6th IFAC Symposium on Telematics Applications
Technical program

June 15-17 2022
Congress centre Prouvé, Nancy

Sponsors:
### Session 1: Industry 4.0

**Chairs:** Lei Ma, Klaus Schilling

- **Advanced Edge Detection of AprilTags for Precise Docking Maneuvers of Mobile Robots**
  Jan Richter, David Bohlig, Andreas Nüchter, Klaus Schilling

- **A Simple Path-Aware Optimization Method for Mobile Robots**
  Tudor Santejudean, Lucian Busoniu, Vineeth Satheeskumar Varma, Irinel Constantin Morarescu

- **A Dual-Robot Cooperative Welding Path Planning Algorithm Based on Improved Ant Colony Optimization**
  Qingyi Wang, Yongkui Sun, Qichao Tang, Lei Ma, Duo Zhao, Jianping Yang, Jian Xu

- **Quality Inspection for the Body-in-white Assembly of High-Speed Train Carriage Based on Machine Vision**
  Ruichen Li, Lei Ma, Qichao Tang, Yongkui Sun, Bin Su

### Invited Session 2: Telematics Digital Twins Applications

**Chairs:** Nathalie Julien, William Derigent, Michaël David

- **Social Cyber-Physical Systems and Digital Twins Networks: A Perspective about the Future Digital Twin Ecosystems**
  Mohammed Adel Hanzaoui, Nathalie Julien

- **Autonomous Wireless Sensors Network for the Implementation of a Cyber-Physical System Monitoring Reinforced Concrete Civil Engineering Structures**
  Gaël Loubet, Alassane Sidibe, Alexandru Takaes, Daniela Dragomirescu

- **Materials Communicating with the BIM: Results of the McBIM Project**
  William Derigent, Michael David, Hang Wan, Daniela Dragomirescu, Alexandru Takaes, Gaël Loubet, Ana Maria Roxin, Roland Melet, Laurent Montegut

- **Digital Twin Network for the IIoT Using Eclipse Ditto and Hono**
  Mehdi Kherbache, Moufida Maimour, Éric Rondeau

### Special session RED WoLF

**Rethink Electricity Distribution Without Load Following**

**Chairs:** Giuseppe Colantuono, Éric Rondeau

- **The RED WoLF Project: Underlying Physical and Algorithmic Ideas**
  Giuseppe Colantuono

- **Greenhouse Gas Emission Reduction in Residential Buildings: Comparison between Two Algorithms**
  Paul Ortiz

- **Why Oldham Has Chosen to Deliver Two RED WoLF Pilots, How We Are Doing This in Practice and What Opportunities Are There for the Future**
  Ben Hill, Jamie Smith

- **CO2 Minimization in a Community With a Shared Battery**
  Sebai Walid
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<td>08.40-09.00</td>
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| 09.00-10.00 | **IFAC TC3.3 meeting**  
*Chair: Lei Ma* |
| 10.00-10.20 | Coffee break                                                        |
| 10.20-12.20 | **Session 3: Control of networks**  
*Chairs: Karl-Erik Arzen, Danfeng Sun*  
- Vickrey-Clarke-Grovess Auction-Based Storage Allocation for Distributed Camera Systems  
  Alexandre Martins, Karl-Erik Arzen, Hung-Yu Wei  
- Critical Logical Link Assessment for Improving Industrial Wireless Communication Systems  
  Danfeng Sun, Zeyun Xiao, Gustavo Cainelli, Jianyong Zhao, Huifeng Wu  
- Multi-criteria detection method for non-determinist SDN control  
  Loïc Desgeorges, Jean-Philippe Georges, Thierry Divoux  
- Adapting the number of validator according the need in a BFT chain with SABINE  
  Guilain Leduc, Sylvain Kubler, Jean-Philippe Georges |
| 12.20-14.00 | Lunch                                                               |
| 14.00-15.30 | **Session 4a: Remote sensors, data acquisition**  
*Chairs: Helge Andreas Lauterbach, Éric Rondeau*  
- Pose estimation and mapping based on IMU and LiDAR  
  Janis Kaltenthaler, Helge Andreas Lauterbach, Dorit Borrmann, Andreas Nüchter  
- An Energy-Efficient WMSN-based System for Endangered Birds Monitoring  
  Aya Sakhri, Moufida Maimour, Eric Rondeau, Noureddine Doghmane, Saliba Hariz  
- Reinforcement Learning TDMA-Based MAC Scheduling in the Industrial Internet of Things: A Survey  
  Mehdi Kherbache Mehdi, Otabek Sobirov Otabek, Moufida Maimour, Eric Rondeau, Abderrezak Benyahia |
| 15.30-16.00 | Coffee break                                                        |
| 16.00-17.00 | **Session 4b: Remote sensors, data acquisition**  
*Chairs: Helge Andreas Lauterbach, Éric Rondeau*  
- Driver vigilance estimation with Bayesian LSTM Auto-encoder and XGBoost using EEG/EOG data  
  Rachid Zeghlache, Mohamed Aymen Labiod, Abdelhamid Mellouk  
- Resilience and Robustness in Visible Light Positioning Systems: An introductory Approach  
  Cristobal Carreño, Nicolas Krommenacker, Patrick Charpentier |
| 19.00   | **Gala dinner**  
*Hôtel de la Reine, Place Stanislas, Nancy* |
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<td><strong>Session 5: Energy issues</strong></td>
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<td>Chairs: Karl Andersson, Michel Kieffer</td>
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|            | - Energy-Efficient Transmission Policies For The Linear Quadratic Control of Scalar Systems  
|            |   Yifei Sun, Samson Lasaulce, Michel Kieffer, Romain Postoyan, Dragan Nesic  
|            | - CANO: A Lightweight CArbon Emission and Inhabitants' Energy Needs Optimisation Model  
|            |   Paul Ortiz, Sylvain Kubler, Eric Rondeau  
|            | - Energy-Efficient Routing for Cooperative Multi-AUV System  
|            |   M. shamim Kaisar, Mohammad Shahadat Hossain, Mufti Mahmud, Karl Andersson  |
| 10.30-10.50| Coffee break                              |
| 10.50-12.00| **Special session: EMJMD GENIAL thesis – Green networking**  
|            | Chair: Jean-Philippe Georges               |
| 12.00-12.20| Closing ceremony                          |
| 12.20-14.00| Lunch                                     |