International Journal on Sciences and Techniques of Automatic control & computer engineering – IJ-STA

Honorary Editors

Prof. Mohamed KAMOUN, National School of Engineering of Sfax, Tunisia. Prof. Ahmed TOUMI, National School of Engineering of Sfax, Tunisia.

Editors in Chief

Prof. Mohamed CHAABANE, National School of Engineering of Sfax, Tunisia. Prof. Yassine KOUBAA, National School of Engineering of Sfax, Tunisia.

Guest Editor of Special issue on Advances in Nonlinear Dynamics and applications

Prof. Samir LADACI, National Polytechnic School of Constantine, Algeria E-Mail: samir_ladaci@yahoo.fr

Associated Guest Editors:

Prof. Ahmed Said NOURI, University of Sfax, Tunisia Prof. Driss MEHDI, University of Poitiers, France

Publishing Editor

Prof. Abdessattar CHAARI, National School of Engineering of Sfax, Tunisia.

Publishing Coordinator

Prof. Maher KHARRAT, National School of Electronics and Telecommunications of Sfax, Tunisia. E-Mail: maherkharrat@yahoo.fr

Address:

Department of Electrical Engineering, Research Unit of Automatic Control, National School of Engineering of Sfax, Route Soukra Km 3.5, B.P. 1173, 3038 Sfax, Tunisia.

For information, contact the Editors in Chief:

Prof. Mohamed CHAABANE and Prof. Yassine KOUBAA

E-Mails: Mohamed.chaabane@sta-tn.com - Yassine.koubaa@enis.rnu.tn

International Editorial Board

Mohamed ABID, National School of Engineering of Sfax, Tunisia.

Mohamed Adel ALIMI, National School of Engineering of Sfax, Tunisia.

Abdelouahab AITOUCHE, CRIStAL UMR CNRS 9189, University of Lille1, France.

Marc ANTONINI, I3S-CNRS, University of Nice, France.

Khaled BELARBI, LAR, University of Constantine, Algeria.

Ridha BEN ABDENNOUR, National School of Engineering of Gabès, Tunisia.

Mohamed BENREJEB, National School of Engineering of Tunis, Tunisia.

Jacques BERNUSSOU, LAAS/CNRS, University of Paul Sabatier Toulouse, French.

Abdellah BENZAOUIA, Faculty of Science Semlalia, Marrakech, Morocco.

Gérard BLOCH, CRAN-ESSTIN, University of Nancy, France.

Mohamed BOUSSAK, Ecole Centrale, University of Marseille, France.

Mohamed CHTOUROU, National School of Engineering of Sfax, Tunisia.

Nabil DERBEL, National School of Engineering of Sfax, Tunisia.

Rachid DHIFAOUI, INSAT, University of Tunis, Tunisia.

Ahmed EL HAJJAJI, MIS, University of Picardie Amiens, France.

Gérard FAVIER, I3S-CNRS, University of Nice, France.

Farhat FNAIECH, ESSTT, University of Tunis, Tunisia.

Germain GARCIA, LAAS-CNRS, University of Paul Sabatier Toulouse, France.

Abdelazziz HAMZAOUI, CReSTIC, University of Champagne Ardenne, France.

Lotfi KAMOUN, LETI, National School of Engineering of Sfax, Tunisia.

Mohamed Ben Ali KAMOUN, National School of Engineering of Sfax, Tunisia.

Mekki KSOURI, National School of Engineering of Tunis, Tunisia.

Samir LADACI, NPSC, University of Constantine, Algeria

Mongi LAHIANI, LETI, National School of Engineering of Sfax, Tunisia.

Didier MAQUIN, CRAN-ENSEM-INPL, University of Nancy, France.

Ahmed MASMOUDI, LREEV, National School of Engineering of Sfax, Tunisia.

Nouri MASMOUDI, LETI, National School of Engineering of Sfax, Tunisia.

Driss MEHDI, LIAS/ESIP, University of Poitiers, French.

Mohamed Faouzi MIMOUNI, National School of Engineering of Monastir, Tunisia.

M'SIRDI Nacer K., LSIS, university of Marseille, France

Ricardo A. Ramirez MENDOZA, ITESM, Campus Monterrey, Mexico.

 $\label{lem:condition} \mbox{Fouad MESQUINE, Faculty of Science Semilalia, Marrakech, Morocco.}$

Lamine MILI, Virginia Polytechnic Institute (VPI), USA.

Radhi M'HIRI, Faculty of Science Tunis, University of Tunis, Tunisia.

Faouzi M'SAHLI, National School of Engineering of Monastir, Tunisia.

Mohand OUHROUCHE, University of Quebec at Chicoutimi, Canada.

Dumitro POPESCU, University of Politehnica of Bucharest.

Mounir SAMET, LETI, National School of Engineering of Sfax, Tunisia.

Maarouf SAAD, School of higher technology, University of Quebec, Canada.

Fernando TADEO, Universidad de Valladolid, Prado de la Magdalena, Spain.

Jalel ZRIDA, ESSTT, University of Tunis, Tunisia.

International Journal on Sciences and Techniques of Automatic control & computer engineering – IJ-STA

Description

The objective of the international journal on Sciences and Techniques of Automatic control and computer engineering (IJ-STA) is to publish original papers of permanent reference value in all fields of electrical, computer engineering and systems. This journal selects, for publication, the best papers presented at the international conference on Sciences and Techniques of Automatic control and computer engineering (STA). The international journal IJ-STA covers strongly related research areas Sciences, Techniques of Automatic control, and computer engineering systems. The backgrounds of the subscribers to the international journal IJ-STA are diversified and include industrial processes (thermal, hydraulics, biotechnical etc.), irrigation systems, greenhouses, mobile robots, articulated mechanical systems, biotechnology, aerospace, aeronautic, control engineering, etc. The international journal IJ-STA provides then a very strong synergy effect throughout the interdisciplinary research and varied application areas.

Scope of the journal

The international journal IJ-STA publishes papers on theoretical analysis, experimental studies and applications in the field of automatic control and computer engineering. The Topics of interest include, but are not limited to:

Adaptive control Agricultural processes Artificial vision Automotive control Biomedical control systems Biotechnological processes Communication systems Control architectures Digital and analogue control Discrete-event systems Distributed systems Decentralized control Education and training Electrical machines Electrical networks Embedded systems

Estimation and prediction
Evolutionary computation
Fault diagnosis systems
Fault-tolerant systems
Fuzzy systems
Hybrid systems
Image processing
Industrial automation
Industrial networking
Intelligent control systems
Large-scale systems
Manufacturing systems
Measurement engineering
Mechatronics
Modeling and simulation
Multivariable systems

Networked systems
Non-linear systems
Optimal control
Power systems control
Process control
Predictive control
Real-time control
Robotics
Robust control
Sensors and actuators
Signal processing
Smart structures control
Stochastic systems
Supervision systems
System identification

Neural networks

Information for authors

The international journal IJ-STA offers an opportunity to contributors to publish their original research papers and review articles that detail the most important and the most recent technological advances of electrical areas, computer engineering and systems, as well as related disciplines. The editors invite academics, scientists and industrials to submit original papers by e-mail to the publishing editors, while respecting the guidelines for authors (http://www.sta-tn.com/guidelines_for_authors.htm).

The scientific committee of the international conference STA selects the to-be-published papers among the best presented papers of this conference in all fields. Notified authors who accept to publish their works in the international journal IJ-STA will be requested to send an extended version of their papers to the publishing editors. Only the reviewed and accepted papers by the Editorial Board of international journal IJ-STA will be published.

It is to note that the manuscript must be limited to 15 pages (including figures and appendices), in the format of the international conference STA. Authors of accepted manuscripts are requested to send a short biography (less than 150 words) and a photograph (jpeg format).

Copyright notice

Copyright of accepted articles for publication in the international journal IJ-STA is available on the website (http://www.sta-tn.com), to ensure both the widest dissemination and protection of material published in this journal. Authors are asked to assign world-wide copyright in both print and other media in their papers, including abstracts, to the international journal IJ-STA. This enables us to guarantee copyright protection against infringement, and to disseminate your article, and our journal, as widely as possible.

A copyright transfer must be filled and signed by the authors and sent back to the publishing editors. A scanned copy of the signed format may be accepted by e-mail.

Subscription information

If you wish to subscribe to our international journal IJ-STA, please fill in and send us the order form together with due payment (www.sta-tn.com):

ORDER FORM	
I wish to receive / continue to receive a subscription to: International Journal on Sciences and Techniques of Automatic control & computer engineering – IJ-STA Name:	
Affiliation (University / Company Name):	
Yes No Sample copy check: Renew New Address change	
N° of subscription Price for two issues yearly (or single issue) postage included.	
Address:	
Telephone: E-mail:	
Payment has to be made by Bank Transfer or order form made payable to: Association Tunisienne des Techniques Numériques et de l'Automatique Bank : Société Tunisienne de Banque ; Agence: Sfax Hached Account Number : STB 10 700 039 2028 301788 82 Swift code : STB KTNTT 940 IBAN : TN 59 1070 0039 2028 3017 8882	

Standard subscription rates (2016) Single Issue Rates (2016) Individual: one Year 140 € (200 DT) Institutional: one Year 160 € (300 DT) Individual: 80 € (120 DT) Institutional: 140 € (200 DT)

Address: Department of Electrical Engineering, Research Unit of Automatic Control, National School of Engineering of Sfax, University of Sfax, Route Soukra Km 3.5

B.P. 1173, 3038 Sfax, Tunisia.

E-Mails: Mohamed.chaabane@sta-tn.com - Yassine.koubaa@enis.rnu.tn

International Journal on Sciences and Techniques of Automatic control & computer engineering – IJ-STA

Volume 10, N° 1, Special Issue Advances in Nonlinear Dynamics and applications AND, April 2016

Fault Detection Identification and Isolation via high-gain observer in a Semi Continuous Stirred Tank Reactor A. ABDELKADER, M. BOUSSADA, K. FIATY, H. HAMMOURI and A. S. NOURI	2055-2061
Diesel Engine Control Strategy for a Programmable Engine Control Unit M. FARRUGIA, C. SEYCHELL, S. CAMILLERI, G. FARRUGIA, C. CARUANA and M. FARRUGIA	2062-2071
Continuous-discrete time observer for a class of state affine nonlinear systems: application to an induction motor O. HERNANDEZ, T. MENARD, M. FARZA, CM. ASTORGA-ZARAGOZA and GV. GUERRERO-RAMIREZ	2072-2078
Improvement Tolerant Control of Shunt Active Power Filter Under Unbalanced Loads K. FRIFITA, M. BOUSSAK, A. NAAMANE and N. M'SIRDI	2079-2084
Stabilization of a Genesio-Tesi Chaotic System Using a Fractional Order $Pl^\lambda D^\mu$ Regulator K. RABAH, S. LADACI and M. LASHAB	2085-2090
Synthesis of a Sliding mode Multi-Observers for Nonlinear Perturbed Output Systems: Application to a denitrification process K. HFAIEDH, K. DAHECH, Y. MASSAOUDI and T. DAMAK	2091-2096
Study on Transformer Insulation Condition Evaluation Method Based on Equipment Operation Load D. JIANZHUO, D. MING, W. LI and Ren MING	2097-2102

Bibliographic & ordering information

ISSN: 1737-7749, Volume 10, April, 2016. Edition: Academic Publication Center, CPU, Tunisia.