

**ICCAD**

**Tor Vergata University  
Rome - Italy**

# PROGRAM



**(ICCAD'23)**

**7<sup>th</sup> INTERNATIONAL CONFERENCE ON  
CONTROL, AUTOMATION AND DIAGNOSIS**

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**[www.iccad-conf.com](http://www.iccad-conf.com)**

**2023**

**May 10-12, 2023**

# Welcome Message

On behalf of the organizing committee, we would like to warmly welcome all the participants of the 7<sup>th</sup> IEEE International Conference on Control, Automation and Diagnosis (ICCAD'23) being held at "Tor Vergata University", in Rome-Italy on May 10-12, 2023.

The first edition of ICCAD conferences series was held in Hammamet-Tunisia in January 2017, the second one in Marrakesh-Morocco in March 2018, the third one was held in Grenoble-France in July 2019, the fourth edition was held in Paris-France in October 7-9, 2020, 5<sup>th</sup> edition was held in Grenoble-France in November 3-5, 2021 and 6<sup>th</sup> edition was held in Lisbon-Portugal.

In addition to the regular papers, ICCAD'23 includes exciting plenary keynote and special sessions. We have received around 180 papers written by more than 500 authors from 49 countries worldwide that yielded 117 valid papers. The acceptance rate for this conference was less than 65%. Authors from all continents honored us by reporting their original work, in all areas of Control, Robotics, Optimization, Diagnosis, Engineering, Computer Science and Information Technologies. We thank them for submitting their work to our conference.

We would like to thank all the members on the organizing committee for their extraordinary efforts to ensure that this conference will be a successful one.

We would like to express our gratitude to our sponsors, ATTeDD, Tor Vergata University, Polytech Grenoble, as well as to our technical sponsors IEEE SMC Society, CNRS, Grenoble Alpes University, Sousse University and our partners G-SCOP Laboratory, ASSCL Laboratory and LARATSI-ENIM Laboratory.

On behalf of the organizing committee of ICCAD'23

*Prof. Sergio Galeani, Tor Vergata University, Rome - Italy*

*Prof. Mohamed Benbouzid, University of Brest - France*

*Prof. Duarte Valério, University of Lisbon - Portugal*

*Prof. Imre J. Rudas, Obuda University - Hungary*

*Prof. Hassani Messaoud, Monastir University - Tunisia*

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*Prof. Carlo Cecati, University of L'Aquila - Italy*

*Prof. Chakib Ben Njima, Sousse University - Tunisia*

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## Venue

**ICCAD'23** will be held at "**Tor Vergata School of Engineering**" in Tor Vergata, Rome-Italy.

**Website :** <https://ing.uniroma2.it/>



**Address :** Macroarea di Ingegneria, Via del Politecnico 1, 00133 Roma, Italy.

# Conference Registration

**Wednesday - May 10, 2023**

(8.00 - 13.00)

**Thursday - May 11, 2023**

(8.00 - 13.00)

**Friday - May 12, 2023**

(8.00 - 10.00)

## ICCAD'23 Program

Wednesday – May 10, 2023	Registration (8.00 – 9.20)				
	Opening Ceremony (9.20 – 9.40)				
	Keynote 1 (9.40 – 10.20) Prof. Maria Di Mascolo French National Center for Scientific Research - France				
	Coffee break (10.20 – 10.50)				
	Technical Sessions 1 (10.50 – 12.40)				
	PEEC.1	MCRM.1	SIPCI	VS.1	VS.2
	Lunch (12.40 – 14.00)				
	Keynote 2 (14.00 – 14.40) Prof. Carlo Cecati University of L’Aquila - Italy				
	Technical Sessions 2 (14.40 – 16.20)				
	CSFD.1	ITS.1	MCRM.2	VS.3	VS.4
Thursday - May 11, 2023	Technical Sessions 3 (8.30 – 10.30)				
	CSFD.2	SS15	PEEC.2	VS.5	
	Coffee break (10.30 – 11.00)				
	Keynote 3 (11.00 – 11.40) Prof. Bernard Brogliato INRIA Grenoble-Rhône-Alpes Research Centre - France				
	Semi-plenary Sessions (11.40 – 12.20)				
	Semi-plenary Session 1 Prof. Corrado Possieri University of Rome “Tor Vergata” - Italy		Semi-plenary Session 2 Prof. Thulasi Mylvaganam Imperial College, London – United Kingdom		
	Lunch (12.20 – 14.00)				
	Technical Sessions 4 (14.00 – 15.30)				



	IST.2	IISE	SS3.1	VS.6
Friday – May 12, 2023	Technical Sessions 5 (8.30 – 10.30)			
	SS3.2	SS8		VS.7
	Coffee break (10.30 – 11.00)			
	Closing Ceremony			

### Presentation - Duration

- Keynote: The duration of each presentation is of 30 minutes plus 10 minutes for questions;
- Oral presentation: The max duration of each presentation is of 15 minutes plus 5 minutes for questions;

**Note: Accepted file formats for all presentations are PDF and PPT**

## Sessions Scheduling

Code	Title	Papers	Room
PEEC.1	<i>Power Electronics &amp; Energy Conversion (Part 1)</i>	2383-6290-8579-2118-3095	<b>Leonardo</b>
MCRM.1	<i>Motion Control, Robotics and Mechatronic (Part 1)</i>	6895-5354-6616-9958-5518	<b>Archimede</b>
SIPCI	<i>Signal and Image Processing &amp; Computation Intelligence</i>	1234-6362-8824-597-6521	<b>Galileo</b>
VS.1	<i>Virtual Session (Part 1)</i>	4612-7742-6513-5362-7323-7557	<b>Zoom</b>
VS.2	<i>Virtual Session (Part 2)</i>	770-4924-9298-6256-2293-3524	<b>Zoom</b>
CSFD.1	<i>Control System &amp; Fault Diagnosis (Part 1)</i>	7386-6188-7542-8849-3568-7043	<b>Leonardo</b>
ITS.1	<i>Intelligent Transportation Systems (Part 1)</i>	6919-532-943-4170-9766	<b>Archimede</b>
MCRM.2	<i>Motion Control, Robotics and Mechatronic (Part 2)</i>	6078-8389-1272-9481-545	<b>Galileo</b>
VS.3	<i>Virtual Session (Part 3)</i>	4348-507-725-7701-1259-872-4937	<b>Zoom</b>
VS.4	<i>Virtual Session (Part 4)</i>	5702-1419-8581-5545-9256-7664-9857	<b>Zoom</b>
CSFD.2	<i>Control System &amp; Fault Diagnosis (Part 2)</i>	447-5631-7866-8653-754-9629	<b>Leonardo</b>
SS15	<i>Special Session: Recent Advances in Computational Intelligence for Smart Industry</i>	5615-3254-5353-8462-9661-825	<b>Archimede</b>
PEEC.2	<i>Power Electronics &amp; Energy Conversion (Part 2)</i>	1869-2905-7600-3718-8121-9055	<b>Galileo</b>
VS.5	<i>Virtual Session (Part 5)</i>	6834-1172-1455-2755-9654-2682	<b>Zoom</b>

ITS.2	<i>Intelligent Transportation Systems (Part 2)</i>	9251-5991-6072-9550	<b>Leonardo</b>
IISE	<i>Industrial Informatics and Software Engineering</i>	1639-1243-2632-6434-4588	<b>Archimede</b>
SS3.1	<i>Special Session: Advances in Fault Diagnosis and Prognosis of Power Electronic Converters in Power Systems (Part 1)</i>	5690-4266-6432-8876-8549	<b>Galileo</b>
VS.6	<i>Virtual Session (Part 6)</i>	1340-2445-6411-7761-8560-3666	<b>Zoom</b>
SS3.2	<i>Special Session: Advances in Fault Diagnosis and Prognosis of Power Electronic Converters in Power Systems (Part 2)</i>	9644-9685-1590-5822-7826	<b>Leonardo</b>
SS8	<i>Special Session: New Trend in Artificial Intelligence for Biomedical Engineering</i>	750-9206-4164-3945-654	<b>Archimede</b>
VS.7	<i>Virtual Session (Part 7)</i>	3955-5207-2659-7489-3329-9741	<b>Zoom</b>

<b>Opening Ceremony</b>	<b>Aula Convegni</b>
<b>Keynote 1, Keynote 2, Keynote 3, Semi-plenary Session 1, Semi-plenary Session 2</b>	<b>Aula Convegni</b>
<b>Closing Ceremony</b>	<b>Aula Convegni</b>

**Below is the map of the Campus**





### Keynote 1

Title: “ A panorama of scientific methods to make healthcare production systems more efficient in terms of organization”

Speaker: **Prof. Maria Di Mascolo, French National Center for Scientific Research - France**

Chair: **Prof. Sergio Galeani**

### Keynote 2

Title: “ Modulation Techniques based on Analytical Methods for Cascaded H-Bridge Multilevel Converters ”

Speaker: **Prof. Carlo Cecati, University of L'Aquila - Italy**

Chair: **Prof. Zineb Simeu-Abazi**

### Keynote 3

Title: “ Implicit Euler discretization of set-valued sliding-mode controllers and differentiators”

Speaker: **Prof. Bernard Brogliato, Inria Grenoble-Rhône-Alpes Research Centre - France**

Chair: **Prof. Rabia Sehab**

### Semi-plenary session 1

Title: “ Algebraic geometry for Robotics and Control Theory”

Speaker: **Prof. Corrado Possieri, Department of Civil Engineering and Computer Engineering of the University of Rome “Tor Vergata” - Italy**

Chair: **Prof. Eric Gascard**

### Semi-plenary session 2

Title: “ Control design via differential games”

Speaker: **Prof. Thulasi Mylvaganam, Faculty of Engineering, Department of Aeronautics, Imperial College, London – United Kingdom**

Chair: **Prof. Emmanuel SIMEU**

# Papers, Sessions and Sessions Chairs

**Wednesday – May 10, 2023 / Technical Sessions 1 (10.50 – 12.40)**

**Session Code:** PEEC.1 / **Session Title:** Power Electronics & Energy Conversion (Part 1)

**Paper** **Session Chair(s) : Prof. Emmanuel SIMEU**

**2383** A Karush-Kuhn-Tucker approach to field-weakening for Surface-Mounted Permanent Magnets Synchronous Motors

*Hiba Houmsi, Federico Bribiesca Argomedo, Paolo Massioni and Romain Delpoux*

**6290** Enhancement of Building Energy Consumption Using a Digital Twin based Neural Network Model Predictive Control

*Abdelali Agouzoul, Emmanuel Simeu and Mohamed Tabaa*

**8579** Implementation of Electronic Throttle for Control of a Dual Fuel Diesel Engine

*Anthony Theodore Saliba, Mario Schembri, Kenneth Scerri and Mario Farrugia*

**2118** Finite time control for grid-connected wind turbine under power step change and grid faults

*Kamal Elyaalaoui, Moussa Labbadi and Stephane Caux*

**3095** Economic Dispatch for Conventional Generation-Replacement with Solar PV and Battery Storage Using Robust Stochastic Optimization

*Khalid Abdullah Khan, Abdul Rauf, Fahad Saleh Al-Ismael and Muhammad Khalid*

**Wednesday – May 10, 2023 / Technical Sessions 1 (10.50 – 12.40)**

**Session Code:** MCRM.1 / **Session Title:** Motion Control, Robotics and Mechatronic (Part 1)

**Paper** **Session Chair(s) : Prof. Anahita Khojandi**

**6895** A Deep Learning-Based Approach for Vehicle Motion Prediction in Autonomous Driving

*Shahrbanoo Rezaei, Jeremiah Gbadegoye, Neda Masoud and Anahita Khojandi*

**5354** Inertial and positioning sensors fusion for indirect location tracking in warehouse inventory management

*Aleksei Fjodorov, Sander Ulp, Muhammad Mahtab Alam and Alar Kuusik*

**6616** BlazePose-Based Action Recognition with Feature Selection Using Stochastic Fractal Search Guided Whale Optimization

*Motasem Alsawadi, Marcial Sandoval-Gastelum, Irfan Danish and Miguel Rio*

- 9958** Vision-based Explainable Action Recognition Model for Polluted Soil Tracking  
*Edern Viannay, Hichem Snoussi, Benitha Vasseur and Dominique Poux*
- 5518** Navigation and Motors Control of a Differential Drive Mobile Robot  
*Roberta Di Fonso and Carlo Cecati*

**Wednesday – May 10, 2023 / Technical Sessions 1 (10.50 – 12.40)**

**Session Code:** SIPCI / **Session Title:** *Signal and Image Processing & Computation Intelligence (Part 1)*

**Paper** **Session Chair(s) :** *Prof. Sergio Galeani*

- 1234** Efficient visual sensor fusion for autonomous agents  
*Lorenzo Bianchi, Daniele Carnevale, Roberto Masocco, Simone Mattogno, Federico Oliva, Fabrizio Romanelli and Alessandro Tenaglia*
- 6362** FABLE : Fabric Anomaly Detection Automation Process  
*Simon Thomine, Hichem Snoussi and Mahmoud Soua*
- 8824** Compact Convolutional Transformer Fourier analysis for GPR tunnels assessment  
*Jonathan Melchiorre, Marco Martino Rosso, Giansalvo Cirrincione and Giuseppe Carlo Marano*
- 597** Machine Learning Vulnerability Assessment of Ring Oscillator Physical Unclonable Functions  
*Husam Kareem and Dmitriy Dunaev*
- 6521** Machine Learning-based Automatic Defect Classification in Real Manufacturing Settings  
*Jay Liu*

**Wednesday – May 10, 2023 / Technical Sessions 1 (10.50 – 12.40)**

**Session Code:** VS.1 / **Session Title:** *Virtual Session (Part 1)*

**Paper** **Session Chair(s) :** *Dr. Thulasi Mylvaganam and Prof. Larbi-Chrifi Alaoui*

- 4612** Design of high-performance control scheme for DFIG-based Wind Energy Conversion System supplies a MAS using Hysteresis and the m & r parameters model  
*Hamed Kamel Eddine Zine and Khoudir Abed*

7742	Economic Battery Storage Dispatch with Deep Reinforcement Learning from Rule-Based Demonstrations  <i>Manuel Sage, Martin Staniszewski and Yaoyao Fiona Zhao</i>
6513	Artificial intelligence-based IoT-enabled biogas production  <i>Peter Onu, Charles Mbohwa and Anup Pradhan</i>
5362	Emotion Recognition from Audio-Visual Information based on Convolutional Neural Network  <i>Syrine Haddad, Olfa Daassi and Safya Belghith</i>
7323	Efficient RNN Models for IOT Intrusion Detection System  <i>Rahma Jablaoui and Noureddine Liouane</i>
7557	Multi-objective Sustainable Supplier Selection and Order Allocation Model using Interval-Valued Intuitionistic Fuzzy AHP  <i>Ipek Eldem</i>

### Wednesday – May 10, 2023 / Technical Sessions 1 (10.50 – 12.40)

**Session Code:** VS.2 / **Session Title:** Virtual Session (Part 2)

**Paper** **Session Chair(s) :** Prof. Rabia Sehab and Prof. Ahmad Taher Azar

770	Camber Angle Estimation based on Physical Modelling and Artificial Intelligence  <i>Raffaele Marotta, Salvatore Strano, Mario Terzo, Ciro Tordela and Valentin Ivanov</i>
4924	Design of a Fuzzy Type-2 Controller for 1-DOF Pitch Axis Twin Rotor System  <i>Abdelrahman Sayed Sayed, Walid K. Shaker, Hossam Hassan Ammar, Ahmad Taher Azar and Chakib Ben Njima</i>
9298	High Performance Adaptive Tracking Control of Saturated Uncertain Nonlinear Systems with Disturbance Rejection  <i>Guichao Yang and Kai Wen</i>
6256	A New Functional Observer Design for Singular Uncertain Systems with Constant Time Delay  <i>Amani Nasri, Fatma Hamzaoui, Malek Khadhraoui and Hassani Messaoud</i>
2293	Data-Driven and Physics-Based Approaches for Wind Turbine High-Speed Shaft Bearing Prognostics  <i>Meriem Bousebsi, Ammar Medoued and Lotfi Saidi</i>
3524	Processing of Vibration Signals and Extraction of Time-domain Features for Condition Monitoring of Rotating Machinery  <i>Anastasija Ignjatovska, Zlatko Petreski, Simona Domazetovska and Damjan Pecioski</i>

**Wednesday – May 10, 2023 / Technical Sessions 2 (14.40 – 16.30)**

**Session Code: CSFD.1 / Session Title: Control System & Fault Diagnosis (Part 1)**

**Paper**

**Session Chair(s) : Dr. Natalia Ogorelysheva**

**7386** Modeling And Diagnosis of Avionic Systems by Hybrid Automata Using Stateflow

*Ilhem Hnayen, Dhouibi Hedi, Zineb Simeu-Abazi and Eric Gascard*

**6188** Fractional Integral Sliding Mode Control for Euler-Lagrange System

*Saim Ahmed, Ahmad Taher Azar, Muhammad Zeeshan Sardar, Mohamed Tounsi, Nashwa Ahmad Kamal and Chakib Ben Njima*

**7542** Adaptive high-gain observers for systems in observability canonical form

*Francesco Gismondi and Corrado Possieri*

**8849** Model-free Optimal Control of a Thin-Walled Rotating Cylinder with Piezoelectric Patches using a Particle Swarm Optimization Approach

*Amir Hataf, Ziv Brand and Matthew O.T. Cole*

**3568** FDI-X: An Occlusion-based Approach for Improving the Explainability of Deep Learning Models in Fault Detection and Isolation

*Balyogi Mohan Dash, Belkacem Ould Bouamama, Midzodzi Pekpe and Mahdi Boukerdja*

**7043** Narrowband-IoT Based Integrated Framework for Monitoring Pipeline Condition in Oil and Gas Industry

*Md Muzakkir Quamar, Khalid Abdullah Khan and Muhammad Khalid*

**Wednesday – May 10, 2023 / Technical Sessions 2 (14.40 – 16.30)**

**Session Code: ITS.1 / Session Title: Intelligent Transportation Systems (Part 1)**

**Paper**

**Session Chair(s) : Prof. Maria Di Mascolo**

**6919** Improving the non-urgent sanitary transportation

*Timothée Chane-Haï, Samuel Vercraene, Celine Robardet and Thibaud Monteiro*

**532** On Troubleshooting in AGV-based Autonomous Systems

*Natalia Ogorelysheva, Anna Vasileva and Nils Gramse*

**943** Transient Vibroacoustic Analysis of a Continuously Variable Transmission with Vold-Kalman filter

*El Mehdi Mojab, Philippe Micheau and Maxime Boivert*

**4170** Control Strategy for Cooperative Driving Automation in Traffic Incidents

*Byeongju Kang, Sujin Kwag, Hyunsoo Jang, Junyeop Park and Yunhyoung Hwang*



**9766** A railway norms application for small traffic railway lines autonomous vehicle

*Simon Collart-Dutilleul, Philippe Bon and Amine Hamidi*

**Wednesday – May 10, 2023 / Technical Sessions 2 (14.40 – 16.30)**

**Session Code:** MCRM.2 / **Session Title:** Motion Control, Robotics and Mechatronic (Part 2)

**Paper** **Session Chair(s) :** Prof. Carlo Cecati

**6078** Development and Experimental Evaluation of a 3DoF Tendon-Driven Probe for Robot Assisted Minimally Invasive Surgical Operations

*Achilleas Santi Seisa, Nikolaos Evangeliou, Anthony Tzes and George Nikolakopoulos*

**8389** Sliding Mode Control of the PUMA 560 Robot

*Arezki Fekik, Ahmad Taher Azar, Mohamed Lamine Hamida, Hakim Denoun, Dyhia Kais, Sabrina Mohand Saidi, Amar Bousbaine, Nashwa Ahmad Kamal, Ammar K. Al Mhdawi*

**1272** Optimal Mechatronics Design and Control of a 3-PRS Robotic Platform for Vertigo Diagnosis

*Ahmed Zermane, Mohamed Guiatni, Mohamed Amine Alouane, Fethi Alloun and Mouloud Tair*

**9481** Simultaneous regulation and velocity tracking control of a two-wheeled self-balancing robot

*Azadeh Ghahremani and Ali Keymasi Khalaji*

**545** Quanser's 3-DOF Helicopter control using LQR-I and MPC-based LQR controllers

*Oussama Lahmar, Latifa Abdou and Imam Barket Ghiloubi*

**Wednesday – May 10, 2023 / Technical Sessions 2 (14.40 – 16.30)**

**Session Code:** VS.3 / **Session Title:** Virtual Session (Part 3)

**Paper** **Session Chair(s) :** Prof. Zineb Simeu-Abazi and Prof. Tarek Garna

**4348** Model-free Position Control of a Soft Continuum Manipulator in Cartesian Space

*Shen Treratanakulchai, Enrico Franco and Ferdinando Rodriguez Y Baena*

**507** Robust identification of nonlinear systems represented by second order NARX-Laguerre model

*Imen Ben Abdelwahed, Ameni El Anes and Kais Bouzrara*

<b>725</b>	Smart Agent-Based Direct Load Control of Air Conditioner Populations in Demand Side Management <i>Pegah Yazdkhasti and Chris P. Diduch</i>
<b>7701</b>	Online Learning for Improved Attitude Control of a Tilt-rotor Hybrid VTOL UAV <i>Louis Dezens and Guillaume Ducard</i>
<b>1259</b>	Robust Controller Design with Two-Degree-of-Freedom Feedback Loop Factorization for Oscillating Plant with Uncertain Time Delay <i>Marek Dłapa</i>
<b>872</b>	An Underwater Vehicle for Aquaculture Inspection <i>Marios Vasileiou, Nikolaos Manos and Ergina Kavallieratou</i>
<b>4937</b>	A Robotic Soil Excavator for Truck Loading: Kinematics, Dynamics and Motion control for a 4-DOF Robotic Manipulator prototype <i>Ehab Iqnaibi, Abdullah Abushokor, Laith Alsayed Ahmad and Karim Tahboub</i>

### Wednesday – May 10, 2023 / Technical Sessions 2 (14.40 – 16.30)

**Session Code:** VS.4 / **Session Title:** Virtual Session (Part 4)

**Paper** **Session Chair(s) :** Prof. Chakib Ben Njima and Prof. Mehrez Abdellaoui

<b>5702</b>	Intelligent police robot uses VSLAM for Dynamic Environments Based on Object Detection and Face Recognition <i>Nawress Barhoumi, Asma Najet Gharbi Lakhal and Naceur Benhadj Braiek</i>
<b>1419</b>	Detecting Holes in Fish Farming nets: A Two – Method approach <i>Konstantinos Paraskevas and Ergina Kavallieratou</i>
<b>8581</b>	Time Generative adversarial network for the generation of electricity load data <i>Aissa Snani and Mohamed Tarek Khadir</i>
<b>5545</b>	Magnetic characterization of AlGaIn/GaN/Si high electron mobility transistors <i>Hana Mosbahi and Khaoula Hergli</i>
<b>9256</b>	Hydrodynamic Performance analysis of H-rotor Darrieus hydrokinetic with different airfoils <i>Intizar Ali and Tanweer Hussain</i>
<b>7664</b>	MODELING AND SIMULATION OF WIND TURBINE <i>Erol Uyar, Mücahid Candan and Demet Candan</i>
<b>9857</b>	HRES Systems State of the Art: Topologies, Sizing Approaches, and Evaluation Criteria <i>Amal Hadj Slama, Sana Toumi, Majdi Saidi and Lotfi Saidi</i>

**Thursday - May 11, 2023 / Technical Sessions 3 (8.30 – 10.30)**

**Session Code:** CSFD.2 / **Session Title:** Control System & Fault Diagnosis (Part 2)

**Paper** **Session Chair(s) :** Dr. Alia Salah and Dr. Khaoula Hergli

**447** Fault Diagnosis for Automotive Electric Machines Based on a Combined Machine Learning and Parameter Estimation Method An Approach for Predictive Maintenance

*Alia Salah, Omar Abu Mohareb and Hans-Christian Reuss*

**5631** A system identification approach to center of mass estimation in trucks

*Hamza Benadada, Michael Di Loreto, Damien Eberard, Vincent Léchappé and Paolo Massioni*

**7866** Simultaneous Detection and Estimation of False Data Injection Attacks in Cyber-Physical Battery Systems using a Learning Observer

*Wen Chen, Feng Lin and Le Yi Wang*

**8653** PD-LQR control of 3DOF helicopter using FPA optimization

*Imam Barket Ghiloubi, Latifa Abdou and Oussama Lahmar*

**754** Comparing the EKF with inverse black-box models in system identification of a chemical stirred tank

*Arash M. Zadeh Fard, Francisco Ambrosio Garcia, Matteo Kirchner, Bart Blockmans, Wim Desmet and Frank Naets*

**9629** Stabilization of Delayed Memristive Neural Networks Driven by Mixed Deception Attacks

*Xinyi Han, Yongbin Yu, Xiangxiang Wang, Xiao Feng and Shouming Zhong*

**Thursday - May 11, 2023 / Technical Sessions 3 (8.30 – 10.30)**

**Session Code:** SS15 / **Session Title:** Special Session: Recent Advances in Computational Intelligence for Smart Industry

**Paper** **Session Chair(s) :** Prof. Jerome MENDES and Prof. Evelina Pencheva

**5615** Policy Based Railway Communications

*Evelina Pencheva, Ivaylo Atanasov and Vasil Vatakov*

**3254** Dynamic Rescheduling in the Context of Distributed Maintenance

*Rony Arsène Djeunang Mezafack, Maria Di Mascolo and Zineb Simeu-Abazi*

**5353** Soft Sensors for Industrial Applications: Comparison of Variables Selection Methods and Regression Models

<i>Joana Leiria, Rodrigo Salles, Jerome Mendes and Pedro Sousa</i>	
<b>8462</b>	Conception of a Miniature Housekeeping System for Launchers  <i>Geraldo Rodrigues, Beltran Arribas, Rui Melicio, Paulo Gordo, Duarte Valério and João Casaleiro</i>
<b>9661</b>	Modular Cyber-Physical System for Smart Industry: a case study on energy load disaggregation  <i>Jorge Alves, Pedro Sousa, Bárbara Matos, Jerome Mendes, Francisco Souza and Tiago Matias</i>
<b>825</b>	Position Control of External Rotor Permanent Magnet Synchronous Motor  <i>Goksel Kizir, A. Furkan Kanburoglu and Murat Yilmaz</i>

#### Thursday - May 11, 2023 / Technical Sessions 3 (8.30 – 10.30)

**Session Code:** PEEC.2 / **Session Title:** Power Electronics & Energy Conversion (Part 2)

**Paper** **Session Chair(s) :** Prof. Philippe Micheau

<b>1869</b>	Condition Monitoring Maintenance in Train Bogie: A Low-Cost Acceleration Sensor Proposal  <i>Bruno Barbosa, João Casaleiro and António Serrador</i>
<b>2905</b>	Analytical and experimental model of an energy harvesting system  <i>Dejan Shishkovski, Damjan Pecioski, Anastasija Ignjatovska, Simona Domazetovska and Maja Anachkova</i>
<b>7600</b>	Capacity Optimization of Battery Energy Storage System for Large-Scale Grid Integration of Renewables  <i>Mohamed Abdulgalil, Muaiz Ali and Muhammad Khalid</i>
<b>3718</b>	A comparison between SHE and SHM techniques based on PAWM for CHB multilevel Inverters  <i>Concettina Buccella, Maria Gabriella Cimatori, Sobhan Mohamadian and Carlo Cecati</i>
<b>8121</b>	Model-Free Control for Tidal Current Turbine Generation Systems: A Comparative Study  <i>Zhibin Zhou, Jean-Matthieu Bourgeot, Yassine Amirat and Mohamed Benbouzid</i>
<b>9055</b>	Towards Spline-based Dynamic Input Allocation  <i>Shima Akbari, Sergio Galeani and Mario Sassano</i>

**Thursday - May 11, 2023 / Technical Sessions 3 (8.30 – 10.30)**

**Session Code: VS.5 / Session Title: Virtual Session (Part 5)**

**Paper** **Session Chair(s) : Prof. Valerio Duarte and Prof. Anis Khouaja**

**6834** Control of UAVs Over Noisy Communication Channel

*Somayeh Dolatkhan Takloo, Alireza Farhadi and Ali Khaki Sedigh*

**1172** Automatic generation of digital-twins in advanced manufacturing: a feasibility study

*Francisco Ambrosio Garcia, Pavel Ereemeev, Hendrik Devriendt, Frank Naets, Hüseyin Metin and Merih Özer*

**1455** State and Unknown Input Estimation of a Linear Constant-Delay System in the Frequency Domain

*Safa Zeiri, Fatma Hamzaoui, Malek Khadhraoui and Hassani Messaoud*

**2755** Robust parametric estimation based on MIMO ARX Laguerre model

*Ameni El Anes, Imen Ben Abdelwahed and Kais Bouzrara*

**9654** Modeling, Dynamic Analysis and Simulation of Frequency-Load Control Process in a Hydroelectric Plant

*Erol Uyar and Mücahid Candan*

**2682** GANs Investigation for Multimodal Medical Data Interpretation : Basic Architectures and Overview

*Assia Boukhmla, Hatthem Buziane, Akram Laib, Nabih Azizi, Roumaissa Rouabhi, Aya Merah and Rim Chaib*

**Thursday - May 11, 2023 / Technical Sessions 4 (14.00 – 15.30)**

**Session Code: ITS.2 / Session Title: Intelligent Transportation Systems (Part 2)**

**Paper** **Session Chair(s) : Prof. Kamal Elyaalaoui**

**9251** Cooperative Prey Hunting for Multi Agent System Designed using Bio-Inspired adaptation Technique

*Md Muzakkir Quamar and Dr. Sami El Ferik*

**5991** Bio-inspired Locomotion Control for Ubot Self-reconfigurable Modular Robot

*Xindan Cui, Yanhe Zhu, Jie Zhao, Songhao Piao and Erfu Yang*

**6072** UAV coverage path optimization for collecting fine-grained distribution of air samples

*Mohammad Hayajneh, Mu'Taz Momani and Alaa Al-Ghazo*

**9550** High-Fidelity Modelling, Parameter Identification, and Co-Simulation of a 4-Wheel Independent Drive and Steer Electric Vehicle with Custom Inverter Design

*Atharva Jamdade, Mohammad Hadi Jalali, Mackenzie Savoy and Kush Bubbar*



**Thursday - May 11, 2023 / Technical Sessions 4 (14.00 – 15.30)**

**Session Code:** IISE / **Session Title:** *Industrial Informatics and Software Engineering*

**Paper** **Session Chair(s) :** *Prof. Zineb Simeu-Abazi*

**1639** Intelligent Real-time Human Activity Recognition Using Wi-Fi Signals

*Hadi El Zein, Farah Mourad-Chehade and Hassan Amoud*

**1243** A Proposed Framework to Help Blind People by Using Online Service Safely: Focus on Safe Online Banking Service

*Dr. Ahmad Alenezi*

**2632** A decentralized position observer for small-sat swarms exploiting GNSS and ranging measurements

*Federico Oliva, Francesco Martinelli, Mario Sassano and Daniele Carnevale*

**6434** Reducing outpatient waiting time: a case study in Vietnamese private hospital

*Hong Lam Pham, Siao Leu Phouratsamay, Maria Di Mascolo and Bao Quan Nguyen*

**4588** Environmental impact of operations carried out in the context of distributed maintenance: a literature review

*Merveille Kouakep Tchouma, Rony Arsène Djeunang Mezafack, Maria Di Mascolo and Zineb Simeu-Abazi*

**Thursday - May 11, 2023 / Technical Sessions 4 (14.00 – 15.30)**

**Session Code:** SS3.1 / **Session Title:** *Special Session: Advances in Fault Diagnosis and Prognosis of Power Electronic Converters in Power Systems (Part 1)*

**Paper** **Session Chair(s) :** *Prof. Lotfi SAIDI and Prof. Jay Liu*

**5690** Online Data-driven Diagnosis Method for Opencircuit Fault of an Inverter Suppling Wound Rotor Synchronous Machine of Electric Vehicle Powertrain

*Chenyun Wu, Rabia Sehab, Ahmad Akrad and Cristina Morel*

**4266** Interpretable Fault Detection Approach With Deep Neural Networks to Industrial Applications

*Fatemeh Kakavandi, Peihua Han, Roger de Reus, Peter Gorm Larsen and Houxiang Zhang*

**6432** Towards a Federated Learning Approach for Branched Wired Networks Prognosis

*Baudouin Naline, Nicolas Ravot, Wafa Ben Hassen, Sandra Garcia Rodriguez and Karine Zeitouni*

**8876** Vibration-Based Estimation of Gearbox Operating Conditions: Machine Learning Approach

*Eli Gildish, Michael Grebshtein, Yehudit Aperstein and Igor Makienko*

**8549** Prognostic and predicting failures methods in complex systems

*Dhouibi Hedi, Houyem Taous, Zineb-Simeu Abazi and Eric Gascard*

**Thursday - May 11, 2023 / Technical Sessions 4 (14.00 – 15.30)**

**Session Code: VS.6 / Session Title: Virtual Session (Part 6)**

**Paper** **Session Chair(s) : Dr. Corrado Possieri and Prof. Khaled Ben Khelifa**

**1340** Intelligence Diagnosis of Eccentricities Faults Based Probabilistic Neural Network (NN-PNN): Application on IM

*Ilhem Bouchareb*

**2445** Biologically Inspired Algorithm for Adaptive Convergence in Multi-Agent System

*Muhammad Majid Gulzar, Muhammad Munawar, Khalid Khan, Haris Mansoor and Muhammad Khalid*

**6411** Human Machine Co-adaptation using Co-Adaptive Policy Gradient Algorithm

*Elias M Maharmeh and Karim Tahboub*

**7761** Improved Distance vector based Kalman Filter localization algorithm for wireless sensor network

*Rahma Mani, Sana Messous, Giuseppe Campobello, Filippo Battaglia and Nourddine Liouane*

**8560** A Holistic Space Experience on Earth Through Architecture

*Sumana Hossain, Leen Alhaj Ahmad and Noor Al Khamiri*

**3666** A review of Credit Rating Models

*Seyed Farid Mousavi and Arezoo Gazori Neishabouri*

**Friday – May 12, 2023 / Technical Sessions 5 (8.30 – 10.30)**

**Session Code:** SS3.2 / **Session Title:** *Special Session: Advances in Fault Diagnosis and Prognosis of Power Electronic Converters in Power Systems (Part 2)*

**Paper** **Session Chair(s) :** *Prof. Lotfi SAIDI*

**9644** Faults explanation based on a machine learning model for predictive maintenance purposes

*Maheritiana Jonathan Jeremie Randriarison, Lala Rajaoarisoa and Moamar Sayed Mouchaweh*

**9685** A data-driven approach to fault diagnostics for industrial process plants based on feature extraction and inferential statistics

*Simone Smeraldo, Axel Busboom, Stefan Bendisch, Hristo Hriskov, Thomas Morgenstern and Maria Prandini*

**1590** Bearing Multi-Faults Diagnosis Based on Stator Current Bi-spectrum Features and Support Vector Machines

*Lotfi Saidi, Chakib Ben Njima and Lakehal Abdelaziz*

**5822** Systematic Control of Electro-hydraulic Velocity Servomechanism using Fractional Order Technique

*Muhammad Majid Gulzar, Fahad Usman Khan, Daud Sibtain and Muhammad Khalid*

**7826** Robust Load Frequency Control of Hybrid Power System

*Muhammad Majid Gulzar, Malik Muhammad Umar and Mujahed Mohammad Al-Dhaifallah*

**Friday – May 12, 2023 / Technical Sessions 5 (8.30 – 10.30)**

**Session Code:** SS8 / **Session Title:** *Special Session: New Trend in Artificial Intelligence for Biomedical Engineering*

**Paper** **Session Chair(s) :** *Prof. Rabia Sehab and Dr. Amine Ben Slama*

**750** Enhanced COVID-19 Detection by chest x-ray images using transfer learning-based extracted deep features and information fusion

*Milad Moradi Heydarloo, Mojtaba Kordestani, Ali Chaibakhsh and Mehrdad Saif*

**9206** CNN-SVM for prediction Alzheimer disease in early step

*Amira Ben Rabeh, Faouzi Benzarti and Hamid Amiri*

**4164** Improved Clinical Feature Classification of Vestibular Disorder Dysfunction

*Hanene Sahli, Amine Ben Slama and Mounir Sayadi*

**3945** Artificial Neural Network based approach to Diabetes Prediction using Pima Indians Diabetes Dataset

*Aniket Pyne and Baisakhi Chakraborty*

**654** A Systematic Location Selection Methodology for Constructing Hydrogen Refuelling Stations

*Jun-Hyung Ryu and Soo Hwan Kim*

**Friday – May 12, 2023 / Technical Sessions 5 (8.30 – 10.30)**

**Session Code: VS.7 / Session Title: Virtual Session (Part 7)**

**Paper** **Session Chair(s) : Prof. Eric Gascard and Dr. Hana Mosbahi**

**3955** Analysis of Road Accidents Using Data Mining Techniques

*Hafssa Tajbel and Hicham BEHJA*

**5207** Modeling and Detection of Stator Asymmetries in Permanent Magnet Synchronous Generators (PMSG)

*Djilali Kouchih and Redouane Hachelaf*

**2659** Application of fault trees and Bayesian networks for predictive maintenance

*Hedi Dhouibi, Khouloud Chihani, Zineb-Simeu Abazi and Eric Gascard*

**7489** Classification of Stroke Using Machine Learning Techniques: Review Study

*Aktham Sawan, Mohammed Awad and Radwan Qasrawi*

**3329** Separation of Electrodermal Activity during Short Inters stimulus Interv al based on EMD Algorithm

*Nourhene DHOUIBI, Jaouher BEN ALI, Mounir SAYADI, Jean-Marc GINOUX, Jacques GRAPPERON and Moez BOUCHOUICHA*

**9741** An analysis of the application of machine learning techniques in anaerobic digestion

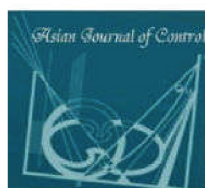
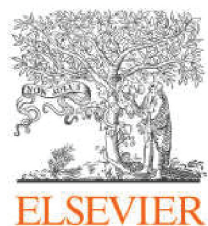
*Peter Onu, Charles Mbohwa and Anup Pradhan*

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