble Alpes, CNRS, Grenoble INP, G2Elab, France
Dr. Vincent Debusschere, Univ. Grenoble Alpes, CNRS, Grenoble INP, G2Elab, France
Prof. Nooredine Hadjsaid, Univ. Grenoble Alpes, CNRS, Grenoble INP, G2Elab, France
Dr. Thi-Thu-Ha Pham, Schneider Electric, France
Prof. Ngapuli Sinisuka, Institut Teknologi Bandung, Indonesia

Reduced-Order Parametric Dynamic Phasor Modeling of AC Distribution Systems with Rectifier Loads

Ms. Xing Liang, University of British Columbia, Canada
Dr. Yingwei Huang, University of British Columbia, Canada
Prof. Juli Jatskevich, University of British Columbia, Canada

Secondary Control of Microgrid Using Multi-Agent Systems

Mr. Ahmed Al-Isaie, Sultan Qaboos University, Oman
Dr. Rashid Al-Ahri, Sultan Qaboos University, Oman
Dr. Hasan Yousef, Sultan Qaboos University, Oman
Dr. Hisham M. Soliman, Sultan Qaboos University, Oman

A Single Stage Quazi Z-Source Based High Step-Up DC-DC Converter for Grid-connected PV System

Prof. Sanjeevikumar Padmanaban, Aalborg University, Denmark
Mr. Kiran Pandav Maroti, Aalborg University, Denmark
Prof. Frede Blaabjerg, Aalborg University, Denmark
Prof. Jens Bo Holm-Nielsen, Aalborg University, Denmark
Dr. Venkata Yaramasu, Northern Arizona University, USA

Full Bridge Three-Phase Interleaved Multi LLC Resonant Converter for HV Applications

Mr. Mohamed Salem, Universiti Sains Malaysia, Malaysia
Prof. Vigna K Ramachandranurthy, Universiti Tenaga Nasional, Malaysia
Prof. Sanjeevikumar Padmanaban, Aalborg University, Denmark
Prof. Venkata Yaramasu, Northern Arizona University, USA

ADALINE Based MPPT with Indirect Control Mode for Photovoltaic Systems

Mr. Yacine Trki, University of Haute Alsace, France
Dr. Ali Bechouche, University of Tizi Ouzou, Algeria
Prof. Hamid Seddiki, University of Tizi Ouzou, Algeria
Dr. Djaffar Ould Abdeslam, University of Haute Alsace, France

Online Clustering for Estimating Occupancy in an Office Setting

Mrs. Nuha Zamzami, Concordia Institute for Information Systems Engineering, Canada
Dr. Manar Amanyri, Grenoble Institute of Technology, France
Prof. Nizar Bouguila, Concordia Institute for Information Systems Engineering, Canada
Prof. Stephanne Ploix, Grenoble Institute of Technology, France

On the Occupancy Measurement and Analysis for Residential Applications

IEEE Industrial Electronics Society
TT12 - BBF4
Sensors, Actuators and Mirco-Nanotechnology

Room: Ballroom B
Time: 15:40 – 17:00, June 14
Co-Chair: Krikor Ozanyan and Juan I. Nieto-Hipolito

Time: 15:40 – 16:00
VD-003808

Multi-Modality Fusion of Floor and Ambulatory Sensors for Gait Classification

Mr. Syed Usama Yunas, The University of Manchester, United Kingdom
Mr. Abdullah Alharthi, The University of Manchester, United Kingdom
Prof. Krikor Ozanyan, The University of Manchester, United Kingdom

Time: 16:00 – 16:20
VD-008761


Dr. Chun Sing Lai, Guangdong University of Technology, China
Ms. Yingshan Tao, Guangdong University of Technology, China
Prof. Loi Lei Lai, Guangdong University of Technology, China

Time: 16:20 – 16:40
VD-011126

Analysis of Spatial Localization Through Frequency Counting for Accelerometers Embedded in INS

Dr. Fabian N. Murrieta-Rico, Uabc, Mexico
Dr. Vitali Petranovskii, Unam, Mexico
Dr. Juan de Dios Sanchez-Lopez, Uabc, Mexico
Dr. Juan I. Nieto-Hipolito, Uabc, Mexico
Dr. Mabel Vazquez-Briseño, Uabc, Mexico
Dr. Daniel Hernandez-Balbuena, Uabc, Mexico
Dr. Oleg Zabula, National Academy of the National Guards of Ukraine, Ukraine

Time: 16:40 – 17:00
VD-010715

Proposal of Magnetic Screw Motor Utilizing Modulated Magnetic Flux

Mr. Kazuaki Takahara, Osaka University, Japan
Prof. Katsuhiro Hirata, Osaka University, Japan
Dr. Noboru Niguchi, Osaka University, Japan

Time: 16:40 – 17:00
VD-009741

TT12 - BBF4
Power Electronics and Energy Conversion, Part VII

Room: Ballroom C
Time: 15:40 – 17:00, June 14
Co-Chair: Jianguo Wang and Sven Bolte

Time: 15:40 – 16:00
VD-009229

Bidirectional Resonant Converter with Integrated Magnetics for On-Board Chargers

Mr. Sven Bolte, Paderborn University, Germany
Dr. Frank Schafmeister, Paderborn University, Germany
Prof. Joachim Böcker, Paderborn University, Germany

Time: 16:00 – 16:20
VD-010081

A DC-Link Voltage Ripple Modeling and Suppression Circuit Design for Load Compensator

Dr. Dongdong Chen, Minnan University of Science and Technology, China
Mr. Xiaxin Huang, Minnan University of Science and Technology, China
Ms. Xiaomin Zhou, Minnan University of Science and Technology, China
Mr. Ye Zhao, Zhejiang University, China

Time: 16:20 – 16:40
VD-010316

Reliable Control of Direct PWM AC-AC Buck Converter with Short Circuit Protection

Dr. Jianguo Wang, University of Warwick, United Kingdom
Prof. Richard McMahon, University of Warwick, United Kingdom

Time: 16:40 – 17:00
VD-010316

Implementation of FPGA and DSP Combined Algorithms for Modular Single-Phase Matrix Converter with Medium Frequency Transformer for Traction Drive Application

Mr. Bedrich Bednar, Czech, Czech Republic
Dr. Pavel Drabek, Czech, Czech Republic
Dr. Martin Pittermann, Czech, Czech Republic

Time: 15:40 – 18:20, June 14
Co-Chair: Mostafa Abarzadeh and Mohammad Sharifzadeh

Time: 15:40 – 16:00
VD-016039

Current Based Model Predictive Control for DC Capacitor Optimization in Grid-Connected and Stand-Alone Nine-Level Packed U-Cell Inverter

Mr. Kiavash Askari Noghani, Ecole de Technologie Superieure, Canada
Mr. Mohammad Sharifzadeh, Ecole de Technologie Superieure, Canada
Dr. Youssef Ounejar, Ecole Superieure de Technologie de Meknes, Morocco
Prof. Kamal Al-Haddad, Ecole de Technologie Superieure, Canada

Time: 16:00 – 16:20
VD-014966

DC Losses Heatsink Verification of IGBT Converter for Power Systems

Dr. Lubos Streit, University of West Bohemia, Regional Innovation Centre for Electrical Engineering, Czech Republic
Mr. Jan Stepanek, University of West Bohemia, Regional Innovation Centre for Electrical Engineering, Czech Republic
Mr. Tomas Komrsk, University of West Bohemia, Regional Innovation Centre for Electrical Engineering, Czech Republic
Dr. Martin Jara, University of West Bohemia, Regional Innovation Centre for Electrical Engineering, Czech Republic
The 28th International Symposium on Industrial Electronics (ISIE)  
Vancouver, Canada, June 12-14, 2019

Time: 16:20 – 16:40  
TT02 - PFF4  
Room: Port of San Francisco  
Time: 16:00 – 18:20, June 14  
Co-Chair: Giampaolo Buticchi and Oleg Sergiyenko  

Electrical Machines and Industrial Drives, Part VI

- Predictive Current Control of An Open End Winding Induction Machine Using A Dual Two-level Inverter Drive  
  Mr. Naga Surya Prakash Musunuru, Department of Electrical Engineering, IIT Madras, India  
  Dr. Srinivas Srivrama, Department of Electrical Engineering, IIT Madras, India  

- Comparison of Finite Control Set and Hysteresis Based Model Predictive Control for NPC and T-Type Converter in Case of Low Carrier Ratio  
  Mr. Stefan Walz, Chair of Power Electronics, CAU Kiel, Germany  
  Prof. Giampaolo Buticchi, PEMC Group, University of Nottingham  
  Ningbo China, China  
  Prof. Marco Liserre, Chair of Power Electronics, CAU Kiel, Germany  

- Torque Profile Optimization in Switched Reluctance Motor  
  Ms. Jingchen Liang, The University of Texas at Dallas, United States  
  Dr. Amir Parsapour, The University of Texas at Dallas, United States  
  Prof. Mehdi Moallem, The University of Texas at Dallas, United States  
  Prof. Morgan Kiani, Texas Christian University, United States  

- Circular Scanning Resolution Improvement by Its Velocity Close Loop Control  
  Mr. Cesar Sepulveda-Valdez, Uabc, Mexico  
  Dr. Oleg Sergiyenko, Uabc, Mexico  
  Dr. Daniel Hernandez-Balbuena, Uabc, Mexico  
  Dr. Vera Tyrsa, Uabc, Mexico  
  Dr. Paolo Mercorelli, Institute of Product and Process Innovation, Leuphana University of Lueneburg, Germany  
  Dr. Wendy Flores-Puentes, Uabc, Mexico  
  Mr. Miguel Reyes-Garcia, Uabc, Mexico  
  Dr. Lars Lindner, Uabc, Mexico  
  Dr. Viktor Melnyk, Kharkiv Petro Vasylchenko National Technical University of Agriculture, Ukraine  

- A Comprehensive Review of Thermal Design and Analysis of Traction Motors  
  Mr. Pratik Roy, University of Windsor, Canada  
  Mr. Muhammad Towhid, University of Windsor, Canada  
  Mr. Firoz Ahmed, University of Windsor, Canada  
  Mr. Alexandre J. Bourgault, University of Windsor, Canada  
  Ms. Shruthi Mukand, University of Windsor, Canada  
  Dr. Atiswarya Balamurthi, University of Windsor, Canada  
  Dr. Narayan C. Kar, University of Windsor, Canada  

---

Centre for Electrical Engineering, Czech Republic
Prof. Zdenek Pernoutka, University of West Bohemia, Regional Innovation Centre for Electrical Engineering, Czech Republic

Time: 17:00 – 17:20  
Finite Control Set Model Predictive Control of Static Compensator  
Mr. Zdenek Kehl, Czech, Czech Republic  
Dr. Tomas Glashberger, Czech, Czech Republic  
Prof. Zdenek Pernoutka, Czech, Czech Republic  

Time: 17:20 – 17:40  
Efficiency Evaluation of A Single Phase and A Three Phase Dual Active Bridge Isolated DC-DC Converter  
Mrs. Fatma Jarra, Electrical Engineering Department ÉTS, Canada  
Mr. Rawad Zgheib, Electrical Engineering Department ÉTS, Canada  
Mr. Mostafa Abarzadeh, Electrical Engineering Department ÉTS, Canada  
Prof. Kamal Al-Haddad, Electrical Engineering Department ÉTS, Canada  

Time: 18:00-18:20  
Considerations for Controlled Switching of the Power GaN HEMT  
Prof. Patrick Palmer, Simon Fraser University, Canada  
Ms. Tianqi Zhang, University of Cambridge, United Kingdom  
Dr. Teng Long, University of Cambridge, United Kingdom  
Mr. Luke Schillaber, University of Cambridge, United Kingdom  
Mr. Edward Shelton, University of Cambridge, United Kingdom  

---

IEEE Industrial Electronics Society
Design and Analysis of Core-Less Multi-Layered Axial Motor
Ms. Chika Soneda, Yokohama National University, Kanagawa Institute of Industrial Science and Technology, Japan
Mr. Hiroshi Asai, Yokohama National University, Kanagawa Institute of Industrial Science and Technology, Japan
Mr. Yoshiyuki Hatta, Yokohama National University, Kanagawa Institute of Industrial Science and Technology, Japan
Prof. Tomoyuki Shimono, Yokohama National University, Kanagawa Institute of Industrial Science and Technology, Japan
Prof. Kouhei Ohnishi, Keio University, Kanagawa Institute of Industrial Science and Technology, Japan

A Linearized Over-Modulation Technique for Dodecagonal Space Vector Structures
Dr. Sudharshan Kaarthik, Indian Institute of Space Science and Technology, India
Mr. Ranjith S., Indian Institute of Space Science and Technology, India

Advanced Boiler Control System for Steam Power Plants Using Modern Control Techniques
Mrs. Shymaa Darwish, Faculty of Engineering, Alexandria University, Egypt
Dr. Amr Pertew, Faculty of Engineering, Alexandria University, Egypt
Dr. Wafaa Elhaweet, Faculty of Engineering, Alexandria University, Egypt
Dr. Amr Mokhtar, Faculty of Engineering, Alexandria University, Egypt

Autonomous Tracking and Landing of QUAV Based on Air-Ground Cooperation
Prof. Xuan Xiao, Beijing Institute of Technology, China
Ms. Chen Wang, Beijing Institute of Technology, China
Prof. Yi Yang, Beijing Institute of Technology, China
Mr. Zhuang Li, Beijing Institute of Technology, China
Ms. Ziyu Qin, Beijing Institute of Technology, China

Optimal Sampling Rate and Quantization for Networked Control Systems
Mr. M. Hossein Roohi, University of Alberta, Canada
Dr. Tongwen Chen, University of Alberta, Canada

On the Application of Reinforcement Learning in Multi-Debris Active Removal Mission Planning
Mr. Jianan Yang, Northwestern Polytechnical University, China
Prof. Yu Hen Hu, University of Wisconsin-Madison, USA
Dr. Yong Liu, Northwestern Polytechnical University, China
Dr. Xiaolei Hou, Northwestern Polytechnical University, China
Prof. Quan Pan, Northwestern Polytechnical University, China

Disturbance Observer Based Decoupling Control to Suppress Rotational Motion of Cross-Coupled Gantry Stage
Mr. Hanul Jung, Dgist, Korea (South)
Prof. Sehoon Oh, Dgist, Korea (South)

Spillover Phenomenon on the Lower Frequency Side in the Multimode Piezoelectric NC-Shunt Damping
Dr. Ichiro Jikuya, Kanazawa University, Japan
Mr. Yasuaki Hori, Kanazawa University, Japan
Mr. Tatsuki Matsuda, Kanazawa University, Japan
Dr. Kentaro Takagi, Nagoya University, Japan

Optimal Sampling Rate and Quantization for Networked Control Systems
Mr. M. Hossein Roohi, University of Alberta, Canada
Dr. Tongwen Chen, University of Alberta, Canada

Neural Networks-based Robust Adaptive Dynamic Surface Sliding Mode Control of Flight Path Angle with Tracking Error Constraints
Mr. Sen Wang, Northeast Electric Power University, China
Prof. Xincai Chen, Shibaura Institute of Technology, Japan
Prof. Xiuwu Zhang, Northeast Electric Power University, China
Dr. Junjie Xu, Jilin Medical University, China
Dr. Xiaoming Li, Northeast Electric Power University, China
Dr. Hong Cao, Northeast Electric Power University, China

Identification of Wind Turbine Using Fractional Order Dynamic Neural Network and Optimization Algorithm
Ms. Zeinab Aslipour, Shahid Beheshti University, Iran
Ms. Tina Yazdizadeh, University of Tehran, Iran
Dr. Alireza Yazdizadeh, Shahid Beheshti University, Iran

Wind Estimation-based Robust Flight Control for UAV with Active Maneuverability Limit
Mr. Kenan Yong, Nanjing University of Aeronautics and Astronautics, China

IEEE Industrial Electronics Society
Automated Tuning of Model Predictive Control for Wind Tunnel

Dr. Junjie Wang, School of Aerospace Science and Technology, Xidian University, China
Prof. Xiaotao Liu, School of Aerospace Science and Technology, Xidian University, China

Time: 16:40 – 17:00

DC Link Capacitor Voltage Balancing Method for Diode-Clamped Multilevel Converters

Dr. Jalal Amini, Simon Fraser University, Canada
Prof. Mehrdad Moallem, Simon Fraser University, Canada

Time: 16:20 – 16:40

High-Efficiency Cooling System for Highly Integrated Power Electronics for Hybrid Propulsion Aircraft

Mr. Flavio Accorinti, Institute Pprime, ISAE-ENSMA, France
Ms. Najoua Erroui, LAPLACE, Université de Toulouse, France
Dr. Vincent Ayel, Institute Pprime, ISAE-ENSMA, France
Prof. Yves Bertin, Institute Pprime, ISAE-ENSMA, France
Dr. Sebastien Dutour, LAPLACE, Université de Toulouse, France
Dr. Marc Miscevic, LAPLACE, Université de Toulouse, France

Time: 16:40 – 17:00

Evaluation of Hybrid Si/SiC Three-Level Active Neutral-Point-Clamped Inverters

Prof. Li Zhang, Hohai University, China
Mr. Shengchao Liu, Hohai University, China
Mr. Guang Chen, Hohai University, China
Ms. Xingjian Yang, Hohai University, China

Time: 17:00 – 17:20

An Improved Modulation Strategy for “SiC+Si” Hybrid Five-Level Active NPC Inverters

Prof. Li Zhang, Hohai University, China
Mr. Guang Chen, Hohai University, China
Mr. Yifan Gu, Nanjing University of Aeronautics and Astronautics, China
Ms. Xingjian Yang, Hohai University, China

Time: 17:20 – 17:40

Design and Analysis of 240 Watt SEPIC Converter for LED Applications

Mr. I. Halil Hayirli, Istanbul Okan University, Turkey
Prof. Burak Kelleci, Istanbul Okan University, Turkey
Prof. O. Cihan Kivanc, Istanbul Okan University, Turkey
Prof. S. Baris Ozturk, Istanbul Okan University, Turkey

Time: 17:20 – 17:40

IEEE Industrial Electronics Society
A Novel Three-Stage Power Electronic Transformer for AC/DC Conversion

Mr. Hang Zhang, Institute of Electrical Engineering, Chinese Academy of Science, China
Prof. Yaohua Li, Institute of Electrical Engineering, Chinese Academy of Science, China
Prof. Zixin Li, Institute of Electrical Engineering, Chinese Academy of Science, China
Prof. Fanqiang Gao, Institute of Electrical Engineering, Chinese Academy of Science, China
Dr. Cong Zhao, Institute of Electrical Engineering, Chinese Academy of Science, China

Small Signal Modeling of Full Bridge Boost Converter

Mr. Mohammad Mahdavyfakhr, University of British Columbia, Canada
Mr. Navid Amiri, University of British Columbia, Canada
Prof. Juri Jatskevich, University of British Columbia, Canada
### Index of Authors and Chairs

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Javier Mazon</td>
<td>Babak Fahimi ...................................62</td>
<td></td>
</tr>
<tr>
<td>A. Al-Marhum</td>
<td>Babu Sena Paul ..................................60</td>
<td></td>
</tr>
<tr>
<td>A. M. Bassani</td>
<td>Bangguo Qiao ....................................26</td>
<td></td>
</tr>
<tr>
<td>A. J. H. Praneet</td>
<td>Baris Baykurt Alagöz .............................44</td>
<td></td>
</tr>
<tr>
<td>A. M. Bhavnagri</td>
<td>Bart W. Tuinema ...................................38</td>
<td></td>
</tr>
<tr>
<td>A. M. B. Bhavnagri</td>
<td>Bassey Isong .....................................38</td>
<td></td>
</tr>
<tr>
<td>A. M. Bassani</td>
<td>Bedrich Bednar ....................................52</td>
<td></td>
</tr>
<tr>
<td>A. M. Bhavnagri</td>
<td>Behroz Majidi .......................................49</td>
<td></td>
</tr>
<tr>
<td>A. M. Bhavnagri</td>
<td>Beibei Shu ..........................................32</td>
<td></td>
</tr>
<tr>
<td>A. M. F. H. Pradeep</td>
<td>Benjamin Krueger ..............................37</td>
<td></td>
</tr>
<tr>
<td>A. M. Bhavnagri</td>
<td>Bernd Klaus .........................................25</td>
<td></td>
</tr>
<tr>
<td>A. M. Bhavnagri</td>
<td>Bernhard Derler ......................................35</td>
<td></td>
</tr>
<tr>
<td>A. M. Bhavnagri</td>
<td>Bhartar Babagopal ..................................51</td>
<td></td>
</tr>
<tr>
<td>A. M. Bhavnagri</td>
<td>Biao Zhao ...........................................56</td>
<td></td>
</tr>
<tr>
<td>A. M. Bhavnagri</td>
<td>Bin Hu ...............................................38</td>
<td></td>
</tr>
<tr>
<td>A. M. Bhavnagri</td>
<td>Bin Li ...............................................56</td>
<td></td>
</tr>
<tr>
<td>A. M. Bhavnagri</td>
<td>Bin Liu ............................................37, 45</td>
<td></td>
</tr>
<tr>
<td>A. M. Bhavnagri</td>
<td>Bin Xu ................................................43, 44</td>
<td></td>
</tr>
<tr>
<td>A. M. Bhavnagri</td>
<td>Bin Zhang ...........................................43, 44</td>
<td></td>
</tr>
<tr>
<td>A. M. Bhavnagri</td>
<td>Bing Fu .............................................39</td>
<td></td>
</tr>
<tr>
<td>A. M. Bhavnagri</td>
<td>Bing Xiao ...........................................36</td>
<td></td>
</tr>
<tr>
<td>A. M. Bhavnagri</td>
<td>Bing Zhang ..........................................26</td>
<td></td>
</tr>
<tr>
<td>A. M. Bhavnagri</td>
<td>Bingnan Qi ...........................................45</td>
<td></td>
</tr>
<tr>
<td>A. M. Bhavnagri</td>
<td>Binxian Mu ..........................................40</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Bo Han .............................................50</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Bo Jin ..............................................52</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Bo Pang ...............................................54</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Bo Wei ................................................54</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Bo Zhang ............................................23, 24</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Bogdan Rosca ......................................51</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Bohui Wang .........................................54</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Bowei Lin ............................................56</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Bowen Zhang .......................................34, 62</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Boyuan Zhou .......................................45</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Braham Brahimi ....................................47</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Brayima Daka ......................................42</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Braz Cardoso Filho ..................................40</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Bruno Allard .........................................33</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Burak Kelleci .....................................64</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Byoungho Lee ......................................28</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Cavin Icledian .......................................41</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Carlo Cecati .........................................54</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Carlos Alberto Canesini ..........................47</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Carlos Cuellar ......................................56</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Carlos Teixeira .....................................52</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Caet Sábe ............................................59</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Calelledodd Yorgili ..................................44</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Cesar Sepulveda-Valdez ...........................62</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaudhary Akhilesh ..................................33</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chandra Ambrish ....................................47</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chang Hee Han ......................................57</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chang Taihua .......................................53</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Changhee Han ........................................53</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Changxin Liu ........................................38</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Changxin Sun .........................................38</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaosheng Chen ......................................45</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaosheng Chen ......................................26</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................34</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................45</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................34</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................45</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................34</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................45</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................34</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................45</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................34</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................45</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................34</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................45</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................34</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................45</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................34</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................45</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................34</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................45</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................34</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................45</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................34</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................45</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................34</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................45</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................34</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................45</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................34</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................45</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................34</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................45</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................34</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................45</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................34</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................45</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................34</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................45</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................34</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................45</td>
<td></td>
</tr>
<tr>
<td>A. N. H. Pradeep</td>
<td>Chaoyi Sun ...........................................34</td>
<td></td>
</tr>
</tbody>
</table>

IEEE Industrial Electronics Society
The 28th International Symposium on Industrial Electronics (ISIE)
Vancouver, Canada, June 12-14, 2019

IEEE Industrial Electronics Society

Chun-Ting Yeh ........................................... 48
Chunxi Yang ........................................... 23
Chung-Yang Zhang ........................................ 43
Claudio David López ..................................... 53
Claudiu Alexandru Oprea ..................................41
Cong Zhao .................................................. 65
Cong-Long Nguyen ....................................... 55
Cong-Sheng Huang ........................................ 51
Congze Zhang ............................................. 27
Cristina Cristalli ......................................... 28

E
Ebrahim Amiri ........................................... 41
Ebrahim Babaei ........................................... 36

Eckehard Schöll ............................................. 49
Edel Diaz-Llerena ......................................... 25
Edgar López ............................................. 59
Edgar Peralta ............................................ 58
Edmond Qi Wu ........................................... 45
Eduardo Sallum ........................................... 28
Edward Shelton ........................................... 62
Edwardo F. Fukushima .................................... 28
Eliška Marková ........................................... 40
Elvira Fernandez .......................................... 43
Emerson Ravazzí Pires Silva ................................ 41
Emilio Bueno-Peña ....................................... 23
Enrico Carpaneto .......................................... 55
Eren Cakmak ............................................... 36
Eric Shi ...................................................... 50
Eric Hoedemakers ......................................... 51
Etsen Erik .................................................. 44
Eun-su Jun .................................................... 56
Eunsoon Kwon ............................................... 50

Fabian N. Murrieta-Rico .................................... 26, 61
Fabio Mandrile ............................................. 55
Fahdah Alalayyan ......................................... 29
Faheem Haroon ............................................ 43
Fakhrooddad Ghoroghchian ................................ 41
Fang Feng ................................................... 25, 53
Fangqiang Guo ............................................. 65
Farhad Mashhadifard ....................................... 49
Farhad Shahnidi ............................................ 34, 39
Fatima Benbouzid-Si Tayeb ................................ 30
Fatma Jarjaya ............................................... 62
Federico Baronti ........................................... 51
Fei Gao ...................................................... 30, 45
Fei Meng ..................................................... 34
Feihua Zhang ............................................... 28
Felipe Ruiz .................................................. 33
Feng Gao ..................................................... 56
Feng Wu ...................................................... 45
Feng Xiao ................................................... 28
Feng Zhou ................................................... 40
Fengchen Zhao .............................................. 64
Feras A. Alshehri ........................................... 38
Fereshteh Poloi ............................................. 42
Fernando Antunes .......................................... 53
Fernando Briz ............................................. 35
Firooz Ahmad ............................................... 62
Flavio Accorinti ........................................... 64
Flavis Akawung Awungabeh ............................... 57
Flavian Bithke .............................................. 41
Florian Habenschaden ....................................... 51
Florian Wenig ............................................... 35
Florin Ghita ............................................... 42
Francesco Picano .......................................... 35
Francesco Ballestros ...................................... 26
Francesco Gonzalez-Longatt ................................ 38
Francisco Marques ......................................... 23, 54
Francois Costa ............................................ 53
Frank Schaafmeister ....................................... 59, 61
Fredrik De Belie ........................................... 37
Fu Jiang ...................................................... 36
Fulong Li ..................................................... 59
Gayan Kanhadawala .......................................... 23
Georgeta Bauer ............................................. 23
Gerasimos Rigatos ......................................... 54
Gerd Griepentrog .......................................... 50
Gerhard Hancke ............................................. 31, 40
Gerhard P. Hancke ......................................... 35, 40
Gerhard Petrus Hancke ..................................... 41
German Baltazar ............................................ 59
Giampaolo Buticchi ....................................... 62
Gilsool Jung ................................................. 53, 57
Glenn Jianiak ............................................... 23
Gongyu Chen ............................................... 38
Gopakumar K ............................................... 55
Grazia Todeschini ......................................... 57
Guang Chen .................................................. 42, 64
Guanghui Wen ............................................... 38, 43
Guangyu Zhu ............................................... 30
Guannan Lv .................................................. 44
Guihui Xie .................................................. 59
Guilherme Adriano Juliani Storti ........................... 41
Guilherme De Azevedo e Melo ................................ 47
Guillaume Gateau .......................................... 43
Guilherme De Azevedo e Melo ................................ 47
Guo Dong Yin ............................................... 26
Guofan Jin .................................................... 24
Guofeng Zhang ............................................. 52
Guoqiang Zhu ............................................... 63
Guoqing Yu .................................................. 39
Guoxing Lu .................................................. 59
Gustavo Henrique Bazan .................................... 59
Guy Clerc .................................................... 33
Guo-Young Kwon .......................................... 40

H
Hadeed Ahmed Sher ........................................... 56
Haibo Du ..................................................... 43
Haixia Liu ................................................... 56
Haitham Abu-Rub ........................................... 56, 58
Hamadi Abdelhamid ........................................ 48
Hamid Naderi ............................................... 59
Hamid Seddiki ............................................. 60
Han Wang .................................................... 36
Han Zhuang ................................................... 44
Hang Zhang .................................................. 65
Hani Vahedi .................................................. 36, 41, 48
Hanmane Nadjatou .......................................... 54
Hans-Peter Schmidt ......................................... 28
Hanul Jung .................................................... 63
Hao Bai ....................................................... 30
Hao Chen ..................................................... 35
Hao Ling ..................................................... 45
Hao Luo ....................................................... 45
Hao Ma ....................................................... 52
Hao Zhao ..................................................... 45
Haohan Yang .................................................. 30
Haqiao Wen .................................................. 45
Haojung Yang ............................................... 46
Haoyue Song ............................................... 33
Hasan Komurcugil .......................................... 56
Hasan Yousif ............................................... 60
Hasitha Hewawasam ....................................... 60
Hassan AboReada ............................................ 56
Hassan Cheaito .............................................. 33
Hassan Yousif ............................................... 60
Hector Chincheri ........................................... 26
Hengshu Shen ............................................... 28
Herbert Lu .................................................... 39
Hieu Nguyen ............................................... 25
Hind El Ouardi ............................................... 29

IEEE Industrial Electronics Society

67
<table>
<thead>
<tr>
<th>Name</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hiroshi Asai</td>
<td>27, 63</td>
</tr>
<tr>
<td>Heinrich Hashimoto</td>
<td>28, 32</td>
</tr>
<tr>
<td>Hiyoriyuki Sawada</td>
<td>52</td>
</tr>
<tr>
<td>Hisham M. Soliman</td>
<td>60</td>
</tr>
<tr>
<td>Homin Jiang</td>
<td>25</td>
</tr>
<tr>
<td>Hong Cao</td>
<td>56, 63</td>
</tr>
<tr>
<td>Hongbo Wang</td>
<td>50</td>
</tr>
<tr>
<td>Hongbo Zhang</td>
<td>24</td>
</tr>
<tr>
<td>Hongchao Wang</td>
<td>27</td>
</tr>
<tr>
<td>Hongda Ren</td>
<td>48</td>
</tr>
<tr>
<td>Hongkai Li</td>
<td>27</td>
</tr>
<tr>
<td>Hongjii Bai</td>
<td>58</td>
</tr>
<tr>
<td>Hongwei Xiang</td>
<td>39</td>
</tr>
<tr>
<td>Hongxia Shen</td>
<td>34, 42</td>
</tr>
<tr>
<td>Hong-Xiang Hu</td>
<td>34</td>
</tr>
<tr>
<td>Hooman Ekhteraei Toosi</td>
<td>42</td>
</tr>
<tr>
<td>Hooman Homayouni</td>
<td>39</td>
</tr>
<tr>
<td>Hoson Lam</td>
<td>29</td>
</tr>
<tr>
<td>Houshang Karimi</td>
<td>36, 48, 64</td>
</tr>
<tr>
<td>Houwuk Kim</td>
<td>51</td>
</tr>
<tr>
<td>Hsu-Hsuwan Wen</td>
<td>24</td>
</tr>
<tr>
<td>Hua Zhang</td>
<td>24</td>
</tr>
<tr>
<td>Huaiyuana Sheng</td>
<td>50</td>
</tr>
<tr>
<td>Huan Luo</td>
<td>30</td>
</tr>
<tr>
<td>Huan-Jun Ye</td>
<td>27</td>
</tr>
<tr>
<td>Huaqiong Zhong</td>
<td>37</td>
</tr>
<tr>
<td>Huayu Li</td>
<td>37</td>
</tr>
<tr>
<td>Huangzhen Fang</td>
<td>35, 40</td>
</tr>
<tr>
<td>Hui Zhang</td>
<td>34, 45</td>
</tr>
<tr>
<td>Huihui Pan</td>
<td>40</td>
</tr>
<tr>
<td>Huijun Gao</td>
<td>38</td>
</tr>
<tr>
<td>Huilong Yu</td>
<td>30</td>
</tr>
<tr>
<td>Huimin Chen</td>
<td>44</td>
</tr>
<tr>
<td>Huiping Li</td>
<td>23, 28</td>
</tr>
<tr>
<td>Hung-Chi Chen</td>
<td>48</td>
</tr>
<tr>
<td>Hussain Sarwar Khan</td>
<td>43</td>
</tr>
<tr>
<td>Hyung Min Lee</td>
<td>40</td>
</tr>
<tr>
<td>Hyunhoo Choi</td>
<td>26</td>
</tr>
<tr>
<td>Jacinta Costa</td>
<td>52</td>
</tr>
<tr>
<td>Jacky Han</td>
<td>58</td>
</tr>
<tr>
<td>Jaebum Cho</td>
<td>28</td>
</tr>
<tr>
<td>Jaehoon Back</td>
<td>56</td>
</tr>
<tr>
<td>Jaeheyoung Lee</td>
<td>53, 57</td>
</tr>
<tr>
<td>Jaime Jose Rodriguez</td>
<td>49, 58</td>
</tr>
<tr>
<td>Jalal Aminii</td>
<td>64</td>
</tr>
<tr>
<td>Jan Haase</td>
<td>25</td>
</tr>
<tr>
<td>Jan Stepanek</td>
<td>52, 61</td>
</tr>
<tr>
<td>Jaroslav Koton</td>
<td>44</td>
</tr>
<tr>
<td>Jagpreet Singh Kalsi</td>
<td>26, 30</td>
</tr>
<tr>
<td>Javad Najafi</td>
<td>51</td>
</tr>
<tr>
<td>Javier Romero-Pergault</td>
<td>27</td>
</tr>
<tr>
<td>Jayaram Subramanian</td>
<td>37</td>
</tr>
<tr>
<td>Jechang Jeong</td>
<td>26</td>
</tr>
<tr>
<td>Jennifer Bauman</td>
<td>48</td>
</tr>
<tr>
<td>Jens Bo Holm-Nielsen</td>
<td>60</td>
</tr>
<tr>
<td>Jesus Adolfo Carino Corrales</td>
<td>45</td>
</tr>
<tr>
<td>Ji Pan</td>
<td>24</td>
</tr>
<tr>
<td>Jhon Brahiam Benes Quispe</td>
<td>47</td>
</tr>
<tr>
<td>Jiabin Shen</td>
<td>39</td>
</tr>
<tr>
<td>Jiacheng Wang</td>
<td>35, 39, 57</td>
</tr>
<tr>
<td>Jiakai Qin</td>
<td>44</td>
</tr>
<tr>
<td>Jiayia Liu</td>
<td>40</td>
</tr>
<tr>
<td>Jiajie Zhang</td>
<td>35</td>
</tr>
<tr>
<td>Jialei Shi</td>
<td>26</td>
</tr>
<tr>
<td>Jialing Zhou</td>
<td>38, 45</td>
</tr>
<tr>
<td>Jian Chen</td>
<td>35, 39</td>
</tr>
<tr>
<td>Jian Gao</td>
<td>58</td>
</tr>
<tr>
<td>Jian Zheng</td>
<td>34, 35</td>
</tr>
<tr>
<td>Jianan Yang</td>
<td>63</td>
</tr>
<tr>
<td>Jiaqi Wu</td>
<td>59</td>
</tr>
<tr>
<td>Jiantao Wang</td>
<td>61</td>
</tr>
<tr>
<td>Jianfeng He</td>
<td>30</td>
</tr>
<tr>
<td>Jianing Hu</td>
<td>36</td>
</tr>
<tr>
<td>Jianping He</td>
<td>23</td>
</tr>
<tr>
<td>Jianqiu Zhao</td>
<td>35</td>
</tr>
<tr>
<td>Jianping Lyu</td>
<td>43</td>
</tr>
<tr>
<td>Jianwei Ye</td>
<td>26</td>
</tr>
<tr>
<td>Jianxiong Zhang</td>
<td>35</td>
</tr>
<tr>
<td>Jing-Lan Li</td>
<td>45</td>
</tr>
<tr>
<td>Jingshun Li</td>
<td>44</td>
</tr>
<tr>
<td>Jing Yang</td>
<td>40</td>
</tr>
<tr>
<td>Jing Zhang</td>
<td>23</td>
</tr>
<tr>
<td>Jinggai Li</td>
<td>34, 39</td>
</tr>
<tr>
<td>Jingchun Liang</td>
<td>62</td>
</tr>
<tr>
<td>Jingcong Zhang</td>
<td>45</td>
</tr>
<tr>
<td>Jingru Yang</td>
<td>34, 62</td>
</tr>
<tr>
<td>Jingwei Meng</td>
<td>56</td>
</tr>
<tr>
<td>Jingyao Wang</td>
<td>38</td>
</tr>
<tr>
<td>Jing-Yi Wang</td>
<td>33</td>
</tr>
<tr>
<td>Jingyi Zhang</td>
<td>55</td>
</tr>
<tr>
<td>Jinguay Wang</td>
<td>55</td>
</tr>
<tr>
<td>Jing-Yue Wang</td>
<td>33</td>
</tr>
<tr>
<td>Jinhaof Meng</td>
<td>40</td>
</tr>
<tr>
<td>Jinhu Xia</td>
<td>38</td>
</tr>
<tr>
<td>Jinhu Zhang</td>
<td>40</td>
</tr>
<tr>
<td>Jintao Gong</td>
<td>42</td>
</tr>
<tr>
<td>Jintao Lai</td>
<td>23</td>
</tr>
<tr>
<td>Jinwen Hu</td>
<td>50</td>
</tr>
<tr>
<td>Jinxing Lin</td>
<td>45</td>
</tr>
<tr>
<td>Juxin M.</td>
<td>56</td>
</tr>
<tr>
<td>Juei Hu</td>
<td>23</td>
</tr>
<tr>
<td>Joachim Böcker</td>
<td>37, 57, 59, 61</td>
</tr>
<tr>
<td>João Barros</td>
<td>28</td>
</tr>
<tr>
<td>Joao Pedro Trovao</td>
<td>37, 53</td>
</tr>
<tr>
<td>João Ferreira</td>
<td>52</td>
</tr>
<tr>
<td>Joe Rodriguez</td>
<td>29</td>
</tr>
<tr>
<td>John Reimers</td>
<td>55</td>
</tr>
<tr>
<td>Johnson Fadeyi</td>
<td>40</td>
</tr>
<tr>
<td>Jonny Herwan</td>
<td>52</td>
</tr>
<tr>
<td>Jorge Mestrelli</td>
<td>59</td>
</tr>
<tr>
<td>Joris Pallier</td>
<td>33</td>
</tr>
<tr>
<td>Jose Barata</td>
<td>54</td>
</tr>
<tr>
<td>Jose Barata</td>
<td>33, 34</td>
</tr>
<tr>
<td>Jose Barba</td>
<td>52</td>
</tr>
<tr>
<td>Jose Fernandez Silva</td>
<td>47</td>
</tr>
<tr>
<td>Jose L. Rueda Torres</td>
<td>38</td>
</tr>
<tr>
<td>Jose Luis Jimenez</td>
<td>26</td>
</tr>
<tr>
<td>Jose Luis Mata</td>
<td>49</td>
</tr>
<tr>
<td>Jose R. Espinoza</td>
<td>35</td>
</tr>
<tr>
<td>Jose Thankachan</td>
<td>39</td>
</tr>
<tr>
<td>Josep Cerera Balcis</td>
<td>45</td>
</tr>
<tr>
<td>Josep Guerrero</td>
<td>51</td>
</tr>
<tr>
<td>Josep M. Guerrero</td>
<td>42</td>
</tr>
<tr>
<td>Juan Antonio Ortega Redondo</td>
<td>45</td>
</tr>
<tr>
<td>Juan C. Vasquez</td>
<td>42</td>
</tr>
<tr>
<td>Juan de Dios Sanchez-Lopez</td>
<td>61</td>
</tr>
<tr>
<td>Juan I. Nieto-Hipolito</td>
<td>60</td>
</tr>
<tr>
<td>Juan Ivan Nieto Hipolito</td>
<td>27</td>
</tr>
<tr>
<td>Juan Manuel Guerrero</td>
<td>35</td>
</tr>
<tr>
<td>Juan Zhao</td>
<td>28</td>
</tr>
<tr>
<td>Jianping Liu</td>
<td>24</td>
</tr>
<tr>
<td>Junjie Pa</td>
<td>38, 42</td>
</tr>
<tr>
<td>Junjie Wang</td>
<td>64</td>
</tr>
<tr>
<td>Junjie Xu</td>
<td>63</td>
</tr>
<tr>
<td>Junjun Chang</td>
<td>52</td>
</tr>
<tr>
<td>Junjun Deng</td>
<td>56</td>
</tr>
<tr>
<td>Junnian Wang</td>
<td>53</td>
</tr>
<tr>
<td>Junning Zhang</td>
<td>46</td>
</tr>
<tr>
<td>Juri Jatskevich</td>
<td>60, 65</td>
</tr>
<tr>
<td>Jyotri Mishra</td>
<td>49</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kae Doki</td>
</tr>
<tr>
<td>Kaixiang Zhang</td>
</tr>
<tr>
<td>Kamal al-Haddad</td>
</tr>
<tr>
<td>Kamal Al-Haddad</td>
</tr>
<tr>
<td>Kamal Maaneshth Mathen Henry</td>
</tr>
<tr>
<td>Kannan Ali Khan Niazi</td>
</tr>
<tr>
<td>Kang Feng Ma</td>
</tr>
<tr>
<td>Kang-Hyun Jo</td>
</tr>
<tr>
<td>Karim Zaghib</td>
</tr>
<tr>
<td>Karl Montgomery</td>
</tr>
<tr>
<td>Katshiro Hirata</td>
</tr>
<tr>
<td>Kazuaki Takahara</td>
</tr>
<tr>
<td>Ke Xu</td>
</tr>
<tr>
<td>Kenan Yong</td>
</tr>
<tr>
<td>Kenneth Hoffmann</td>
</tr>
<tr>
<td>Kenneth Voneck</td>
</tr>
<tr>
<td>Kentaro Takagi</td>
</tr>
<tr>
<td>Kevin Marojarah Banjar-Nahor</td>
</tr>
<tr>
<td>Kevin Siggers</td>
</tr>
<tr>
<td>Keyhan Sheshyekani</td>
</tr>
<tr>
<td>Kezhen Han</td>
</tr>
<tr>
<td>Khaled Addoweeesh</td>
</tr>
<tr>
<td>Kivash Askari</td>
</tr>
<tr>
<td>Kivash Askari Noghani</td>
</tr>
<tr>
<td>Kim Fung Tsang</td>
</tr>
<tr>
<td>Kiran Pandav Maroti</td>
</tr>
<tr>
<td>Kiran Pandov</td>
</tr>
<tr>
<td>Kiseung Bang</td>
</tr>
<tr>
<td>Kiyoshi Ohishi</td>
</tr>
</tbody>
</table>
The 28th International Symposium on Industrial Electronics (ISIE)  
Vancouver, Canada, June 12-14, 2019

Klaus-Dieter Kuhnert ........................................ 23
Kodjo Agbossou .............................................. 47, 53, 61
Kohjiro Hashimoto ........................................... 27
Koketsu Nishabetsu .......................................... 31
Kongpui Guo ................................................... 30
Kouhei Ohnishi ................................................ 27, 63
Kourosh Sedghisigarchi .................................... 59
Koyeji Khatun ................................................... 33
Krikor Oyananyan ............................................. 29, 61
Krishna Raj R .................................................... 55
Kuan Li .............................................................. 45
Kui Wu ............................................................ 33
Kun He ............................................................. 34
Kun Li ............................................................. 26
Kunpeng Li ...................................................... 34
Kunwu Zhang ..................................................... 38, 50
Kyihwan Park ................................................... 50
Kyuil Hwang ..................................................... 37
Kyumon Lee ...................................................... 37
Kyang Beom Kim ............................................... 24

L
Laizhen Luo ...................................................... 53
Lais Ferrera Crispino Proença ............................. 24
Lalit Kumar Sahu ............................................. 48
Langwen Zhang ................................................ 44
Lars Erik Wetterwald ......................................... 32
Larisa Lindner ................................................... 26, 62
Lasantha Meegapalapitiya .................................. 54
Laszlo Horvath ................................................... 52
Laurie Garbuio ................................................... 60
Lazhar Ben-Brahim .......................................... 58
Le Wei .................................................................. 25
Lei Ding ............................................................. 44
Lei Zhang ........................................................... 27
Lelin Cai ............................................................ 51
Leonel Deudrada ............................................... 52
Leopoldo G. Franquelo ..................................... 45
Levon Gevorkyan ............................................... 50
Li Fu ..................................................................... 52
Li He ..................................................................... 48
Li Peng ............................................................... 56
Li Qiu ..................................................................... 23
Li Zhang .............................................................. 55, 58, 64
Liang Li .............................................................. 26
Liangcai Cao ....................................................... 24
Ligang Wu ........................................................... 45
Li Jie ..................................................................... 57
Li Jinhua ............................................................. 34
Lin Cai ................................................................. 36
Lisa Zhao ............................................................. 29
Ling Shi ............................................................... 54
Ling Yang ........................................................... 40
Lingfeng Wang .................................................... 22
Lingyun Huang .................................................... 23
Lipeng Zhang ....................................................... 45
Liu Shiheng ........................................................ 46
Lixiao Cao ........................................................... 55
Loi Lei Lai ............................................................ 59, 61
Long Chen ........................................................... 38
Longjun Wang ..................................................... 27
Lorenzo Gangiardi .............................................. 28
Lotfi Beghou ......................................................... 52, 53
Louis Viglione .................................................... 55
Louis-A. Dessaint ............................................... 48
Loveswar Harvansh .......................................... 43
Lu Liu ..................................................................... 43
Lu Zhou ............................................................... 45
Lubos Streit ........................................................ 61

Luce Carbonari .................................................... 28
Lucca Lattanzii ..................................................... 28
Lucas Araujo ...................................................... 39, 40
Lucas Matuziuki Kunzler ................................... 53
Ludwig Brabetz .................................................... 51
Luigi Vanfretti ..................................................... 47
Luis de Oro Arenas ............................................. 47
Luis De Oro Arenas ............................................. 47
Luis do O ............................................................. 54
Luis Gomes .......................................................... 52
Luis Gomes .......................................................... 28
Luis Guilherme Barbosa Rolim ............................ 23
Luis Miguel Campos .......................................... 23
Luis O. Moreno-Ahedo ....................................... 26
Luis Romero ........................................................ 52
Luis Rueda ........................................................... 61
Luis D. Dröner ..................................................... 41
Luis A. C. Lopes ................................................... 53
Liz Eduardo Borges da Silva ................................ 24
Lucas Dedelet ..................................................... 41
Luke Schillaber ................................................... 62
Lun He ................................................................. 24
Lyne Woodward .................................................. 55

M
M. Hosseini Roohi .............................................. 58, 63
M. Oezgu Citci ..................................................... 64
M.Hossein Roohi ............................................... 63
Mabel Vazquez-Briese ........................................ 61
Madjdi Fathi ....................................................... 23
Mahajan Sagar Bhaskar ...................................... 41, 58
Malhi Debouza ................................................... 58
Mahdi Habibi ...................................................... 57
Mahdi Jafari ......................................................... 49
Mahsa Karami .................................................... 49
Majed Shakir ....................................................... 57
Majid Farhangi .................................................... 46
Mamadou Bailly Camara .................................... 42
Man Li ................................................................... 44
Manar Amarny ................................................... 26, 60
Manik Jhalota ...................................................... 48
Manjot Singh Sidhu ............................................. 30
Manuel Luis Aguilar .......................................... 59
Manuel Avila ....................................................... 35
Manuel Mayerhofer .......................................... 52
Maoqiang Zhou ................................................... 33
Marc Missiere .................................................... 64
Marcel Eckert ..................................................... 25
Marcel Müller ...................................................... 25
Marcelo A. Perez ................................................ 35
Marcelo Favoretto Castoldi .................................. 41, 59
Marco Lisserre .................................................... 62
Marco Rivera ....................................................... 29, 36
Marco Zimmermann .......................................... 49
Margarita Norambuena .................................... 29
Marina Kolendowska ......................................... 23
Marina Paparitondis .......................................... 54
Marina Perdigo .................................................... 53
Mário Alves ........................................................ 28
Marius Dranca .................................................... 42
Marius Stender ................................................... 37
Mariusz Malinowski .......................................... 35
Marlon Jesus Alburquerque Valdivia .................... 47
Mart A.M.V. van der Meijden ................................ 38
Martin Horauer ................................................... 25
Martin Jara .......................................................... 61
Martin Ordonez ................................................... 61
Martin Pittermann ............................................. 61
Martin Siroyev .................................................... 50

Maryam Sarebanzadeh ........................................ 29, 36
Masahiro Yokota ................................................. 32
Masayuki Koyama .............................................. 35
Masoud Abbaszadeh .......................................... 50, 54
Masoud Karimi-Ghartemani ................................ 36, 43, 48, 64
Massimo Guarnieri .......................................... 35
Matteo Mazanti ................................................... 28
Matthew J. Reno ................................................ 39
Matthias Stiller ................................................... 49
Max Mauro Dias Santos ..................................... 36
Max Mauro Santos .............................................. 28
Mebratnom Beraki .............................................. 54
Mehdi Gholi-zadeh ............................................. 37
Mehdi Moallem ................................................... 62
Mehdi Narimani ................................................ 24, 48
Mehmet Gulec ..................................................... 30
Mehrdad Moallem .............................................. 57, 64
Meiling Wang ..................................................... 39
Mengchen Li ....................................................... 45
Mengdan Li ........................................................ 38
Mengmeng Yang ............................................... 55
Mengyin Fu ......................................................... 39
Michal Głowski .................................................... 36
Miguel Reyes-Garcia ........................................... 26, 62
Mihai Chircu ....................................................... 41
Mihoko Nitsuma ................................................ 27, 32
Milad Keshani ................................................... 56
Milos Cvetkovic .................................................. 53
Min Feng ............................................................ 30
Min Li ................................................................... 42
Min Wu ............................................................... 28
Ming Moti ........................................................... 39
Ming Zeng ........................................................... 38
Minghan Dong .................................................... 52
Mingming Wan .................................................... 34
Mingming Zhou ................................................... 54
Mingxi Tong ........................................................ 33
Mingyong Liu ..................................................... 23
Mingzhe Sun ........................................................ 27
Minhan Yoon ...................................................... 57
Minjay Cho ........................................................ 50
Miren T. Bedialalaneta ......................................... 43
Mohin Naderi ...................................................... 51
Mohamed Ayeb ................................................... 41
Mohamed Bourham ........................................... 51
Mohamed Kashfi ................................................ 54
Mohamed Salem .................................................. 60
Mohamed Sallam ............................................... 50
Mohamed-Hamza Laraki .................................... 47
Mohammad Ali Hosseinzadeh ............................. 29, 36
Mohammad Mahdyasfakhri ............................... 65
Mohammad Meraj ............................................... 41
Mohammad Sakel ................................................. 53
Mohammad Shariatzadeh .................................... 29, 61
Mohammad Meraj ............................................... 58
Mohammad Takrouni .......................................... 54
Mohsen N. Soltani ................................................ 58
Mohsen Soltani ................................................... 49, 60, 62
Mohsin Muntaz .................................................. 43
Mojtaha Yousefi ................................................... 60, 62
Morgan Khan ....................................................... 62
Mostafa Abrarzadeh .......................................... 24, 29, 61, 62
Mou Chen ........................................................... 64
Mo-Yuen Chow .................................................. 51
Muhammad Aamir ............................................. 43
Muhammad Ahmed Humais ................................ 48
Muhammad Ali ................................................... 43
Muhammad Azam ............................................... 25
Muhammad Farhan ............................................. 26

IEEE Industrial Electronics Society
Zhaohui Liu ............................................... 38
Zhe Guan ................................................... 44
Zhen Kang ............................................... 62
Zhen Shao .................................................. 49, 50
Zhendong Dai ............................................ 27
Zheng Liu .................................................. 25, 41
Zheng Qian ............................................... 33, 55
Zheng Qin .................................................. 42
Zhengkun Yang ........................................... 45
Zhengxuan Li ............................................. 29, 56
Zhengyu Lin ................................................ 59
Zhengze Xu .................................................. 40
Zhenhuan Ding .......................................... 35
Zhenpo Wang ............................................. 56
Zhenxuan Li ............................................... 24
Zhihao Min ............................................... 58
Zhihong Bai ............................................... 52
Zhi-Hong Guan .......................................... 42
Zhihong Liu ............................................... 43
Zhijian Ji .................................................... 25
Zhiqiang Long ............................................ 43
Zhisheng Duan ........................................... 38, 44
Zh-Wei Liu ............................................... 42
Zhiwen Chen ............................................. 45
Zhi-Wen Jiang ........................................... 38
Zhiwu Huang ............................................. 36
Zhi-xiang Liu ............................................. 50
Zhi-xiong Shi ............................................. 34
Zhiyi Yang ............................................... 43
Zhiyong Guan ............................................ 50
Zhiyuan Liu ............................................... 38
Zhongguo Zhang ......................................... 34, 39
Zhongyu Wang ............................................ 36
Zhouhua Peng .......................................... 43
Zhuang Li .................................................. 63
Zhuo Chen ................................................. 37
Zhuo Wang ............................................... 40
Zhuo Zhang ............................................... 28
Zi exposures 55
Zi, Zihan Meng ............................................ 64
Zhi-Min .................................................... 25
Ziquan Yu .................................................. 50
Zixiao Xu .................................................... 34
Zixin Li ..................................................... 65
Ziyu Qin .................................................... 63
Zubair Asif ............................................... 43
Zifeila Asif ............................................... 43
Zunaira Umar ............................................. 41
Zuo Wang ................................................. 64

IEEE Industrial Electronics Society
The 28th IEEE International Symposium on Industrial Electronics

June 12-14 2019, Vancouver, Canada

Pictures courtesy of the Metro Vancouver Convention and Visitors Bureau

Opening Ceremony: Wednesday, June 12, 8:00 am — 8:20 am
Welcome Reception: Wednesday, June 12, 7:00 pm — 9:00 pm
Banquet: Thursday, June 13, 7:00 pm — 9:30 pm