

6th-2019
**International Conference on Control,
Decision and Information Technologies (CoDIT'19)**

April 23-26, 2019
Paris, France



Conference Digest

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Welcome Message

It is our pleasure to welcome in Paris, France, all participants to the sixth International Conference on Control, Decision and Information Technologies (CoDIT'19) being held at Conservatoire National des Arts et Métiers (Cnam) on April 23-26, 2019.

Since 2013 the CoDIT conference series has evolved to one of the largest and most important conferences dedicated to Control, Optimization, Decision, Computer Science and Information Technologies. The first edition of this conference was held in Hammamet – Tunisia in May 2013, the second one in Metz – France in November 2014, the third edition in St. Paul's Bay – Malta on April 6-8, 2016, the fourth edition in Barcelona – Spain on April 5-7, 2017, and the last previous edition in Thessaloniki – Greece on April 10-13, 2018. We consider ourselves fortunate to have the opportunity to organize CoDIT'19 in Paris.

In addition to the regular papers, CoDIT'19 program includes exciting plenary keynotes and special and invited sessions and Work-in-Progress (WiP) Papers. We have received around 592 papers from 77 countries worldwide that yielded 323 valid papers. Authors from all continents honored us by reporting their original work. We thank them for submitting their work to our conference.

This year's CoDIT is organized under the technical sponsorship of the IEEE Systems, Man, and Cybernetics Society and the great support of the Centre d'Etudes et de Recherches en Informatique et Communications (CEDRIC), Cnam.

Finally, an event of this size and importance cannot be organized without the help of a large number of volunteers. We would like to thank all the members' of the organizing committee for their extraordinary efforts to ensure that this conference will be a successful one. We are especially indebted to the local organizing team of the CEDRIC Laboratory: Agnès Plateau and Stéphane Rovedakis.

Finally, we would like to thank all the members of the organizing committee for their extraordinary efforts to ensure that this conference will be a successful one.

On behalf of the organizing committee of CoDIT'19

Sourour Elloumi, ENSTA ParisTech & Cnam, France

Maria P. Fanti, Polytechnic of Bari, Italy

Achraf J. Tilmoudi, University of Sousse, Tunisia

Enrique H. Viedma, University of Granada, Spain

Sponsors



<http://www.ieeesmc.org>



**Le Conservatoire
national des arts
et métiers**

<http://www.cnam-paris.fr>



Centre d'études et de recherche en informatique du CNAM

<http://cedric.cnam.fr>



<https://www.lamsade.dauphine.fr>



<http://lcoms.univ-lorraine.fr>



<https://www.cristal.univ-lille.fr>



<http://gdrro.lip6.fr>



<http://www.roadef.org>



Department of Electronic Engineering

<http://www.issatso.rnu.tn>

CoDIT'19 Committees

General co-Chairs

Sourour Elloumi, France
A. Ridha Mahjoub, France
Belkacem Ould Bouamama, France
Enrique H. Viedma, Spain

Program co-Chairs

Maria Pia Fanti, Italy
Imed Kacem, France
Achraf J. Tilmoudi, Tunisia

Publication co-Chairs

Mariagrazia Dotoli, Italy
Malek Masmoudi, France

Special Sessions co-Chairs

Kamal Medjaher, France
Dan Popescu, Romania
Francis Rousseaux, France

Steering Committee

Nizar Bouguila, Canada
Maria Pia Fanti, Italy
Alessandro Giua, Italy
Nicholas Karampetakis, Greece
Dimitri Lefebvre, France
Belkacem Ould Bouamama, France
Achraf J. Tilmoudi, Tunisia
Enrique H. Viedma, Spain

Local Organizing Committee

Sourour Elloumi, France
A. Ridha Mahjoub, France
Agnès Plateau, France
Stéphane Rovedakis, France
Moez Soltani, Tunisia
Achraf J. Tilmoudi, Tunisia

Accommodation, Venue and Practical Information

CONFERENCE LOCATION



The conference will take place in **Paris**, at “**Le Cnam**” of Paris at the following address :

Conservatoire national des arts et métiers
292 Rue Saint-Martin
75003 Paris

“Le Cnam” is nearby two metro lines: metro line 4 at “réaumur Sebastopol” station and metro line 11 at Arts et métiers station (More information can be found at RATP or interactive map).



TRANSPORT TO/FROM THE ORLY AIRPORT (ORY) AND CHARLES DE GAULLE AIRPORT (CDG)

Orly Airport (ORY) is about 20 minutes south of Paris and **Charles de Gaulle Airport** (CDG) is about 40 minutes northeast.

To get from these airports to the Cnam you may proceed as follows:

- From **Charles de Gaulle Airport**:
 - Depending on your Terminal of arrival (1 or 2), you may walk to the RER (train) station or you may need to take a free bus shuttle.
 - For this, buy an RER ticket to Paris-section-urbaine (metro ticket included).
 - Take the RER B and get off at "CHATELET-LES HALLES" station.
 - Take a correspondence to metro line 4 direction “Porte de Clignancourt” and get off at “Réaumur Sébastopol” Station and take the exit “Rue Papin”.

A taxi service is also available at the airport on a 24-hour basis (a 30-40 minute drive that costs approximately around 35€).

- From **ORLY Airport**:
 - Take Orlyval until Antony.
 - Buy an RER ticket to Paris-section-urbaine (metro ticket included).
 - Take the RER B and get off at "Chatelet-les Halles" station.
 - Take a correspondence to metro line 4 direction “Porte de Clignancourt” and get off at “Réaumur Sébastopol” Station and take the exit “Rue Papin”.

A taxi service is also available at the airport on a 24-hour basis (a 40-50 minute drive that costs approximately around 50€).

HOW TO REACH THE CNAM FROM PARIS

- From **gare de l'est** or **gare du nord**:

Take metro line 4 direction "Porte de Clignancourt" and get off at "Réaumur Sébastopol" Station and take the exit "Rue Papin".

- From **gare montparnasse**:

Take metro line 4 direction "Porte d'Orléans" and get off at "Réaumur Sébastopol" Station and take the exit "Rue Papin".

- From **gare de Lyon**:

Take metro line 1 direction "Porte d'Orléans" and get off at "Hôtel de Ville" Station.

Take a correspondence to metro line 11 direction "Mairie des Lilas" and get off at "Arts et Métiers" Station and take the exit "Rue Conté".

Oral Session Room Facilities

Every room will be provided with a multi-media LCD projector and a desktop computer with Windows, Office Power Point and a PDF reader. Electricity will be supplied at 220 V, 50 Hz AC through standard European sockets.



Lunch Facilities

Full registration fee includes two lunch tickets for Wednesday (April 24, 2019) and Thursday (April 25, 2019). Lunch will be served at 12:20 , at the **"Salle des textiles"**. Extra lunch tickets will be available on sale in the registration desk (25 €/person).

Coffee Breaks

Coffee breaks will be served as indicated in the "CoDIT'19 Program (page 9)" at the **"Salle des textiles"**.

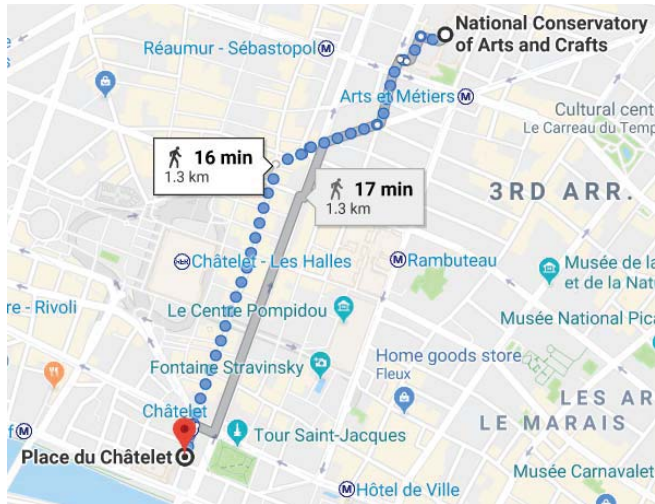
Site Map (Cnam - Amphis)



Conference Banquet

The conference dinner will take place on a Cruise “**THE GRAND PAVOIS**” at the Seine River – Paris on Thursday April 25th. Participants must be at the quayside by 7:45 p. m. at the latest in Marina de Bercy (address: Port de Bercy, 75012 Paris, France). The Conference Banquet is included **ONLY** in the full registration.

How to reach the "BERCY MARINA" From the "CNAM" in 3 steps?

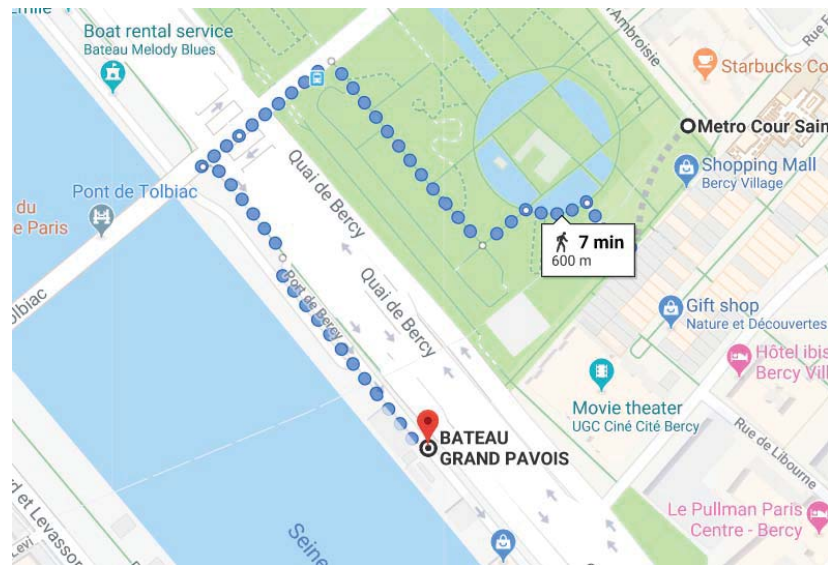
<p>STEP 1:</p> <p>From CNAM</p> <p>Go to “Châtelet” Station</p>	<p>Solution 1:</p> <p>From the station “Réaumur-Sébastopol” Take the metro line 4 direction “Mairie de Montrouge” and get off at “Châtelet” station.</p>  <p>6:37 PM ○ Réaumur - Sébastopol</p> <p>○ 4 Mairie de Montrouge ^ 4 min (3 stops)</p> <p>6:38 PM ○ Étienne Marcel</p> <p>6:40 PM ○ Les Halles</p> <p>Service run by STIF</p> <p>6:41 PM ○ Châtelet</p>
	<p>Solution 2:</p> <p>Going by foot.</p>  <p>16 min 1.3 km</p> <p>17 min 1.3 km</p>
<p>STEP 2:</p> <p>From “Châtelet” Station</p> <p>Go to “Cour Saint Emilion” Station</p>	<p>From the station “Châtelet” Take the metro line 14 direction “Olympiades” and get off at “Metro Cour Saint Emilion” station.</p>  <p>6:34 PM ○ Châtelet</p> <p>○ 14 Olympiades ^ 6 min (3 stops) - ♿</p> <p>6:37 PM ○ Paris Gare de Lyon</p> <p>6:38 PM ○ Bercy</p> <p>Service run by STIF</p> <p>6:40 PM ○ Metro Cour Saint Emilion</p>

STEP 3:

From “Cour Saint Emilion” Station

Go to “Marina de Bercy” (BATEAU THE GRAND PAVOIS)

Going by foot.



CoDIT'19 Program

Tuesday - April 23, 2019				Wednesday - April 24, 2019				Thursday - April 25, 2019				Friday - April 26, 2019											
10:00 - 12:30 Registration				08:00 - 10:00 Technical Sessions 3				08:00 - 10:00 Technical Sessions 7				08:30 - 10:30 Technical Sessions 11											
				S-10	S-11	S-12	S-13	S-14	S-30	S-31	S-32	S-33	S-34	S-50	S-51	S-52	S-53	S-54					
				10:00 - 10:20 Coffee break				10:00 - 10:20 Coffee break				10:30 - 10:50 Coffee break											
				10:20 - 11:10 Keynote 2				10:20 - 11:10 Keynote 4				10:50 - 12:50 Technical Sessions 12											
12:30 - 14:40 Technical Sessions 1				11:10- 12:50 Technical Sessions 4				11:10 - 12:50 Technical Sessions 8				S-55				S-56	S-57	S-58	S-59				
				S-15	S-16	S-17	S-18	S-19	S-35	S-36	S-37	S-38	S-39										
				12:50 - 13:50 Lunch				12:50 - 14:00 Lunch															
				13:50 - 15:30 Technical Sessions 5				14:00 - 15:40 Technical Sessions 9															
S-01	S-02	S-03	S-04	S-20	S-21	S-22	S-23	S-24	S-40	S-41	S-42	S-43	S-44										
14:40 - 15:00 Coffee break				15:30 - 15:45 Coffee break				15:40 - 16:00 Coffee break															
15:00 - 16:10 Opening Ceremony & Keynote 1				15:45 - 16:35 Keynote 3				16:00 - 18:00 Technical Sessions 10															
16:10 - 17:50 Technical Sessions 2				16:35 - 17:55 Technical Sessions 6				S-45				S-46	S-47	S-48	S-49								
S-05	S-06	S-07	S-08	S-09	S-25	S-26	S-27	S-28	S-29	Free time				20:00 - 23:00 Gala Dinner									

Sessions Titles - Papers ID/Session – Rooms

Opening Ceremony and Plenary Sessions Room: Amphithéâtre A. Grégoire

	Session ID	Session Tittle & Papers ID/Session		Room
Technical Sessions 1	S-01	Title	Transport Optimization	Amphithéâtre A.Grégoire
		Papers ID	229 - 331 - 512 - 82 - 205 - 55 - (WiP-31)	
	S-02	Title	Smart Grids	Amphithéâtre J.P.Say
		Papers ID	365 - 471 - 476 - 275 - 96 - 213	
	S-03	Title	Computer science & Software Engineering	Amphithéâtre R.Faure
		Papers ID	225 - 289 - 341 - 245 - 368 - 514 - 447	
	S-04	Title	Signal Processing, Sonsor & Instrimentation	Amphithéâtre P.Painlevé
		Papers ID	456 - 409 - 127 - 192 - 99 - 253 - 220	
Technical Sessions 2	S-05	Title	Control Design Methods	Amphithéâtre A.Grégoire
		Papers ID	8 - 27 - 181 - 440 - 252	
	S-06	Title	Artificial Intelligence	Amphithéâtre J.P.Say
		Papers ID	382 - 25 - 279 - 172 - 293 - (WiP-16)	
	S-07	Title	WiP Session: Control Methods and Applications	Salle 17.2.07
		Papers ID	WiP21 - WiP30 - WiP33 - WiP38 - WiP22 - WiP24	
	S-08	Title	Automation & Control Applications	Amphithéâtre R.Faure
		Papers ID	470 - 50 - 92 - 306 - 132 - 196	
Technical Sessions 3	S-10	Title	Data Mining & Artificial Intelligence	Amphithéâtre A.Grégoire
		Papers ID	375 - 246 - 65 - 366 - 178	
	S-11	Title	Diagnosis Methods and Applications	Amphithéâtre J.P.Say
		Papers ID	444 - 340 - 239 - 371 - 387 - 155	
	S-12	Title	Image Processing	Salle 17.2.15
		Papers ID	427 - 42 - 410 - 221 - 379 - 223	
	S-13	Title	System Identification	Amphithéâtre R.Faure
		Papers ID	209 - 118 - 46 - 56 - 206 - 272	
Technical Sessions 4	S-15	Title	Special Session on "Failure Prognostics of Complex Systems"	Amphithéâtre A.Grégoire
		Papers ID	325 - 367 - 525 - 310 - 116 - 377	
	S-16	Title	Logistics and Supply Chain Management	Amphithéâtre J.P.Say
		Papers ID	45 - 488 - 397 - 17 - 491 - 73	
	S-17	Title	Robotics Applications	Salle 17.2.15
		Papers ID	39 - 503 - 294 - 405 - 400	
	S-18	Title	Applied Optimization	Amphithéâtre R.Faure
		Papers ID	115 - 263 - 197- 465 - 265 - 16	
	S-19	Title	Monitoring and Supervision	Amphithéâtre P.Painlevé
		Papers ID	439 - 425 - 497 - 335 - 103 - 326	

	Session ID	Session Title & Papers ID/Session		Room
Technical Sessions 5	S-20	Title	Multi-Objective Optimization	Amphithéâtre A.Grégoire
		Papers ID	83 - 89 - 422 - 284 - 84 - 194	
	S-21	Title	Nonlinear Systems: Modeling and Simulation	Amphithéâtre J.P.Say
		Papers ID	152 - 501 - 144 - 228 - 107 - 207	
	S-22	Title	Parallel and Distributed Computing	Salle 17.2.15
		Papers ID	486 - 328 - 441 - 418 - 185 - 494	
	S-23	Title	Predictive Control	Amphithéâtre R.Faure
		Papers ID	369 - 135 - 183 - 455 - 199 - 113	
	S-24	Title	Special Session on "Fractional order systems: theory and applications"	Amphithéâtre P.Painlevé
		Papers ID	102 - 234 - 309 - 76 - 237 - 349 - 235	
Technical Sessions 6	S-25	Title	Robotics and Vision Systems	Amphithéâtre A.Grégoire
		Papers ID	469 - 393 - 417 - 153 - (WiP-27)	
	S-26	Title	Industry and Process Control	Amphithéâtre J.P.Say
		Papers ID	303 - 140 - 78 - 240 - (WiP-34)	
	S-27	Title	Combinatorial Optimization (Part 1)	Amphithéâtre R.Faure
		Papers ID	(WiP-521) - 434 - 381 - 449 - 157	
	S-28	Title	Computational Intelligence	Amphithéâtre P.Painlevé
		Papers ID	311 - 85 - 448 - 419 - (WiP-18)	
	S-29	Title	Control Applications (Part 1)	Salle 17.2.15
		Papers ID	138 - 71 - 70 - 69	
Technical Sessions 7	S-30	Title	Scheduling Problems	Amphithéâtre A.Grégoire
		Papers ID	498 - 230 - 264 - 204 - 433 - 222 - 388	
	S-31	Title	Invited Session on "Resilient Control in Large-Scale Networked Cyber-Physical Systems"	Amphithéâtre J.P.Say
		Papers ID	128 - 238 - 117 - 270 - 33 - 87	
	S-32	Title	Special Session on "Petri nets models for modeling, control and optimization"	Amphithéâtre R.Faure
		Papers ID	451 - 407 - 268 - 511 - 286 - 98 - 97	
	S-33	Title	Linear Systems	Salle 17.2.15
		Papers ID	360 - 136 - 112 - 361 - 313 - 90	
	S-34	Title	Modeling and Simulation Problems	Amphithéâtre P.Painlevé
		Papers ID	517 - 337 - 146 - 198 - 258 - 60	
Technical Sessions 8	S-35	Title	Emergent Methods and Computational Intelligence applications	Amphithéâtre A.Grégoire
		Papers ID	248 - 297 - 242 - 324 - 462 - 171	
	S-36	Title	Special Session on "Smart and Green Logistics and Transportation Systems"	Amphithéâtre J.P.Say
		Papers ID	351 - 94 - 100 - 330 - 475 - 151	
	S-37	Title	Discrete Event Systems	Salle 17.2.15
		Papers ID	47 - 58 - 283 - 12 - 287 - 32	
	S-38	Title	Special Session on "Energy and Control"	Amphithéâtre R.Faure
		Papers ID	19 - 435 - 520 - 244 - 75 - 298	
	S-39	Title	Intelligent Control	Amphithéâtre P.Painlevé
		Papers ID	495 - 506 - 392 - 468 - 231 - 29	

	Session ID	Session Tittle & Papers ID/Session		Room
Technical Sessions 9	S-40	Title	Adaptive Control	Amphithéâtre A.Grégoire
		Papers ID	121 - 513 - 51 - 519 - 329 - 323	
	S-41	Title	Special Session on "Formal Methods applied to Transportation and Industry 4.0"	Amphithéâtre J.P.Say
		Papers ID	133 - 426 - 282 - 288 - 179 - 137	
	S-42	Title	Fault Detection	Salle 17.2.15
		Papers ID	502 - 492 - 481 - 484 - 404 - 200 - 342	
	S-43	Title	Information and Learning Systems	Amphithéâtre R.Faure
		Papers ID	443 - 487 - 164 - 110 - 256 - 314	
	S-44	Title	Energy Control and Power Systems	Amphithéâtre P.Painlevé
		Papers ID	516 - 145 - 257 - 509 - 120 - 524	
Technical Sessions 10	S-45	Title	Embedded Systems and Design for Electronic Circuits	Amphithéâtre A.Grégoire
		Papers ID	123 - 442 - 271 - 332 - 458 - 30	
	S-46	Title	Combinatorial Optimization (Part 2)	Amphithéâtre J.P.Say
		Papers ID	480 - 301 - 291 - 260 - 453 - 131	
	S-47	Title	Control Theory	Amphithéâtre R.Faure
		Papers ID	174 - 429 - 167 - 177 - 68 - 182	
	S-48	Title	Automation & Control Systems Applications	Salle 17.2.15
		Papers ID	386 - 285 - 219 - 160 - 88 - 13	
	S-49	Title	Nonlinear Systems	Amphithéâtre P.Painlevé
		Papers ID	80 - 292 - 236 - 189 - 77	
Technical Sessions 11	S-50	Title	Control Systems Design	Amphithéâtre A.Grégoire
		Papers ID	175 - 346 - 30 - 163 - 424 - 108	
	S-51	Title	Decision Making	Amphithéâtre J.P.Say
		Papers ID	304 - 233 - 212 - 348 - 300 - 106 - 531	
	S-52	Title	Cloud, Parallel and Distributed Computing	Salle 17.2.15
		Papers ID	63 - 416 - 81 - 262 - 415	
	S-53	Title	Nonlinear Optimization Problems	Amphithéâtre R.Faure
		Papers ID	321 - 267 - 210 - 169 - 389 - 141	
	S-54	Title	Control Systems with Applications	Amphithéâtre P.Painlevé
		Papers ID	478 - 344 - 40 - 86 - 142 - 21 - 527	
Technical Sessions 12	S-55	Title	Information Systems	Amphithéâtre A.Grégoire
		Papers ID	166 - 413 - 522 - 383 - 187 - 391 - 414	
	S-56	Title	WiP Session: Optimization and Decision Making	Amphithéâtre J.P.Say
		Papers ID	WiP2 - WiP4 - WiP278 - WiP19 - WiP20 - WiP31 - WiP25 - WiP46	
	S-57	Title	Wireless Communications and Telecommunication Applications	Salle 17.2.15
		Papers ID	437 - 454 - 211 - 158 - 402 - 403	
	S-58	Title	Control Applications (part 2)	Amphithéâtre R.Faure
		Papers ID	464 - 201 - 316 - 312 - 336 - 208	
	S-59	Title	Energy Control Applications	Amphithéâtre P.Painlevé
		Papers ID	165 - 347 - 504 - 526 - 191 - 159 - 266	

Keynotes

Keynote 1

(April 23, 2019 / 15:20 - 16:10)

“Resilience Against Sensor Deception Attacks on Cyber-Physical Control Systems”

Prof. Stéphane Lafortune (IEEE Fellow)

University of Michigan, USA

Chair: Prof. Mariagrazia Dotoli (Polytechnic of Bari, Italy), Room: Amphithéâtre A. Grégoire

Abstract

We study the security of Cyber-Physical Systems (CPS) where sensors are subject to cyber-attacks. Specifically, we consider CPS control systems where sensor readings may be compromised by a malicious attacker intent on causing damage to the system. We study this problem at the supervisory layer of the control system, using discrete event systems techniques. We assume that the attacker can edit the outputs from the sensors of the system before they reach the supervisory controller.

In the first step, we consider the problem from the viewpoint of the attacker, where the goal is to use edit attacks on the sensor readings to steer the system to an unsafe state without being detected. In the second step, we consider defense mechanisms and formulate the problem of synthesizing a supervisor that is robust against a large class of edit attacks.

We present solution methodologies to these two problems that blend algorithmic techniques from games on automata with imperfect information with results from supervisory control theory of partially observed discrete event systems. We discuss the scalability of these algorithms in the context of a case study.

[Joint work with: Rômulo Meira-Góes, Eunsuk Kang, Raymond Kwong, and Hervé Marchand]

Biography of Prof. Stéphane Lafortune



Stéphane Lafortune was born in Montréal, Québec, Canada. He received the B.Eng degree from École Polytechnique de Montréal in 1980, the M.Eng degree from McGill University in 1982, and the Ph.D degree from the University of California at Berkeley in 1986, all in electrical engineering. Since September 1986, he has been with the University of Michigan, Ann Arbor, where he is a Professor of Electrical Engineering and Computer Science. In March 2018, he was appointed as the N. Harris McClamroch Collegiate Professor of Electrical Engineering and Computer Science. Lafortune is a Fellow of the IEEE (1999) and of IFAC (2017). He received the Presidential Young Investigator Award from the National Science Foundation in 1990 and the Axelby Outstanding Paper Award

from the Control Systems Society of the IEEE in 1994 (for a paper co-authored with S.-L. Chung and F. Lin) and in 2001 (for a paper co-authored with G. Barrett). Lafortune's research interests are in discrete event systems and include multiple problem domains: modeling, diagnosis, control, optimization, and applications to computer and software systems. He is the lead developer of the software package UMDDES and co-developer of DESUMA with L. Ricker. He co-authored, with C. Cassandras, the textbook Introduction to Discrete Event Systems (Second Edition, Springer, 2008). Lafortune is Editor-in-Chief of the Journal of Discrete Event Dynamic Systems: Theory and Applications.

Keynote 2

(April 24, 2019 / 10:20 - 11:10)

“Probabilistic Graphical Models: On Learning, Fusion, and Revision”

Prof. Rudolf Kruse (IEEE Fellow)

Otto-von-Guericke University of Magdeburg, Germany

Chair: Prof. Nizar Bouguila (Concordia University, Canada) , Room: Amphithéâtre A. Grégoire

Abstract

Probabilistic Graphical Models are of high relevance for complex industrial applications. The Markov network approach is one of their most prominent representatives and an important tool to decompose uncertain knowledge in high dimensional domains. But also relational and possibilistic decompositions turn out to be useful to make reasoning in such domains feasible. Compared to conditioning a decomposable model on given evidence, the learning of the structure of the model from data as well as the fusion of several decomposable models is much more complicated. The important belief change operation revision has been almost entirely disregarded in the past, although the problem of inconsistencies is of utmost relevance for real world applications. In this talk these problems are addressed by presenting successful complex industrial applications.

Biography of Prof. Rudolf Kruse



Rudolf Kruse is Professor at the Faculty of Computer Science in the Otto-von-Guericke University of Magdeburg in Germany. He obtained his Ph.D. and his Habilitation in Mathematics from the Technical University of Braunschweig in 1980 and 1984 respectively. Following a stay at the Fraunhofer Gesellschaft, he joined the Technical University of Braunschweig as a professor of computer science in 1986. Since 1996 he is a professor in the Computational Intelligence Group in Magdeburg. He has coauthored 15 monographs and 25 books as well as more than 350 peer-refereed scientific publications in various areas with 16000 citations. He is associate editor of several scientific journals.

Rudolf Kruse is Fellow of the International Fuzzy Systems Association (IFSA), Fellow of the European Association for Artificial Intelligence (EURAI/ECCAI), and Fellow of the Institute of Electrical and Electronics Engineers (IEEE). His group is successful in various industrial applications in cooperation with companies such as Volkswagen, SAP, Daimler, and British Telecom. His current main research interests include data science and intelligent systems.

Keynote 3

(April 24, 2019 / 15:45 - 16:35)

"Location-Routing Problems: Characteristics and Metaheuristic Algorithms"

Prof. Paolo Toth

University of Bologna, Italy

Chair: Prof. A. Ridha Mahjoub (Université Paris Dauphine, France), **Room: Amphithéâtre A. Grégoire**

Abstract

We will consider the family of optimization problems including both "location" and "routing" aspects. After a description of the main characteristics of the "routing problems" and of the "location problems", two problems will be addressed in more detail: the *Capacitated Location-Routing Problem* (CLRP) and the *Generalized Traveling Salesman Problem* (GTSP).

In the *Capacitated Location-Routing Problem* (CLRP), we are given a set of available depots (each depot is located at a node of a network, and has an associate cost, a capacity and a set of identical vehicles stationed at the depot) and a set of customers (each customer is located at a node of the network and has a positive demand). All the demands of the customers must be satisfied through a set of routes (each route starts from a depot, visits a subset of customers whose global demand must not exceed the capacity of the associated vehicle, and returns to the starting depot). In addition, each customer must be visited by exactly one route, and the global demand of the customers visited by the vehicles associated with a depot must not exceed the capacity of the depot. The aim of the CLRP is to determine the subset of depots to be opened, the customers to be assigned to each open depot, and the routes to be performed to satisfy the demands of the customers. The objective is to minimize the sum of the global cost of the open depots, of the global cost of the used vehicles, and of the global traveling cost associated with the performed routes. The CLRP is NP-hard, since it generalizes two well-known NP-hard problems: the *Capacitated Facility Location Problem* (CFLP) and the *Multi Depot Vehicle Routing Problem* (MDVRP).

The *Generalized Traveling Salesman Problem* (GTSP) is a generalization of the well-known Traveling Salesman Problem (TSP) in which the set of nodes is partitioned into clusters. In the GTSP the aim is to find a minimum-cost simple cycle visiting exactly one node for each cluster. The GTSP is NP-hard, since it generalizes the TSP. The most effective metaheuristic algorithms proposed for the solution of the CLRP and of the GTSP will be described, and experimentally compared on the benchmark instances from the literature, by taking into account both the quality of the solutions found and the CPU times required to obtain the solutions.

Biography of Prof. Paolo Toth



Paolo Toth is "Professor Emeritus" of "Operations Research" at DEI: (Department of Electrical and Information Engineering "Guglielmo Marconi"), University of Bologna, where he was Full Professor from 1983 to 2011. His research interests include Operations Research and Mathematical Programming methodologies and, in particular, the design and implementation of effective exact and heuristic algorithms for Combinatorial Optimization and Graph Theory problems, and their application to real-world Transportation, Logistics, Loading, Routing, Crew Management, Railway Optimization problems. He is author of more than 180 papers published in international journals and of the book "Knapsack Problems: Algorithms and Computer Implementations" (coauthor S.

Martello; J. Wiley, 1990). He is also Co-editor of the books "The Vehicle Routing Problem" (SIAM Monographs on Discrete Mathematics and Applications, 2002) and "Vehicle Routing: Problems, Methods and Applications" (MOS-SIAM Series on Optimization, 2014). He was President of EURO (Association of the European Operational Research Societies) for the period 1995-1996, and President of IFORS (International Federation of the Operational Research Societies) for the period 2001-2003. He received several international awards, among which: the "EURO Gold Medal" (the highest distinction within Operations Research in Europe) in 1998; the "Robert Herman Lifetime Achievement Award in Transportation Science" (from INFORMS) in 2005; the "INFORMS Fellowship" in 2016. In May 2003, the University of Montreal conferred him a "Doctorate honoris causa" in Operational Research.

Keynote 4

(April 25, 2019 / 10:20 - 11:10)

“Event-triggered communication in networked control systems”

Prof. Maurice Heemels (IEEE Fellow)

Eindhoven University of Technology, The Netherlands

Chair: Prof. Maria Pia Fanti (Polytechnic of Bari, Italy), Room: Amphithéâtre A. Grégoire

Abstract

Advanced communication technologies are deployed in many applications leading to an increasingly networked and wireless world. In the context of networked control systems, this raises many new challenging questions, especially when the communication (or other) resources for control are limited. To efficiently use the available resources it is desirable to limit the communication between (distributed) controllers, sensors and actuators to instances when the system really needs attention. In classical time-triggered control schemes, the communication and control actions are performed periodically in time (irrespective of the state of the system) rather than when the system actually needs attention. Therefore, it is of interest to consider novel control and communication paradigms that are (more) resource-aware. In this talk we discuss so-called event-triggered schemes in which control and communication actions are triggered by well-designed events involving the system's state, output or any other locally available information. We will discuss the main ideas and design techniques (guaranteeing stability, performance and robustness), recent advances and open problems in the field of event-triggered control for networked control systems. Applications of event-triggered communication in the area of multi-agent consensus and cooperative adaptive cruise control (CACC) strategies for vehicle platooning, including experimental results, will be presented.

Biography of Prof. Maurice Heemels



Maurice Heemels received the M.Sc. degree in mathematics and the Ph.D. degree in control theory (both summa cum laude) from the Eindhoven University of Technology (TU/e), the Netherlands, in 1995 and 1999, respectively. From 2000 to 2004, he was with the Electrical Engineering Department, TU/e and from 2004 to 2006 with the Embedded Systems Institute (ESI). Since 2006, he has been with the Department of Mechanical Engineering, TU/e, where he is currently a Full Professor. He held visiting professor positions at the Swiss Federal Institute of Technology (ETH), Switzerland (2001) and at the University of California at Santa Barbara (2008). In 2004, he worked also at the company Océ, the Netherlands. His current research interests include hybrid and cyber-

physical systems, networked and event-triggered control systems and constrained systems including model predictive control. Maurice served/s on the editorial boards of *Automatica*, *Nonlinear Analysis: Hybrid Systems*, *Annual Reviews in Control*, and *IEEE Transactions on Automatic Control*. He was a recipient of a personal VICI grant awarded by STW (Dutch Technology Foundation, NWO/TTW) and is the current chair of the IFAC Technical Committee on Networked Systems. He is the founding father of a bi-annual PhD school on multi-disciplinary research topics such as hybrid, networked and cyber-physical systems educating over 600 PhD students worldwide since 2003. He was IPC (co-)chair of IFAC ADHS'12, ECC'13, IFAC NECSYS'13, IFAC ADHS'18, and ECC'21. He is a Fellow of the IEEE. See www.heemels.tue.nl for more information.

Papers / Session & Sessions chairs

S-01 Transport Optimization		
Chair(s): Askhat Diveev		
Paper ID	Title	Authors
229	A Mathematical Model and Control Problems of Traffic Flows in Urban Road Networks	Elena Sofronova, Askhat Diveev (Russia)
331	Sensitivity Analysis of an Optimal Design Methodology for Hybrid Power System	Adriano Ceschia, Toufik Azib, Olivier Bethoux, Francisco De Oliveira Alves (France)
512	The Discrete and Dynamic Berth Allocation Problem in Bulk Port	Rokaya Lassoued, Abdelkarim Elloumi (Tunisia)
82	Game Theoretic Algorithm for Vehicle Selection from Deployed Fleet	Evangelos Spyrou, Dimitris Mitrakos, Afroditi Anagnostopoulou, Maria Boile (Greece)
205	Disturbances and Coupling Estimation for Trajectory Tracking of a Novel Multi Link Aerial System	José Castillo, Juan Antonio Escareno Castro, Jonatan Uziel Alvarez Muñoz, Joanny Stephant, Islam Boussaada (France)
55	A Bi-Level Programming Approach to Locate Capacitated Electric Vehicle Charging Stations	Céline Gicquel, Mouna Kchaou-Boujelben, Walid Makhoulf (France)
WiP-31	Toward the improving healthcare services in remote areas of India	Amir Elalouf, Aakash Kamble, Guy Wachtel and Dmitry Tsadikovich (Israel)

S-02 Smart Grids		
Chair(s): Vicenç Puig		
Paper ID	Title	Authors
365	Residential Microgrid Photovoltaic Panel Array Sizing Optimization to Ensure Energy Supply and Financial Safety	Remy Vincent (France)
471	A Novel Hybrid Architecture with Support Vector Classifier for Classification of Power Quality Disturbances Using Trained Features Extracted from Convolutions	Arshiya Aggarwal, Nisheet Das, Mansi Arora, Madan Mohan Tripathi (India)
476	Optimization of the Slope Angle for Photovoltaic Panels	Zahra Rasouli Dogaheh, Vicenç Puig (Spain)
213	Distributed Optimization of Standalone PV Components in Microgrid	Alok Kumar, Bhagyashree Umathe (India)
275	Real-Time Load Consumption Prediction and Demand Response Scheme Using Deep Learning in Smart Grids	Sara Atef, Amr Eltawil (Egypt)
447	A Performance Evaluation on Distance Measures in KNN for Mobile Malware Detection	Gianmarco Baldini, Dimitris Geneiatakis (Italy)

96	Cloud: Privacy for Locations Based-Services' through Access Control with Dynamic Multi-Level Policy	Anwar Chitheer Jasim Al Bazooni, Imad Ali Hassoon Al Tameemi, Nicolae Tapus (Romania)
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S-03 Computer Science & Software Engineering		
Chair(s): Mariusz Zieja		
Paper ID	Title	Authors
225	A Theoretical Framework for Testing Cyber-Physical Systems	Puneet Bhateja (India)
289	Fixed Point Computation by Exponentiating Linear Operators	Asma Mansouri, Matthieu Martel, Oana Silvia Serea (France)
341	Proposition of a Holonic Approach to Model the Information Chain from Product to Stakeholder	Vivien Basselot, Thierry Berger, Yves Sallez (France)
368	A Method for Predicting IT Vulnerabilities Using Branching Processes – an Outline	Mariusz Zieja (Poland)
245	Design a Universal Remote Controlled Thermostat Based on FPGA	Ali Alghamdi (Saudi Arabia)
514	Impact of using Agile Methods in Software Engineering Education: A Case Study	Serein Al-Ratrout (Oman)

S-04 Signal Processing, Sensor & Instrumentation		
Chair(s): Owen Cacha		
Paper ID	Title	Authors
456	A Comparative Analysis of Motorcycle Attitude Estimation in a Trajectory Reconstruction Framework	Sarra Smaiah, Rabah Sadoun, Abdelhafid Elouardi, Bruno Larnaudie, Samir Bouaziz, Abderrahmane Boubezoul, Bastien Vincke, Stéphane Espie (France)
220	Constrained H_∞ Control for Active Suspension Systems with Aperiodic Sampling: a Looped Functional Approach	Seungyong Han, S.M. Lee, Ho-Youl Jung, Ju H. Park (South Korea)
127	A Low PAPR DHT Precoding Based UFMC Scheme for 5G Communication Systems	Imran Baig (Oman)
192	Signal Processing in the Investigation of Two-Phase Liquid-Gas Flow by Gamma-Ray Absorption	Robert Hanus, Marcin Zych, Marek Jaszczur, Anna Szlachta, Anna Golijanek-Jędrzejczyk (Poland)
99	Analysis and Optimization of Waveform-Dependent UWB Timing Synchronization by Delay-Locked Loops	Mohamed Adnan Landolsi, Mishal Algharabally (Kuwait)
253	Cooperative People Tracking Using Multiple Ground Lidars Based on Distributed Interacting Multimodel Estimator	Takeru Nakahira, Masafumi Hashimoto, Kazuhiko Takahashi (Japan)
409	On the Development of a Wireless Motion Capture Sensor Node for Upper Limb Rehabilitation	Ourania Tsilomitrou, Konstantinos Gkoutas, Nikolaos Evangeliou, Evangelos Dermatas (Greece)

S-05 Control Design Methods		
Chair(s): Hassan Noura		
Paper ID	Title	Authors
8	Aircraft Control with Neural Networks	Akif Altun, Mehmet Önder Efe (Turkey)
252	Pitch-Rate Control Augmentation System Design for Delayed Measurements	İlkay Gümüşboğa, Altug Iftar (Turkey)
27	Alternative Droop Control Method Using a Modified Lag Compensator for Paralleled Converters in DC Microgrids	Daniel Zammit, Cyril Spiteri Staines, Maurice Apap, Alexander Micallef (Malta)
181	Model Free Control vs Sliding Mode Control Application to a Coupled Three-Tank System	Zahraa Serhan, Hassan Noura (Lebanon)
440	Bond Graph Based Modeling Approach with Application for Traffic Flow	Milka Uzunova, Konstantin Dimitrov, Rositsa Velichkova, Nikolaj Linkov (France)

S-06 Data Mining & Artificial Intelligence (Part 1)		
Chair(s): Nizar Bouguila		
Paper ID	Title	Authors
382	Ball Detection for Boccia Game Analysis	Alexandre Calado, Vinícius Silva, Filomena Soares, Paulo Novais, Pedro Arezes (Portugal)
279	MACD-Histogram-Based Fully Convolutional Neural Networks for Classifying Time Series	Shuichi Hashida, Keiichi Tamura (Japan)
172	Selection of Pattern Neurons for a Probabilistic Neural Network by Means of Clustering and Nearest Neighbor Techniques	Maciej Kusy (Poland)
293	Evaluation of Skeletal Gender and Maturity for Hand Radiographs using Deep Convolutional Neural Networks	Rijad Saric, Jasmin Kevric, Edhem Custovic, Dejan Jokic, Nejra Beganovic (Bosnia and Herzegovina)
25	A New Method of Analysis of Three-Way Contingency Tables}	Philippe Casin (France)
WiP-16	A Fuzzy Contextual Ontology for the Analysis of Baccalaureate and Server Failure Data Warehouses	Djamila Hammouche, Karim Atif, Mourad Loukam, Fatma Zohra Belkredim and Walid Khaled Hidouci (Algeria)

S-07 WiP Session: Control Methods and Applications		
Chair(s): Jana Flochova		
Paper ID	Title	Authors
WiP-21	Closed-loop Feedback Control of the Wound Healing System	Jacquelyn Dawn Parente, Knut Möller and J. Geoffrey Chase (Germany)

WiP-30	Traffic Light Control Based on Timed Automata	Jana Flochova, Ján Pivarček (Slovakia)
WiP-33	Optimal Control-Based Unmanned Aerial Vehicle in Free Final Time using Discretization Method	Abdelkrim Nemra, Philippe Marthon, Kahina Louadj, Mohamed Aidene, Pierre Martinon, Joseph Gergaud and Frederic Messine (France)
WiP-38	Dynamic model and control of two cooperative UAVs with manipulators transporting a load	Konstantinos Gkountas and Anthony Tzes (Greece)
WiP-24	Application of the carbone nanotube interconnection model for simulation of ammonia gas sensor	Francisco Victor Esteves Lemos, Marcos Eduardo Do Prado Villarroel Zurita, Andrei Carvalho Ribeiro and Jayne Pessoa Silva (Brazil)
WiP-22	Active Control Of Velocity Field In A Composite Structur	Philippe Micheau, Valentin Serey, Mathieu Renier, Michel Castaings, Patrice Masson and Nicolas Quaegebeur (Canada)

S-08 Automation & Control Applications		
Chair(s): Wen-Jer Chang		
Paper ID	Title	Authors
470	Fuzzy sliding mode controller design using scalar sign function for a class of T-S fuzzy models	Lotfi Chaouech, Moez Soltani, Achraf Jabeur Telmoudi and Abdelkader Chaari (Tunisia)
50	Multi-Variance Performance Constrained Robust Fuzzy Control for Fuzzy Model-Based Discrete-Time Stochastic Systems	Chih-Ming Chang, Yann-Horng Lin, Wen-Jer Chang (Taiwan)
196	Arrowhead Framework Services for Condition Monitoring and Maintenance Based on the Open Source Approach	Jaime Campos, Pankaj Sharma, Michele Albano, Erkki Jantunen, David Baglee, Luis Lino Ferreira (Sweden)
92	DLO-In-Hole for Assembly Tasks with Tactile Feedback and LSTM Networks	Riccardo Zanella, Daniele De Gregorio, Salvatore Pirozzi, Gianluca Palli (Italy)
132	Convexity Analysis of Optimization Framework of Attitude Determination from Vector Observations	Jin Wu, Zebo Zhou, Min Msong, Hassen Fourati (China)
306	Assisted Cooperative Adaptive Cruise Control with human memory effects	Luis Juárez-Ramiro, Sabine Mondie (Mexico)

S-09 Operational Research		
Chair(s): Céline Gicquel		
Paper ID	Title	Authors
327	Stochastic Dual Dynamic Integer Programming for a Multi-Echelon Lot-Sizing Problem with Remanufacturing and Lost Sales	Franco Quezada, Céline Gicquel, Safia Kedad-Sidhoum (France)

232	CODAS-SORT: A New CODAS Based Method for Sorting Problems	Abir Ouhibi, Hela Frikha (Tunisia)
165	Genetic Algorithm to Optimize Unloading of Large Containers Vessel in Port of Tripoli-Lebanon	Ali Skaf, Sid Lamrous, Zakaria Hammoudan, Marie-Ange Manier (Lebanon)
423	A New Mixed-Integer Linear Programming Formulation for Multiple Responses Regression Clustering	Ebru Angun, Alper Altinoy (Turkey)
295	String Similarity Algorithms for a Ticket Classification System	Malgorzata Maria Pikies, Junade Ali (United Kingdom)
523	2-Dimensional packing algorithms on a variable-size rectangular interface	Imed Kacem, Ilyes Kadri, Benoit Martin, Isabelle Pecci (France)

S-10 Data Mining & Artificial Intelligence (Part 2)		
Chair(s): Mohammed AL Zamil		
Paper ID	Title	Authors
375	Statistical Maneuver Net Generation for Anomaly Detection in Navigational Waterways	Arne Lamm, Axel Hahn (Germany)
246	Multimodal Daily Activity Recognition in Smart Homes	Mohammed AL Zamil (Jordan)
65	Predicting Breast Cancer Risk Using Subset of Genes	Tahsien Al-Quraishi, Jemal Abawajy, Naseer Al-Quraishi, Ahmad S. Abdalrada, Lamyaa Alomairi (Australia)
366	Deep Neural Network Approach for Predicting the Productivity of Garment Employees	Abdullah Al Imran, Md Nur Amin, Md Rifatul Islam Rifat, Shamprikta Mehreen (Bangladesh)
178	Algorithms for Belief State Compression	Ali Elhalawaty, Haythem Ismail (Egypt)

S-11 Diagnosis Methods and Applications		
Chair(s): Dusan Krokavec		
Paper ID	Title	Authors
444	Fault Diagnosis of a Direct Drive Wind Turbine Using a Bank of Goertzel Filters	Lavinus Ioan Gliga, Bogdan Ciubotaru, Houcine Chafouk, Dumitru Popescu, Ciprian Lupu (France)
340	Fault Diagnosis of Stator Inter-Turn Short Circuit in Doubly Fed Induction Generator of Wind Turbine	Imane Idrissi (Morocco)
239	On Fault Detection for Discrete-Time Linear State-Multiplicative Systems with Uncorrelated Multiplicative Faults	Dusan Krokavec, Anna Filasova (Slovakia)
371	Leak Localization in Water Distribution Networks Using Deep Learning	Mohammadreza Javadiha, Joaquim Blesa, Vicenç Puig, Adrià Soldevila (Spain)
387	Observability and Sliding Mode Observer Design for Multi-Cell Series Converter	Mariem Jday, Paul-Etienne vidal, Joseph Haggege, Frederic Rotella (Tunisia)
155	Stabilization of Cyber Physical System Exposed to a Random Replay Attack Modeled by Markov Chains	Reda El Abbadi, Hicham Jamouli (Morocco)

S-12 Image Processing		
Chair(s): Jasmin Velagić		
Paper ID	Title	Authors
427	Bird Detection in Agriculture Environment Using Image Processing and Neural Network	Seolhee Lee, Hyesun Jeon, Miran Lee, Anthony Smith (South Korea)
42	A Framework for Extraction of Inner Limiting Membrane in High Speckle Noisy Images	Hina Raja, M. Usman Akram, Aneeqa Ramzan, Tehmina Khalil, Amtul Aziz, Hira Raja (Pakistan)
410	Binary-Patterns Based Floor Recognition Suitable for Urban Scenes	Juan Antonio de Jesus Osuna-Coutiño, Jose Martinez-Carranza (Mexico)
221	Classification of Optical Remote Sensing Images Based on Convolutional Neural Network	Yibo Li, Mingjun Liu, Senyue Zhang (China)
379	Design of Radiometric Thermography System for Object Recognition	Edina Ražanica, Ajdin Hamzić, Dinko Osmankovic, Jasmin Velagić (Bosnia and Herzegovina)
223	Image Classification with Local Directional Decoded Ternary Pattern	Issam El khadiri, Youssef El merabet, Yassine Ruichek, Raja Touahni, Abderrazak Chahi (Morocco)

S-13 System Identification		
Chair(s): Piotr Ostalczyk		
Paper ID	Title	Authors
209	Parameter Identification Using PSO under Measurement Noise Conditions	Ricardo Cortez-Vega, Jessica Jazmin Maldonado Ramos, Rubén Garrido (Mexico)
118	Parameter-Estimation-Based Adaptive MTPA Control for Interior Permanent Magnet Synchronous Motors	Jinhui Xia, Jiayue Xu, Yingwei Huang, Jatskevich Juri, Yuanbo Guo, Xiaohua Zhang (Canada)
46	Online Parameter Identification Method for Lti Systems in State Space Representation	Francis A. Okou, Donatien Nganga-Kouya, Arsene amissanda (Canada)
56	On a Supercapacitor Dynamics Mathematical Optimal Modelling Due to Different Measures	Piotr Ostalczyk (Poland)
206	Model of the Human Cardiovascular System based on Hybrid Systems	André Jorge, Fabrício Junqueira, Diolino José dos Santos Filho, Paulo Miyagi (Brazil)
272	Automatic Control of Drug Dosage for Continuous Infusion in Anaesthesia Using State Space Methods	Jorge Silva, Teresa Mendonça, Paula Rocha (Portugal)

S-14 Special Session on "Robotics and Control Engineering Education"		
Chair(s): José Gonçalves and Paulo Oliveira		
Paper ID	Title	Authors
269	Innovating in Control Engineering Teaching/Learning with Smartphones	Paulo Moura Oliveira, José Boaventura Cunha, Filomena Soares (Portugal)

395	Introduction to DC Motors for Engineering Students Based on Laboratory Experiments	Vítor H. Pinto, José A. Gonçalves, Paulo Costa (Portugal)
489	ADRC as an Exercise for Modeling and Control Design in the State-Space	Mikulas Huba, Paulo Moura Oliveira, Damir Vrancic, Pavol Bistak (Slovakia)
250	A Line Follower Educational Mobile Robot Performance Robustness Increase Using a Competition As Benchmark	José A. Gonçalves, Vítor H. Pinto, Paulo Costa (Portugal)
227	Stability Control of a Quadcopter Fixed to a Base	Helder Freitas, Pedro Alexandre Rodrigues Santos, Tiago Lima Coelho, Filomena Soares, Joao Sena Esteves, Alexandre Calado (Portugal)
35	Mimicking Human Movement with Robots: Control of an Anthropomorphic Robotic Arm Using a Glove-Based System As an Educational Tool	Ricardo Oliveira, Ricardo Resende, Filomena Soares, Alexandre Calado, Pedro Leite (Portugal)

S-15 Special Session on "Failure Prognostics of Complex Systems"		
Chair(s): Kamal Medjaher		
Paper ID	Title	Authors
325	Uncertainty Quantification in System-Level Prognostics: Application to Tennessee Eastman Process	Ferhat Tamssaouet, Khanh T.P. Nguyen, Kamal Medjaher, Marcos E. Orchard (France)
367	Economic Health-Aware MPC-LPV Based on DBN Reliability Model for Water Transport Network	Fatemeh Karimi Pour, Vicenç Puig (Spain)
525	A New Adaptive Prognostic Strategy Based on Online Future Evaluation and Extended Kalman Filtering	Salma Harrath, Jaouher Ben Ali, Taoufik Zouaghi and Nourddine Zerhouni (Tunisia)
310	Reconfiguration of Distribution Systems Aiming for Accumulated Impedance Balancing among Feeders through Genetic Algorithm	Mauro Antonio Guimarães Clark, Iulle Macêdo Guerra Neves, Aldir Silva Sousa, Marcos Eduardo Do Prado Villarroel (Brazil)
116	Diagnosis, Prognosis and Health Monitoring of Electro Hydraulic Servo Valves (EHSV) Using Particle Filters	Khashayar Khorasani, Shahram Shahkar, Yanyan Shen (Canada)
377	Data Preparation and Preprocessing for Broadcast Systems Monitoring in PHM Framework	Houda Sarih, Ayeley Philippe Tchangani, Kamal Medjaher, Eric Péré (France)

S-16 Logistics and Supply Chain Management		
Chair(s): Mehdi Toloo		
45	Evaluation of Invisible Physical and Mental Exertion from CT Scan Operation in Saudi Arabian Hospitals	Saad Aldoihi, Omar Hammami (France)
488	A Decision Support System for Drug Inventory Management within an Emergency Department: A Case Study	Faten Ben Chihouai, Nouha Maddeh, SAFA BHAR LAYEB, Chokri Hamouda, JOUHAINA CHAOUACHI (Tunisia)

397	Selecting Third-Party Reverse Logistics Providers under Uncertainty	Esmail Keshavarz, Mehdi Toloo (Czech Republic)
17	Bullwhip Effect Attenuation in Supply Chain Management Via Control-Theoretic Tools and Short-Term Forecasts: A Preliminary Study with an Application to Perishable Inventories	Koussaila Hamiche, Michel Fliess, Cédric Join, Hassane Abouaissa (France)
491	Hybrid Genetic Algorithm for Home Healthcare Routing and Scheduling Problem	Rahma Borchani, Malek Masmoudi, Bassem Jarboui (France)
73	On Line Appointment Systems in a Patient Centric Strategy: A Qualitative Approach in a Case Study for Hospitals in Morocco	Said Bensbih, Otmane Bouksour, Said Rifai (Morocco)

S-17 Robotics Applications		
Chair(s): Nicholas Karampetakis		
Paper ID	Title	Authors
39	Development of an Anthropomorphic Robotic Hand with Tactile Perception	Artur Vitório, Alberto Alvares (Brazil)
400	3D Mapping Based on Fusion of 2D Laser and IMU Data Acquired by Unmanned Aerial Vehicle	Tarik Pozderac, Jasmin Velagić, Dinko Osmankovic (Bosnia and Herzegovina)
503	Non-Holonomic Flight Modeling and Control of a Tilt-Rotor MAV	D. Nieto-Hernandez, C.-F. Mendez-Barrios, J. Escareno, V. Ramirez-Rivera, L.A. Torres and H. Mendez-Azúa, (Mexico)
294	Development of Waypoint Tracking Controller for Differential Drive Mobile Robot	Robins Mathew, Somashekhar Hiremath (India)
405	Leader-Follower Formation Control for a Group of ROS-Enabled Mobile Robots	Khadir Lakhdar Besseghieur, Radosław Trebinski, Wojciech Kaczmarek, Jarosław Panasiuk (Poland)

S-18 Applied Optimization		
Chair(s): Alexander Matasov		
Paper ID	Title	Authors
115	Multi-Objective Approximation for the Optimal Design of Control Charts with Variable Parameters Using the Taguchi Loss Function	Rita Penabaena-Niebles, Oscar Oviedo-Trespalcacios (Colombia)
263	A New Intelligent Technique of Constructing Optimal Airline Seat Protection Levels for Multiple Nested Fare Classes of Single-Leg Flights	Nicholas Nechval (Latvia)
465	Investigating the Interrelationships among Vulnerability Factors in Supply Chain: An Analysis with DEMATEL Method in Agri-Food Industry	Hatem Elleuch, El Mouloudi Dafaoui, Abderrahman El mhamedi, Habib Chabchoub (Tunisia)
197	A Robust Optimization Model for the Radioactive Waste Transmutation in ADS	Anna Golovkina, Sorin Olaru, Dmitri Ovsyannikov (Russia)

265	Multiple Criteria Hierarchy Process within ARAS method	Maroua Ghram, Hela Frikha (Tunisia)
16	Guaranteed Approach to Accelerometer Unit Calibration	Andrei Golovan, Alexander Matasov (Russia)

S-19 Monitoring and Supervision		
Chair(s): Jari Halme		
Paper ID	Title	Authors
439	A Review of Intrusion Detection Systems for Industrial Control Systems	Mohamad Kaouk, Jean-Marie Flaus, Marie-Laure Potet, Roland Groz (France)
425	Price Manipulation Fraud Detection by Intelligent Visual Fraud Surveillance System	Abbas Bagherian Kasgari, Mohammad Taghi Taghavifard, Saeideh Golchin Kharazi (Iran)
497	Collisions Avoidance and Deadlocks Prevention, for Dynamic Routing of Trains in a Railway Node	Paul Cazenave, Manel Khelif Bouassida, Armand Toguyeni (France)
335	Monitoring of Production Processes and the Condition of the Production Equipment through the Internet	Jari Halme, Erkki Jantunen, David Hästbacka, Csaba Hegedűs, Pal Varga, Mikael Björkbom, Heikki Mesiä, Rupesh More Antti Jaatinen, Laurentiu Barna, Pasi Tuominen, Henri Pettinen, Marko Elo, Martin Larrañaga (Finland)
103	Gait Matching by Mapping Wearable to Camera Privacy-Preserving Recordings: Experimental Comparison of Multiple Settings	Nikolaos Kolokas, Stelios Krinidis, Anastasios Drosou, Dimosthenis Ioannidis, Dimitrios Tzovaras (Greece)
326	A Performance Evaluation for Parameter Estimation Method Suitable for Machine Noise Analysis	Yukihiro Kamiya (Japan)

S-20 Multi-Objective Optimization		
Chair(s): Alain Quilliot		
Paper ID	Title	Authors
83	The FlowSort for Multi Criteria Decision Making in Intuitionistic Fuzzy Environment	Fedia Daami, Hela Frikha (Tunisia)
267	Submodular Stochastic Probing with Prices	Ben Chugg, Takanori Maehara (Japan)
422	A Stackelberg Game Theoretic Approach for Optimal Electricity Pricing Dynamics employing Time-of-Use Algorithm	Joselyn Koonamparampath, Atharva Ketkar, Mayur Sawant (India)
284	Localizing, Tracking and Classifying of Aerial Objects	Ameni Ellouze, Mohamed Karray, Mohamed Ksontini, François Delmotte (France)
84	Decisions Based on Deviation Functions	Andrea Stupnanova (Slovakia)

194	Comparison between P&O-Based and PSO-Based MPPT Algorithms for Photovoltaic System under Partially Shaded Conditions	Samuel Nogueira Figueiredo, Ranoyca Nayana Alencar Leão e Silva Aquino, Marcos Eduardo Do Prado Villarroel (Brazil)
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S-21 Nonlinear Systems: Modeling and Simulation		
Chair(s): Vasilios Ilioudis		
Paper ID	Title	Authors
152	Reduced Order Modelling of Inverter Chain Circuit Using Nonlinearity Aware TPWL	Shifali Kalra, Mashuqun Nabi (India)
501	Sensorless Control Applying Signal Injection Methodology on Modified Model of Permanent Magnet Synchronous Machine	Vasilios Ilioudis (Greece)
144	Estimation and Nonlinear Predictive Control for an Induction Machine	Florin Stinga, Marius Marian (Romania)
228	Robust Least Squares Approach for Tracking Control Synthesis of Unstructured Uncertain Bilinear Systems	Bassem Iben Warrad, Mohamed Karim Bouafoura, Naceur Benhadj Braiek (Tunisia)
107	Regional Optimal Control of a Bilinear Plate Equation	El Hassan Zerrik, Abderrahman Ait Aadi (Morocco)
207	Modelling and Controlling of a Hybrid Motorized Wheelchair on Flat and Inclined Surfaces	André Jorge, Luis Riascos, Paulo Miyagi (Brazil)

S-22 Parallel and Distributed Computing		
Chair(s): Saeid Sedighi		
Paper ID	Title	Authors
486	Deep Reinforcement Learning-Based Continuous Control for Multicopter Systems	Anush Manukyan, Miguel A. Olivares-Mendez, Matthieu Geist, Holger Voos (Luxembourg)
328	Model-Free Control Applied for Position Control of Quadrotor Using ROS	Zakaria Chekakta, Mokhtar Zerikat, Yasse Bouzid, Mohamed Abderrahim (Algeria)
441	Implementation of a Parking State Machine on Vision-Based Auto Parking Systems for Perpendicular Parking Scenarios	Saeid Sedighi (Germany)
418	Trajectory Tracking for a Commercial Quadrotor	Marcos Alberto Rosaldo-Serrano, Eduardo Aranda-Bricaire (Mexico)
185	Evaluation of the Influence of the Properties of Inhomogeneous Media in the Formation of the Image in Technical Vision Systems	Tatiana Akimenko (Russia)
494	A Novel Solution of $AX=YB$ Sensor Calibration Problem Using Dual Lie Algebra	Daniel Condurache, Ioan-Adrian Ciureanu (Romania)

S-23 Predictive Control		
Chair(s): Nicholas Karampetakis		
Paper ID	Title	Authors
135	Distributed Predictive Control for Wind Farms Efficiency Maximization: Challenges and Opportunities	Constantin Florin Caruntu (Romania)

369	Energy-Efficient Cooperative Adaptive Cruise Control Strategy using V2I	Stephen John Jones, Niklas Wikstroem, Alejandro Ferreira Parrilla, Rohan Ranjit Patil, Emre Kural, Alexander Massoner, Anders Grauers (Austria)
183	Gradient-Descent Based Nonlinear Model Predictive Control for Input-Affine Systems	Carlos Andres Devia Pinzon, Diego Patino, Julian Colorado (Colombia)
455	Towards the Automatic Implementation of Reduced-Size and High Throughput MPC on FPGAs	Aitor del Rio Ruiz, Koldo Basterretxea (Spain)
199	Model Predictive Control of Glucose Concentration Based on Signal Temporal Logic Specifications	Francesca Cairoli, Gianfranco Fenu, Felice Andrea Pellegrino, Erica Salvato (Italy)
113	Mixed Integer Linear Programming Model for the Optimal Operation of a Dual Source Heat Pump	Sasan Rafii-Tabrizi, Jean-Regis Hadji-Minaglou, Frank Scholzen (Luxembourg)

S-24 Special Session on "Fractional order systems: theory and applications"		
Chair(s): Riccardo Caponetto		
Paper ID	Title	Authors
102	Properties of Continued Fractions Approximations of Fractional Analog and Digital Operators	Guido Maione (Italy)
234	Simple Design of Fractional-Order DC Motor Controller	Stavroula Kapoulea, Costas Psychalinos, Ivo Petras (Greece)
309	Fractional- PD^{μ} Controllers for Implicitly Defined Systems	Adrián Josué Guel Cortez, Bill Goodwine, César Fernando Méndez-Barrios, Mihir Sen (USA)
76	Carbon Black Based Fractional Order Element: Wien Oscillator Implementation	Arturo Buscarino, Riccardo Caponetto, Emanuele Murgano, Maria Gabriella Xibilia (Italy)
237	Advantages of a limited frequency band fractional integration operator in the definition of fractional models	Jocelyn Sabatier, Rodriguez Sergio, Christophe Farges (France)
349	Cone Discrete-Time Fractional Variable Order Systems	Wiktor Malesza, Dominik Sierociuk (Poland)
235	Fractional-Order Mihalas–Niebur Neuron Model Implementation Using Current-Mirrors	Panagiotis Bertsias, Costas Psychalinos, Ahmed Elwakil (Greece)

S-25 Robotics and Intelligent Systems		
Chair(s): Immacolata Notaro		
Paper ID	Title	Authors
469	Integrated Forest Monitoring System for Early Fire Detection and Assessment	George Georgiades, Xanthi Papageorgiou, Savvas Loizou (Cyprus)

393	Aerodynamic Disturbance Rejection Acting on a Quadcopter Near Ground	Antonio Matus-Vargas, Gustavo Rodriguez-Gomez, Jose Martinez-Carranza (Mexico)
417	Accuracy Improvement of Semantic Segmentation Using Appropriate Datasets for Robot Navigation	Ryusuke Miyamoto, Miho Adachi, Yuta Nakamura, Takeshi Nakajima, Hiroki Ishida, Shingo Kobayashi (Japan)
153	Reactive Collision Avoidance Using Essential Visibility Graph	Egidio D'Amato, Immacolata Notaro, Massimiliano Mattei (Italy)
WiP-27	Pose estimation with a monocular vision system	Saul Martinez Diaz (Mexico)

S-26 Industry and Process Control		
Chair(s): Pierre-Philippe Robet		
Paper ID	Title	Authors
303	Evaluation of Alarm System Performance and Management in Semiconductor Manufacturing	Mohammed AL-KHARAZ, Bouchra Ananou, Mustapha Ouladsine, Michel combal, Jacques Pinaton (France)
140	Model Based Approach IDS Design	Mohamad Houssein Monzer, Kamal Beydoun, Jean-Marie Flaus (France)
78	A Cascaded Loop Structure in Force and Position to Control a Bilateral Teleoperation Robotic System	Sylvain Devie, Pierre-Philippe Robet, Yannick Aoustin, Maxime Gautier (France)
240	Control of a Single Flexible Link Manipulator Using Fractional Active Disturbance Rejection Control	Fareh Raouf (United Arab Emirates)
WiP-34	Design and implementation of a multiprocessor embedded system for the classification of the vehicles in the carriageway by using the Artificial intelligence	Ibnoulafkih Abdelghani, Khamlich Fathallah, Khamlich Salaheddine and Benrabh Mohamed (Morocco)

S-27 Combinatorial Optimization (Part 1)		
Chair(s): Alain Quilliot		
Paper ID	Title	Authors
WiP-521	An exact algorithm to find the most degree-central clique	Haonan Zhong, Foad Mahdavi Pajouh (USA)
381	A Layered Compact Formulation for the Multiple Steiner TSP with Order Constraints	A. Ridha Mahjoub, Raouia Taktak, Eduardo Uchoa (France)
434	New Algorithms for Online Time Series Search with Interrelated Prices	Pascal Schroeder, Imed Kacem (France)
449	Minimum flows in Directed Planar Dynamic Networks	Eleonor Ciurea, Camelia Schiopu (Romania)
157	Layered Network Oriented Approaches for Vehicle Relocation Problems	Alain Quilliot (France)

S-28 Computational Intelligence		
Chair(s): Nizar Bouguila		
Paper ID	Title	Authors
311	Application of Evolutionary Algorithm for Reconfiguration of the Distribution Network, Envisaging a Larger Branching of the System	Iulle Macêdo Guerra Neves, Mauro Antonio Guimarães Clark, Aldir Silva Sousa, Marcos Eduardo Do Prado Villarroel (Brazil)
85	Crow Search Algorithm for Continuous Optimization Tasks	Piotr A. Kowalski (Poland)
448	Beta-Liouville Regression and Applications	Divya Ankam, Nizar Bouguila, Amayri Manar (Canada)
419	Gabriel Graph Transductive Approach to Dataset Shift	Carla Takahashi, Luiz Carlos Bambera Torres, Antonio Padua Braga (Brazil)
WiP-18	Evaluation of a Fall Alerting System based on a Convolutional Deep Neural Network	Eduardo Casilari, Raúl Lora-Rivera and Francisco García-Lagos (Spain)

S-29 Control Applications (Part 1)		
Chair(s): Jaouhar Ben Ali		
Paper ID	Title	Authors
138	Inverse Stochastic Quadcopter Trajectory Generation Using Flat Inverse Dynamics and Polynomial Chaos Uncertainty Propagation	Tom Lefebvre, Frederik De Belie, Guillaume Crevecoeur (Belgium)
71	Energy-Efficient Bicycling with Passive Mechanical Network	Makoto Shinpou, Kentaro Hirata, Yukinori Nakamura, Kuniyoshi Okano, Kazuyoshi Hatada (Japan)
69	Multi-Robot Formation and Tracking Control Method	Dong Wang, Yang Yu, Wei Wang (China)
70	Prediction of Heparin Dose during Continuous Renal Replacement Therapy Surgery by Using the Gradient Boosting Regression Model	Jie Lian, Qiaofeng Zhao (China)

S-30 Scheduling Problems		
Chair(s): Alain Quilliot		
Paper ID	Title	Authors
498	Accuracy and Localization-Aware Rescheduling for Flexible Flow Shops in Industry 4.0	Bouziane Brik, Belgacem Bettayeb, M'hammed Sahnoun, Anne Louis (France)
230	Optimization of a Milk Processing Application Using a Service Oriented Architecture	Alina Itu (Romania)
264	Plan Repair Applied to Autonomous Underwater Vehicle Swarms	Helene Soubaras - van den Broek d'Obrenan (France)
204	Optimal Scheduling of Energy Supply Entities in Home Area Power Network	Daud Mustafa Minhas, Georg Frey (Germany)

433	Optimizing the Reading of Railway Sensors Data	Fayez Alfayez, Bani Melhim Loai, Mahdi Jemmali (Saudi Arabia)
222	No-Idle Parallel Machine Scheduling of Unit-Time Jobs	Alain Quilliot, Nadia Brauner, Mikhail Y. Kovalyov, Helen Toussaint (France)
388	Selection and Scheduling of Actions for Innovation Capabilities Improvement	Franco Quezada, Luis Rojo-González, Óscar C. Vasquez (Chile)

S-31 Invited Session on "Resilient Control in Large-Scale Networked Cyber-Physical Systems"		
Chair(s): Giuseppe Franzè and Giancarlo Fortino		
Paper ID	Title	Authors
128	Detection of Replay Attacks in CPSs Using Observer-Based Signature Compensation	Carlos Trapiello, Damiano Rotondo, Helem Sabina Sanchez Corrales, Vicenç Puig (Spain)
238	A Reputation Capital and Blockchain-Based Model to Support Group Formation Processes in the Internet of Things	Giancarlo Fortino, Fabrizio Messina, Domenico Rosaci, Giuseppe Maria Sarnè (Italy)
117	Security Index of Linear Cyber-Physical Systems: A Geometric Perspective	Khashayar Khorasani, Amir Baniamerian (Canada)
270	Denial-Of-Sleep Attacks against IoT Networks	Antoine Gallais, Thin-Hinen Hedli, Valeria Loscrì, Nathalie Mitton (France)
33	A Leader-Follower Set-Theoretic Approach for Cyber-Physical Systems against Denial-Of-Service Attacks	Giuseppe Franzè, Walter Lucia, Francesco Tedesco (Italy)
87	Stability Analysis of Power Networks under Cyber-Physical Attacks: An LPV-Descriptor Approach	Souad Bezzaoucha, Holger Voos (Luxembourg)

S-32 Special Session on "Petri nets models for modeling, control and optimization"		
Chair(s): Patrice Bonhomme and Dimitri Lefebvre		
Paper ID	Title	Authors
451	On Modeling and Evaluation of Corrective and Preventive Maintenance Policies of Unreliable Manufacturing Systems	Rym Meriah, Kamel Barkaoui, Gaiyun Liu, Olfa Belkahla (France)
407	A Hybrid Representation of Urban Traffic Networks Using Multi-Agent Systems and Petri Nets	Mauricio Flores Geronimo, Eduardo Gamaliel Hernandez-Martinez, Enrique D. Ferreira, Jose-Job Flores-Godoy, Guillermo Fernandez-Anaya (Mexico)
268	Petri Net Based Navigation Planning with Dipole Field and Dynamic Window Approach for Collision Avoidance	Lan Anh Trinh, Mikael Ekström, Baran Curuklu (Sweden)
511	Towards a Minimum Initial Marking Estimation Procedure for P-Time Labelled Petri net System	Amir Abdellatif, Patrice Bonhomme, Achraf Jabeur Telmoudi (Tunisia)

286	Trajectory-Observers of Timed Stochastic Discrete Event Systems: Applications to Security and Privacy Analysis	Dimitri Lefebvre, Christoforos Hadjicostis (France)
97	Pattern Recognition Technique for Synthesis Fractal Petri Nets	Alexander Semenov (Russia)
98	Clinical Decision Support Using Colored Petri Nets: A Case Study on Cancer Infusion Therapy	Francesca Cairoli, Gianfranco Fenu, Felice Andrea Pellegrino (Italy)

S-33 Linear Systems		
Chair(s): Eli Gershon and Nicholas Karampetakis		
Paper ID	Title	Authors
360	Online Balanced Truncation for Linear Time-Varying Systems Using Continuously Differentiable Interpolation on Grassmann Manifold	Nguyen Thanh Son, Pierre-Yves Gousenbourger, Estelle Massart, Pierre-Antoine Absil (Belgium)
136	On the Algebraic Structure of the Moore Penrose Inverse of Full Row or Full Column Rank Polynomial Matrices	Ioannis Kafetzis, Nikos Karampetakis (Greece)
112	State-Multiplicative Stochastic Linear Systems - Input-Delayed H_∞ Control	Eli Gershon (Israel)
361	A geometric-based approach to the maximum-speed state and output variables for some class of IMC structures	Wojciech Przemyslaw Hunek, Tomasz Feliks (Poland)
313	Model Based Control of Disturbance Forces for Pitch Plane Stability of a Tractor with Implement	Gurudatt Anche, Devika K B, Shankar Subramanian (India)
90	Two Wheels Electric Vehicle Modelling : Parameters Sensitivity Analysis	Cristhian Yesid Bello Ceferino, Toufik Azib, Cherif Larouci, Moussa Boukhni, Diego Patino, Fredy Ruiz, Pr. Rizoug Rizoug Nassim (France)

S-34 Modeling and Simulation Problems		
Chair(s): José Machado		
Paper ID	Title	Authors
517	Composability Modeling for the Use Case of Demand-Controlled Ventilation and Heating System	Ali Behravan, Nadra Tabassam, Osama Al-Najjar, Roman Obermaisser (Germany)
337	Modeling of Dynamic Behavior of AGV Systems	João Veiga, João Sousa, José Machado, João Mendonça, António Machado, Pedro Silva (Portugal)
146	Generalized Phi-Transformations and N-Uninorms	LeSheng Jin, Martin Kalina, Radko Mesiar, Surajit Borkotokey, Jana Špírková (Slovakia)
198	About One Approach to Simulation of Non-Stationary Temperature Field in Axisymmetric Structures	Tatiana Akimenko (Russia)
258	Prioritized Control of Multivariate Process Using Lexicographic Ordering Approach: A Simulation Study	Anilkumar Markana, Nitin Padhiyar, Kannan M. Moudgalya (India)

60	Simulation Study on Latency-Aware Network in Edge Computing	Qinling Zheng, Zhan Ping (USA)
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S-35 Emergent Methods and Computational Intelligence applications		
Chair(s): Owen Cacha		
Paper ID	Title	Authors
248	On the Effectiveness of MH-Based Joint-Decoders for Very Short Tardos Fingerprinting Codes	Bettina Fazzinga, Sergio Flesca, Filippo Furfaro, Elio Masciari (Italy)
297	Long Short-Term Memory for Predicting Firemen Interventions	Selene Leya Cerna Ñahuis, Christophe Guyeux, Héber Hwang Arcolezi, Raphaël Couturier, Guillaume Royer, Anna Diva Plasencia Lotufo (Brazil)
242	Modeling Computer Security Service Desk	Sabah Al-Fedaghi, Basmah AlMusallam (Kuwait)
324	Statistical Properties of DDoS Attacks	Derya Erhan, Emin Anarım (Turkey)
462	Secure Energy Market against Cyber Attacks Using Blockchain	Vaishali Kamuni, Asfia Urooj, Mohd Adil Sheikh (India)
171	Regularization of Extreme Learning Machines with Information of Spatial Relations of the Projected Data	Lourenço Ribeiro Grossi Araujo, Luiz Carlos Bambirra Torres, Leonardo José Silvestre, Carla Takahashi, Antonio Padua Braga (Brazil)

S-36 Special Session on "Smart and Green Logistics and Transportation Systems"		
Chair(s): Maria Pia Fanti, Agostino M. Mangini and Michele Roccotelli		
Paper ID	Title	Authors
351	Innovative Baseline Estimation Methodology for Key Performance Indicators in the Electro-Mobility Sector	Maria Pia Fanti, Alessandro Rinaldi, Michele Roccotelli, Bartolomeo Silvestri (Italy)
94	A Variable Neighborhood Search to Reduce Carbon Dioxide Emissions in the Capacitated Vehicle Routing Problem	Dalila Tayachi, Henda Boukadi (Tunisia)
100	About Satisfying String Stability Using Heterogenous Unidirectional Controllers	Arash Farnam, Guillaume Crevecoeur (Belgium)
330	Iterative Learning Wave Control of a 20 Actuator System for External Flow Research	Martin Florian Seidler ,Michael Schiek, Wolfgang Silex, Roger Heil, Stefan van Waasen, Dirk Abel (Germany)
475	Evaluation of Unavailability of the Railway Service using AHP Methodology	Agostino Marcello Mangini, Ilario Precchiazzi, Valentino Sangiorgio, Maria Pia Fanti (Italy)
151	Traffic Flow Multi-Model with Machine Learning Method Based on Floating Car Data	Jinjian Li, Jacques BOONAERT, Arnaud Doniec, Guillaume Lozenguez (France)

S-37 Discrete Event Systems		
Chair(s): Ahmed Khoumsi		
Paper ID	Title	Paper ID
47	Cooperative tracking control in networked discrete-event systems	Markus Zgorzelski, Jan Lunze (Germany)
58	Deducing Causes for the Absence of States in Supervised Systems	Lennart Swartjes, Michel Reniers, Wan Fokkink (Netherlands)
283	A Two-Step Approach for Fault Diagnosis of Max-Plus Automata	Aiwen LAI, Sébastien Lahaye, Alessandro Giua (France)
12	Alternative Inference-Based Decentralized Prognosis of Discrete Event Systems	Ahmed Khoumsi (Canada)
287	Time-Based Estimator for Control Reconfiguration of Discrete Event Systems (DES)	Imane Tahiri, Alexandre Philippot, Véronique Carré-ménétrier, Abdelouahed Tajer (France)
32	Model Reduction of LTI Discrete-Time Multivariable Systems Using Pade Approximation and Stability Equation Method	Sudharsana Rao Potturu, Rajendra Prasad (India)

S-38 Special Session on "Energy and Control"		
Chair(s): Moussa Boukhniher		
Paper ID	Title	Authors
19	A Comparative Study of Open-Circuit-Voltage Estimation Algorithms for Lithium-Ion Batteries in Battery Management Systems	Jianwen Meng, Moussa Boukhniher, Demba DIALLO (France)
435	Low Voltage Ride through Control for Grid-Connected Inverter Based on Second Order Generalized Integrator under Unbalanced Fault	Sabir Ouchen, Heinrich Steinhart, Daniel Lebsanft (Germany)
520	Improving Electricity Network Efficiency and Customer Satisfaction in Generation Constrained Power System	Julius Quarshie Azasoo, Kanakis Triantafyllos, Ali Al-Sherbaz, Michael Opoku Agyeman (United Kingdom)
244	Implementation and Experimental Validation of Robust Numerical Control for DC-DC Buck Converter	Moussa Boukhniher (France)
75	Improving the Low-Voltage Ride-Through Capacity of a DFIG Using Neural Inverse Optimal Field Oriented Control	Larbi Djilali, Edgar N. Sanchez, Fernando Ornelas-Tellez, Mohammed Belkheiri (Mexico)
298	FCS-MPC Current Control of Parallel Photovoltaic Grid Connected Inverter with Common AC and DC Buses	Saad Bella, Azeddine Houari, Ali Djerioui, Mohamed Machmoum, Aissa Chouder, Mohamed Fouad Benkhoris, Kaci Ghedamsi (France)

S-39 Intelligent Control		
Chair(s): Ivan Samylovskiy		
Paper ID	Title	Authors
495	Implementation of Type-2 Fuzzy Control of PMSM Position Drive with Flexible Coupling	Galina Demidova, Dmitry Lukichev, Konstantin Denisov (Russia)

506	On the First and Second-Order Conditions in Optimal Control Problems Related to Autonomous Objects Group Lifecycle	Ivan Samylovskiy (Russia)
392	A Fuzzy Logic-Based Approach for HVAC System Control	Anass Berouine, Elmakki Akssas, Youssef NaitMalek, Fadwa Lachhab, Mohamed Bakhouya, Radouane Ouladsine, Mohammed Essaaidi (Morocco)
468	Literature Review on Smart Lighting Systems and Their Application in Industrial Settings	Marc Fächtenhans, Eric H. Grosse, Christoph H. Glock (Germany)
231	An LMI Approach to ILC of Linear Distributed Parameter Systems with Time Delay	Xisheng Dai, Su Wang, Chenghua Liang (China)
29	Innovative Single Sensor Neural Network PV MPPT	Abdelghani Harrag, Sabir Messalti, Yacine Daili (Algeria)

S-40 Adaptive Control		
Chair(s): Ashraf Saleem		
Paper ID	Title	Authors
121	Stability of Switched Nonlinear Feedback Systems with Bounded Average Time-Variation	Yu-chen Sung, Michael G. Safonov, Sagar Patil (USA)
513	Tracking Control of Piezoelectric Actuators using Feedforward/Feedback Learning-based Controller	Ashraf Saleem, Musabah Al Hattali, Muhammed Shafiq, Issam Bahadur (Oman)
51	Hybrid Direct-Indirect Adaptive Control of Nonlinear System with Unmatched Uncertainty	Girish Joshi, Girish Chowdhary (USA)
519	Adaptive Synchronization of Uncertain Fractional-Order Chaotic Triangular Systems Via Fuzzy Backstepping Control	Amina boubellouta, Abdeselem Boulkroune (Algeria)
329	Voltage Control of DC-DC Three Level Boost Converter Using TS Fuzzy PI Controller	Hajar Doubabi, Issam Salhi, Mohammed Chennani, Najib Essounbouli (Morocco)
323	Robust Adaptive PI Controller of Low Voltage Ride-Through for PMSG-Based Wind Turbine	Ayman Alhejji, Yasser Bouzid (Saudi Arabia)

S-41 Special Session on "Formal Methods applied to Transportation and Industry 4.0"		
Chair(s): Mariagrazia Dotoli and Dimitri Lefebvre		
Paper ID	Title	Authors
133	Emerging Issues in Control, Decision, and ICT Approaches for Smart Waste Management	Nicola Epicoco, Mariagrazia Dotoli (Italy)
426	Nonlinear Attitude Control Design and Verification for a Safe Flight of a Small-Scale Unmanned Helicopter	Omar A. Jasim, Sandor Veres (United Kingdom)
282	Discovering Systematic Relations between Alarms for Alarm Flows Reduction	Yannick Laumonier, Jean-Marc Faure, Jean-Jacques Lesage, Hervé Sabot (France)
288	Identification of Railway Transport Systems Using Stochastic P-Timed Petri Nets Model	Mouhaned Gaied, Dimitri Lefebvre, Anis M'halla, Kamel Ben Othman (France)

179	Proposed Decision Framework for Smart Product Development in Industry 4.0: An Indian Perspective	Akanksha Jaiswal, Rana Basu, Prabha Bhola (India)
137	Railway Disruption: A Bi-Level Rescheduling Algorithm	Graziana Cavone, Lex Blenkers, Ton J. J. van den Boom, Mariagrazia Dotoli, Carla Seatzu, Bart De Schutter (Italy)

S-42 Fault Detection		
Chair(s): Kary Thanapalan		
Paper ID	Title	Authors
502	Robust Fault Detection & Isolation in Distributed Dynamic Systems	Sam Nazari, Bahram Shafai (USA)
492	Cluster Head Recovery Algorithm for Wireless Sensor Networks	Chafiq Titouna (Algeria)
481	Prediction of Lithium-Ion Battery Capacity in UAVs	Erick Frota Costa, Darielson Araújo Souza, Vandilberto Pereira Pinto, Miqueias Silva Araújo, Artur Melo Peixoto, Erivaldo Pinheiro Júnior Costa (Brazil)
484	Fracture Toughness Prediction of Composite Materials	Bethany Jones, Kary Thanapalan, Ewen Constant (United Kingdom)
404	Early Chatter Detection Using MaxEnt and SPRT	Yanqing Zhao, Kondo Hloindo Adjallah, Alexandre Sava, Zhouhang Wang (France)
200	Comparison of Disturbance Rejection with Derivative State Feedback and Active Disturbance Rejection Control: Case Study	Joel Abraham González-V., Christophe Sueur (France)
342	Open-switch Fault Diagnosis Based on Luenberger Observer in Back-to-Back Converters of Wind Turbines with DFIG	Siamak Afshar Khamseh, Amir Mohammadbeigi (Iran)

S-43 Information and Learning Systems		
Chair(s): Nizar Bouguila		
Paper ID	Title	Authors
443	An Improved K-Medoids Algorithm Based on Binary Sequences Similarity Measures	Fahdah Alalyan, Nuha Zamzami, Manar Amayri, Nizar Bouguila (Canada)
487	Concept Analysis for Visualizing Actors' Experiences in E-learning Spaces to Create an Active Learner's Profile	Liana Stanca, Ramona Lacurezeanu, Cristina Felea (Romania)
164	Universal Notice Network: Transferable Knowledge among Agents	Mehdi Mounsif, Sébastien Lengagne, Benoit Thuilot, Lounis Adouane (France)
314	Hotspots Infrared Detection of Photovoltaic Modules Based on Hough Line Transformation and Faster-RCNN Approach	Shuoquan Wei, Wenjun Yan (China)

110	An Intelligent Compensation Through B-Spline Neural Network for a Delta Parallel Robot	Jonatan Martin Escorcia Hernandez, Hipolito Aguilar-Sierra, Omar Aguilar-Mejia, Ahmed Chemori, José Humberto Arroyo Núñez (Mexico)
256	The Multi-Armed Bandit Problem under Delayed Rewards Conditions in Digital Campaign Management	Miguel Martín, Antonio Jiménez-Martín, Alfonso Mateos (Spain)

S-44 Energy Control and Power Systems		
Chair(s): Moussa Boukhniifer		
Paper ID	Title	Authors
516	State Observer-Based Current Sensor-Less Hysteresis Current Control for Stand-Alone Inverters	Triet Nguyen-Van, Kenji Tanaka (Japan)
145	Switched-Mode Power Supply for Control System	Vladimir Strelkov, Elena Sosnina, Andrey Dar'enkov, Andrey Shalukho, Ivan Lipuzhin (Russia)
257	Optimal Sizing and Placement of Multiple Distributed Generators Using Teaching Learning Based Optimization Algorithm in Radial Distributed Network	Gargi Trivedi, Anilkumar Markana, Praghresh Bhatt, Vivek Patel (India)
509	Multi-Sources Energy Plants Location Using Goal-Programming and Flow Control Analysis Approach	Abbas Hamze, Yassine Ouazene, Nazir Chebbo, Imane Maatouk (France)
524	Improved SMC Approach for Rotor-Side Converter of DFIGBased on Stator Flux Estimator Using a Programmable Low Pass Filter	Ameni Kadri, Hajer Marzougui, Faouzi Bacha (Tunisia)
120	Stabilizing AC Distributed Power Systems with Constant-Power Loads Using Tunable Active Damping	Zhi Qu, Navid Amiri, Jatskevich Juri (Canada)

S-45 Embedded Systems and Design for Electronic Circuits		
Chair(s): Owen Casha		
Paper ID	Title	Authors
123	Particle Swarm Optimization of a Rail-To-Rail Delay Element for Maximum Linearity	Jordan Lee Gauci, Edward Gatt, Owen Casha, Giacinto De Cataldo, Ivan Grech, Joseph Micallef (Malta)
442	Dynamical Analysis, Synchronization and Circuit Implementation of a New Hyperchaotic System with Line Equilibrium	Khaled Benkouider, Toufik Bouden, Meriem Halimi (Algeria)
458	Sensorless BLDC Motor Sliding Mode Controller Design for Interference Recovery	Peter I-Tsyuen Chang, Xin-You Lin, Yi-Jui Yu (Taiwan)
271	Analysis of the Performance of Extended Kalman Filtering in SLAM Problem	Asim Kr Naskar, Satwik Mohanty (India)
332	Multi-Channel Software Infrastructure for Remote Control of Service Robots	Denis Chikurtev (Bulgaria)

S-46 Combinatorial Optimization (Part 2)		
Chair(s): Dalila Tayachi & A. Ridha Mahjoub		
Paper ID	Title	Authors
301	A Special Case of Variable-Sized Bin Packing Problem with Color Constraints	Igor Crevits, Saïd Hanafi, A. Ridha Mahjoub, Raouia Taktak, Christophe Wilbaut (France)
291	On the Real-World Applicability of State-Of-The-Art Algorithms for the Optimal Camera Placement Problem	Julien Kritter, Mathieu Brévilliers, Julien Lepagnot, Lhassane Idoumghar (France)
260	Enhanced Exact Approach for the Network Loading Problem	Imen Mejri, Safa Bhar Layeb, Farah Zeghal Mansour (Tunisia)
453	Contraction-Based Method for Computing a Lower Bound on the Clique Number of a Graph	Gueham Assia, Ait Haddadène Hacène, Anass Nagih (Algeria)
131	Component Sizing Based on Multi-Objective Optimization for a Fuel Cell Hybrid Vehicle	Sashidhar Palani, Shankar Subramanian, Raghuram Chetty (India)

S-47 Control Theory		
Chair(s): Efstathios Antoniou and Igor B. Furtat		
Paper ID	Title	Authors
167	Algorithms for Prediction of Smooth Bounded Signals	Igor B. Furtat, Pavel A. Gushchin, Artem N. Nekhoroshikh, Sergey A. Vrazhevsky, Mikhail S. Tarasov, Julia V. Chugina (Russia)
429	On the Controllability of a Cubic Semi-Linear Wave Equation	Carlos Barron-Romero (Mexico)
177	Synchronisation of linear agents over a time-varying random network	Philipp Welz, Jan Lunze (Germany)
174	Modified Backstepping Algorithm for Plants under Mismatched Disturbances and Varying Time-Delay	Igor B. Furtat, Pavel A. Gushchin, Artem N. Nekhoroshikh, Sergey A. Vrazhevsky, Julia V. Chugina (Russia)
68	A New Approach on the Linearization of 2-D Polynomial Matrices	Stavros Vologiannidis, Efstathios Antoniou (Greece)
182	Comparison between Sinusoidal and Space Vector Modulation Techniques on the Resulting Electromagnetic Torque Ripple Produced by a Three-Phase BLDC Motor under Field-Oriented Control	Nicolae Daniel Irimia, Marian Luchian, Florin Lazar (Romania)

S-48 Automation & Control Systems Applications		
Chair(s): Fu-Cheng Wang		
Paper ID	Title	Authors
386	FSM Modeling of Testing Security Policies for Map Reduce Frameworks	Sara Hsaini, Salma Azzouzi, My El Hassan Charaf (Morocco)
285	Automatic Drone Navigation in Realistic 3D Landscapes Using Deep Reinforcement Learning	Sangyun Shin, Yongwon Kang, Yong-Guk Kim (South Korea)

219	Fusing Stereopsis & Corner Sparse Optical Flow for Real-Time Obstacle Avoidance of Unmanned Aerial Vehicle	Shihao Ding, Wenjun Yan (China)
160	Using an Adaptive Entropy-Based Threshold for Change Detection Methods – Application to Fault-Tolerant Fusion in Collaborative Mobile Robotics	Bilal Daass, Denis Pomorski, Kamel Haddadi (France)
88	Inertial Response Using Backstepping Control from DFIG Based Wind Power Plant for Short-Term Frequency Regulation	Mohamed Nadour, Ahmed Essadki, Mohammed Fdaili, Tamou Nasser (Morocco)
13	The Multicopter Control Algorithms with Unstable Modes	Viacheslav Pshikhopov, Mikhail Medvedev, Victor Soloviev (Russia)

S-49 Nonlinear Systems		
Chair(s): Askhat Diveev		
Paper ID	Title	Authors
80	Approximate Controllability of a Bilinear Vibrating Plate Equation with Bounded Distributed Control	Abella El kabouss, El Hassan Zerrik (Morocco)
77	Iterative Learning Fuzzy Control with Optimal Gains for a Class of Nonlinear Systems	Tarek Bensidhoum ,Farah Bouakrif , Michel Zasadzinski (Algeria)
292	Stabilization of a Class of Second Order Semilinear Distributed Systems	El Hassan Zerrik, Lahcen Ezzaki (Morocco)
236	Hybrid Evolutionary Algorithm for Synthesized Optimal Control Problem of Group Interaction of Robots	Askhat Diveev, Elizaveta Shmalko (Russia)
189	Extended High Gain Observer Based Control Design for Buck-Boost Converters	Ravi Sharma, Kaushal Baghel, Shadab Nayyer Syed, Abhijeet Almelkar, Sonam Kharade (India)

S-50 Control Systems Design		
Chair(s): Immacolata Notaro		
Paper ID	Title	Authors
30	Wind MPPT for a PMSG SWT in a Grid-Connected DC Microgrid	Daniel Zammit, Cyril Spiteri Staines, Alexander Micallef, Maurice Apap (Malta)
175	Implementable Discrete-Time L1 Adaptive Control for a Cart Inverted Pendulum System	Ahmed Lasheen, Mahmoud Elnaggar (Egypt)
346	Deadbeat vs. Pole-Free Perfect Control	Marek Krok,Wojciech Przemyslaw Hunek (Poland)
163	Distributed UAV State Estimation in UTM Context	Marco Cicala, Egidio D'Amato, Immacolata Notaro, Massimiliano Mattei (Italy)
424	A Comparative Stability Analysis of Underactuated versus Fully-Actuated Rotorcrafts Having Time-Delay Feedback	Jose Carmen Lopez Hernandez, Juan Antonio Escareno Castro,César Fernando Méndez-Barrios, Ouidad LABBANI, Juan Carlos Coronado Salazar, Héctor Méndez-Azúa

		(France)
108	Homogeneous Finite Time Higher Order Sliding Mode Control Applied to an Upper Limb Exoskeleton Robot	Ratiba Fellag, Mustapha Hamerlain, Salah Laghrouche, Mohamed Guiatni, Nouara Achour (Algeria)

S-51 Intelligent Decision Making		
Chair(s): Juan Antonio Morente-Molinera		
Paper ID	Title	Authors
304	Coordinated Distributed Decision Making on Social Influence Networks	Wynn C. Luca Tummolini (USA)
233	Organizing Internet Opinions to Improve Their Usefulness Using Fuzzy Ontologies and Sentiment Analysis	Juan Antonio Morente-Molinera, Francisco Javier Cabrerizo, Kou Gang, C Pang, Sergio Alonso, Enrique Herrera-Viedma (Spain)
212	Audio Tempo Estimation Method Improved by Rhythm Pattern and Data Augmentation	Fu-Hai Frank Wu (Taiwan)
348	An Approach for Handling Partially Visible Human Shapes in People Detection Systems	Avanish Shrestha, Tapanan Yeophantong, Kwankamol Nongpong (Thailand)
300	Automatic Acute Lymphoblastic Leukemia Detection and Comparative Analysis from Images	Md. Nuruddin Bhuiyan, Shantanu Kumar Rahut, Razwan Ahmed Tanvir, Shamim Ripon (Bangladesh)
106	Facial Expression Recognition Based on DWT Feature for Deep CNN	Bendjillali Ridha Ilyas, Beladgham Mohammed, Merit Khaled, Abdelmalik Taleb Ahmed, ALOUANI Ihsen (Algeria)
530	Monitoring Mental Health Using Smart Devices with Text Analytical Tool	Norah Alghamdi (Saudi Arabia)

S-52 Cloud, Parallel and Distributed Computing		
Chair(s): El-Hasan Tareq		
Paper ID	Title	Authors
63	Easily Implementable Time Series Forecasting Techniques for Resource Provisioning in Cloud Computing	Michel Fliess, Cédric Join, Maria Bekcheva, Moradi Alireza, Hugues Mounier (France)
416	Efficient Content Distribution and Storage P2P System Based on Information Dispersal	Francisco de Asís Lopez-Fuentes, Javier Mendoza-Almanza, Ricardo Marcelín-Jiménez, Betzayda Velázquez-Méndez (Mexico)
262	Internet of Thing (IoT) Based Remote Labs in Engineering	El-Hasan Tareq (Jordan)
81	SPORES: A New Distributed Heuristic Inspired by Fungi Reproduction	Abdeslam Jakjoud, Maria Zrikem, Claude Chanchole (France)

415	Optimal Network Coding Based on Machine Learning Methods for Collaborative Networks	Francisco de Asís Lopez-Fuentes, Javier Mendoza-Almanza (Mexico)
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53 Nonlinear Optimization Problems		
Chair(s): Arnaud Lazare		
Paper ID	Title	Authors
321	Novel Approach towards Global Optimality of Optimal Power Flow Using Quadratic Convex Optimization	Hadrien Godard, Sourour Elloumi, Amelie Lambert, Jean Maeght, Manuel Ruiz (France)
89	Utility Functions and Constrained Additivity	Radko Mesiar, Anna Kolesarova (Slovakia)
210	Theoretical Fundamentals for Unimodality Estimation of an Objective Functional in the Optimal Control Problem	Askhat Diveev, Elizaveta Shmalko, Elena Sofronova (Russia)
169	Interval Observers Design for Uncertain Multiple Model Systems	Naima Sehli, Kaouther Ibn Taarit, Tarek Raïssi, Moufida Ksouri (Tunisia)
389	Semidefinite Programming Relaxations through Quadratic Reformulation for Box-Constrained Polynomial Optimization Problems	Arnaud Lazare, Sourour Elloumi, Amelie Lambert (France)
141	Active FTC Approach Design for T-S Fuzzy Systems under Actuator Saturation	Sabrina Aouaouda, Lotfi Moussaoui, Ines Righi (Algeria)

S-54 Control Systems with Applications		
Chair(s): Samira EL Faiz		
Paper ID	Title	Authors
257	Optimal Sizing and Placement of Multiple Distributed Generators Using Teaching Learning Based Optimization Algorithm in Radial Distributed Network	Gargi Trivedi, Anilkumar Markana, Praghresh Bhatt, Vivek Patel (India)
344	Design of Mamdani Type Fuzzy Controller for a Hybrid Solar-Electric Dryer: Case Study of Clay Drying	Ahmed Zoukit, Hicham El Ferouali, Issam Salhi, Said Doubabi, Naji Abdenouri (Morocco)
40	Large Space Dimension Reinforcement Learning for Robot Position/Force Discrete Control	Adolfo Perrusquia, Wen Yu, Alberto Soria (Mexico)
86	Optimal Tuning Rules for Integrating Processes for 2-DOF Parallel Control Structure	Mohammad Irshad, Ahmad Ali (India)
478	Energy Management of Fuel Cell Vehicle with Hybrid Storage System: A Frequency Based Distribution	Hajer Marzougui, Ameni Kadri, Faouzi Bacha, Mansour Amari (Tunisia)
142	Reduced Modelling of Transmission Line Circuits Using a Novel Nonlinearity Aware TPWL with Adaptive Sampling	Shifali Kalra, Mashuqun Nabi (India)
21	Robust Pole Placement with Minimum Gain for Constrained Linear Systems	Samira EL Faiz, Abdellah Benzaouia (Morocco)

S-55 Information Systems		
Chair(s): Per Sieverts Nielsen		
Paper ID	Title	Authors
166	Hybrid Deep Learning and HOF for Anomaly Detection	Slim Hamdi, Samir bouindour, Kais Loukil, Hichem Snoussi, Mohamed Abid (France)
413	Vehicle to Vehicle Distance Measurement for Self-Driving Systems	Abdelmoghit Zaarane, Ibtissam Slimani (Morocco)
522	Data Pre-Processing Techniques in the Regional Emissions Load Profile Case	Angreine Kewo, Pinrolinvic Manembu, Per Sieverts Nielsen (Denmark)
383	Towards a Pancreatic Lesions Disease Classification System Based on Ontologies	Khouloud Fakhfakh, Ahmed Maalel, Waad Farhat (Tunisia)
187	A New Network Anomaly Detection Method Based on Header Information Using Greedy Algorithm	Çağatay Ateş, Süleyman Özdel, Emin Anarım (Turkey)
391	A Novel Approach to Improve the Record Linkage Process	Hamid Naceur Benkhalel, Djamel Berrabah, Faouzi Boufares (France)
414	Vehicle License Plate Localization and Recognition System for Intelligent Transportation Applications	Ibtissam Slimani, Abdelmoghit Zaarane (Morocco)

S-56 WiP Session: Optimization and Decision Making		
Chair(s): Foad Mahdavi Pajouh and Sara Séguin		
Paper ID	Title	Authors
WiP-2	Robotic process automation (RPA) using an integer linear programming formulation	Sara Séguin and Guillaume Routhier (Canada)
WiP-25	Integration of production scheduling and preventive maintenance in a Colombian footwear sole maker company	Eliana Maria Gonzalez-Neira, Andres Felipe Yaya-Bohorquez and Jorge Enrique Leon-Bernate (Colombia)
WiP-278	Detecting a most closeness-central clique in complex networks	Foad Mahdavi Pajouh, Farzaneh Nasirian, Balabhaskar Balasundaram (USA)
WiP-19	An aggregation technique for capturing inner dependency among criteria in multi-layer hierarchical structure	Debasmita Banerjee and Debashree Guha (India)
WiP-20	Minimum Volume Ellipsoid Comprising a Subset of Points	Fabrizio Dabbene and Pavel Shcherbakov (Italy)
WiP-46	System Survivability to intelligent threats of continuous attacks	Mohamed Naceur Azaiez (Tunisia)
WiP-4	A Decision-Making Tool to Help Daycare Centers Plan Weekly Meal Schedules	Geoffrey Glangine, Sara Séguin, Bruno Bouchard, Kevin Bouchard and Sébastien Gaboury (Canada)

S-57 Wireless Communications and Telecommunication Applications		
Chair(s): Dalila Tayachi		
Paper ID	Title	Authors
437	Improving Industrial Computing Capacity with Fog Computing and Smart Systems	Anderson Carvalho, Niall O' Mahony, Lenka Krpalkova, Sean Campbell, Pat Doody, Joseph Walsh (Ireland)
454	Bio-Inspired OLSR Routing Protocol	Nassir Harrag, Abdelghani Harrag (Algeria)
211	An Improvement of Service Qualities by Edge Computing in Network-Oriented Mixed Reality Application	Shiori Takagi, Junichi Kaneda, Shin'ichi Arakawa, Masayuki Murata (Japan)
158	Supervision and Energy Management System for Smart Telecom Tower Based on the LoRaWAN Protocol	Olle Michel Kam, Camel Tanougast, Pierre Kasser, Harris Ramenah, Stephane Noël, Kondo Hloindo Adjallah (France)
402	EMG Onset Detection Caused by Temperature Variation	Efrén Herrera Muentes, Edgar Marcelo Vela Pinela, Nathaly Simuy Sánchez Chan, Victor Andres Arce Dominguez, Katherine Molina, Luis Efrén Herrera Baños, Douglas Plaza (Ecuador)
403	Spectral Features of Myoelectric Signal: Approach on Temperature Variation	Efrén Herrera Muentes, Katherine Molina, Edgar Marcelo Vela Pinela, Dennys Cortez, Luis Efrén Herrera Baños, Douglas Plaza (Ecuador)

S-58 Control Applications (Part 2)		
Chair(s): Fu-Hai Frank Wu		
Paper ID	Title	Authors
464	Sensor Fault Tolerant Sliding Mode Control Using Information Filters with Application to a Two-Wheeled Mobile Robot	Boussad Abci, Maan El Badaoui El Najjar, Vincent Cocquempot, Gerald Dherbomez (France)
201	Terminal Sliding Mode Control of a Virtual Humanoid Robot	Misael Sanchez-Magos, Mariana Ballesteros Escamilla, David Cruz Ortiz, Ivan Salgado, Isaac Chairez (Mexico)
316	Multi-Mode Control System of an Unmanned Vessel with Fuzzy Hybridization of Controllers	Viacheslav Pshikhov, Mikhail Medvedev, Victor Soloviev (Russia)
312	A RISE-Based Controller Fine-Tuned by an Improved Genetic Algorithm for Human Lower Limb Rehabilitation Via Neuromuscular Electrical Stimulation	Héber Hwang Arcolezi, William R. B. M. Nunes, Selene Leya Cerna Ñahuis, Marcelo Augusto Assunção Sanches, Marcelo C. M. Teixeira, Aparecido Augusto de Carvalho (Brazil)

336	Constrained Optimal Control of Bilinear Systems: Application to an HVAC System	Nihale El Boukhari, El Hassan Zerrik (Morocco)
208	Nonlinear Optimal Control of the Heel Angle of a Rocket	Mohamed Aliane, Nacima Moussouni, Mohand Bentobache (Algeria)

S-59 Energy Control Applications		
Chair(s): Souad Bezzaoucha		
Paper ID	Title	Authors
347	Optimal Topology and Repowering Time for Offshore Wind Turbines	Nacef Tazi, Fatemeh Safaei, Eric Chatelet, Youcef Bouzidi (France)
504	Unit Commitment : An Escort Dynamics Approach	Udaykumar Suryawanshi, Mayur Sawant, Joseph Moyalan, Mohd Adil Sheikh, Sudhir Bhil (India)
526	Influence of power management strategies on the sizing and ageing of hybrid energy storage system composed with High power and High energy Li-ion batteries	Laid Degaa, Bachir Bendjedja, Nassim Rizoug, Abdelkader Saidane and Cherif Larouci (France)
191	Performance Analysis and Islanding Detection of 3-Phase 1500V Dc Grid Inverter	Sonam Kharade, Nikhil Pagar, Sudeep Bhagat, Asha Sharma (India)
159	PV System Sizing with Storage Management: A Comparative Study Based on Mixed Integer Linear Programming	Mohamed Hascuri, Mustapha Ait Rami, Mostafa Derrhi (Morocco)
195	Optimal Tracking Control for a Permanent Magnet Synchronous Generator	David Cortes-Vega, Fernando Ornelas-Tellez, Juan Anzures Marín, Carlos Cordova Aguilar (Mexico)
266	Detection and SVM Classification of Broken Rotor Bars Fault in Induction Motor Using WPA	Djalel Drici, Yahia Kourd, Mostefa Mohamed Touba, Hichem Merabet, Khouloud Bedoud (Algeria)