

REGULAR PAPERS

- A Survey of Controller Designs for New Generation UAVs: The Challenge of Uncertain Aerodynamic Parameters**  
M. G. Michailidis, M. J. Rutherford, and K. P. Valavanis 801
- Stability of Switched Positive Linear Systems with Actuator Saturation under Mode-dependent Average Dwell Time**  
L. You, J. Fang, and X. Mu 817
- Practical Approach for Controlling Optical Image Stabilization System**  
W.-Y. Kim, H.-T. Seo, S. Kim, and K.-S. Kim 824
- PD+SMC Quadrotor Control for Altitude and Crack Recognition Using Deep Learning**  
J. M. Vazquez-Nicolas, E. Zamora, I. González-Hernández, R. Lozano, and H. Sossa 834
- Standoff Tracking of a Moving Target for Quadrotor Using Lyapunov Potential Function**  
H. Ye, X. Yang, H. Shen, and R. Li 845
- Online Delay Estimation and Adaptive Compensation in Wireless Networked System: An Embedded Control Design**  
S. M. Rajkumar, S. Chakraborty, R. Dey, and D. Deb 856
- Output Regulation for a Class of Uncertain Nonlinear Time-delay Systems by Output Feedback Control**  
G.-Z. Meng and K.-M. Ma 867
- Stability Criteria for Systems with Multiple Probabilistic Intervals Time-varying Delay**  
Z. Yin, X. Jiang, and F. Wang 877
- Two-stage Gradient-based Iterative Estimation Methods for Controlled Autoregressive Systems Using the Measurement Data**  
F. Ding, L. Lv, J. Pan, X. Wan, and X.-B. Jin 886
- Operating Range Scheduled Robust Dahlin Algorithm to Typical Industrial Process with Input Constraint**  
X. Tian, H. Peng, X. Luo, S. Nie, F. Zhou, and X. Peng 897
- Passive Fuzzy Control Design for a Class of Nonlinear Distributed Parameter Systems with Time-varying Delay**  
X. Yin, X. Song, and M. Wang 911
- $H_\infty$  Containment Control of Multi-agent Systems with Random Communication Time-varying Delay**  
M. He and X. Mu 922
- Fast Finite-time  $H_\infty$  Control for a Class of  $p$ -normal Form Nonlinear Systems with Output Constraint and Its Application**  
L. Hu and X. Li 930
- Leader-following Exponential Consensus of Discrete-time Multi-agent Systems with Time-varying Delay and Intermittent Communication**  
S. Liang, Z. Liu, and Z. Chen 944

- Online Ensemble Topology Selection in Expensive Optimization Problems**  
Y. Tenne 955
- Event-triggered Coordination Control for Multi-agent Systems with Connectivity Preservation**  
Y. Fan, J. Chen, C. Song, and Y. Wang 966
- Decentralized Adaptive Event-triggered Control for Nonlinear Interconnected Systems in Strict-feedback Form**  
Y. Ji, H. Zhou, and Q. Zong 980
- Time-varying Formation Tracking for Second-order Multi-agent Systems Subjected to Switching Topology and Input Saturation**  
J. Liu, J. Fang, Z. Li, and G. He 991
- Study on Asymptotic Stability of Fractional Singular Systems with Time Delay**  
D. Li, L. Wei, T. Song, and Q. Jin 1002
- Optimal Tracking Performance of NCSs with Time-delay and Encoding-decoding Constraints**  
J.-W. Hu, X.-S. Zhan, J. Wu, and H.-C. Yan 1012
- Generalized Optimal and Explicit PI/PID Tuning Formulas for Under-damped Second-order Systems**  
S. Albatran, I. A. Smadi, and H. A. Bataineh 1023
- A Relaxed Observer-based Control for LPV Stochastic Systems Subject to  $H_\infty$  Performance**  
G.-W. Chen and C.-C. Ku 1033
- A PD-type Iterative Learning Control Algorithm for One-dimension Linear Wave Equation**  
M. Hamidaoui, C. Shao, and S. Haouassi 1045
- Rebalancing Method for a Front-loading Washing Machine Using a Robot Balancer System**  
M. G. Jo, J. H. Kim, and J. W. Choi 1053
- Study on the Handling Qualities Enhancement of Fixed-wing Aircraft Using Adaptive Neural Network**  
D. H. Lee, C.-J. Kim, S. W. Hur, and S. H. Lee 1061

**INDEXED IN** Science Citation Index Expanded (SciSearch), SCOPUS, INSPEC, Google Scholar, ProQuest, Current Contents/Engineering, Computing and Technology, EI-Compendex, Journal Citation Reports/Science Edition, OCLC, Summon by Serial Solutions, Korea Citation Index.

# International Journal of Control, Automation, and Systems

#### EDITOR-IN-CHIEF

Professor Keum-Shik Hong  
School of Mechanical Engineering  
Pusan National University  
Busan 46241, Korea  
E-mail: kshong@pusan.ac.kr

#### EDITORS

Hyo-Sung Ahn, Gwangju Institute of Science and Technology, Gwangju, Korea  
hyosung@gist.ac.kr

Kyoung Kwan Ahn, University of Ulsan, Ulsan, Korea  
kkahn@ulsan.ac.kr

Hamid Reza Karimi, Politecnico di Milano, Milan, Italy  
hamidreza.karimi@polimi.it

Euntai Kim, Yonsei University, Seoul, Korea  
etkim@yonsei.ac.kr

Won-jong Kim, Texas A&M University, TX, U.S.A.  
wjkim@tamu.edu

Doo Yong Lee, KAIST, Daejeon, Korea  
leedy@kaist.ac.kr

Jay H. Lee, KAIST, Daejeon, Korea  
jayhlee@kaist.ac.kr

Young IL Lee, Seoul National University of Science and Technology, Seoul, Korea  
yilee@seoultech.ac.kr

Myotaeg Lim, Korea University, Seoul, Korea  
mlim@korea.ac.kr

Fumitoshi Matsuno, Kyoto University, Kyoto, Japan  
matsuno@me.kyoto-u.ac.jp

Yoshito Ohta, Kyoto University, Kyoto, Japan  
yoshito\_ohta@i.kyoto-u.ac.jp

Chan Gook Park, Seoul National University, Seoul, Korea  
chanpark@snu.ac.kr

Ju Hyun Park, Yeungnam University, Kyongsu, Korea  
jessie@ynu.ac.kr

PooGyeon Park, POSTECH, Pohang, Korea  
ppg@postech.ac.kr

Fuchun Sun, Tsinghua University, Beijing, China  
fcsun@tsinghua.edu.cn

Guang-Hong Yang, Northeastern University, Liaoning, China  
yangguanghong@ise.neu.edu.cn

#### ASSOCIATE EDITORS

Changsun Ahn, Pusan National University, Busan, Korea

Shun-ichi Azuma, Nagoya University, Nagoya, Japan

Juhoon Back, Kwangwoon University, Seoul, Korea

Joonbum Bae, UNIST, Ulsan, Korea

David Banjerpongchai, Chulalongkorn University, Bangkok, Thailand

Pinhas Ben-Tzvi, Virginia Tech, VA, USA

Mohammed Chadli, University of Paris-Saclay, Univ Evry, Paris, France

Xiao-Heng Chang, Bohai University, Liaoning, China

Jun Cheng, Guangxi Normal University, Guilin, China

Min-Sen Chiu, National University of Singapore, Singapore

Andrea Cristofaro, University of Camerino, Camerino, Italy

Truong Quang Dinh, University of Warwick, Coventry, UK

Juxiang Dong, Northeastern University, Liaoning, China

Takahiro Endo, Kyoto University, Kyoto, Japan

Yonghao Gui, Aalborg University, Aalborg East, Denmark

Soohee Han, POSTECH, Pohang, Korea

Wei He, University of Science and Technology Beijing, Beijing, China

Le Van Hien, Hanoi National University of Education, Hanoi, Viet Nam

Changchun Hua, Yanshan University, Qinhuangdao, China

Pilwon Hur, Texas A&M University, TX, USA

Yingmin Jia, Beihang University, Beijing, China

Bin Jang, NUAU, Nanjing, China

Maolin Jin, KIRO, Pohang, Korea

Kang-Hyun Jo, University of Ulsan, Ulsan, Korea

Nam H. Jo, Soongsil University, Seoul, Korea

Niket S. Kaisare, Indian Institute of Technology Madras, Chennai, India

Mathiyalagan Kalidass, Bharathiar University, Tamilnadu, India

Tae-Koo Kang, Sangmyeong University, Cheonan, Korea

Muhammad Jawad Khan, National Univ. of Sciences and Technology, Islamabad, Pakistan

Arkadii Kim, The Russian Academy of Sciences(Ural Branch), Ekaterinburg, Russia

Chang-Sei Kim, Chonnam National University, Gwangju, Korea

DaeEun Kim, Yonsei University, Seoul, Korea

Do Wan Kim, Hanbat National University, Daejeon, Korea

Gon-Woo Kim, Chungbuk National University, Chungbuk, Korea

Jong-Han Kim, Kyung Hee University, Gyeonggi, Korea

Jongrae Kim, University of Leeds, UK

Kyeong-Hwa Kim, Seoul National University of Science and Technology, Seoul, Korea

Min Young Kim, Kyungpook National University, Daegu, Korea

Seungkeun Kim, Chungnam National University, Daejeon, Korea

Tae-Hyoung Kim, Chung-Ang University, Seoul, Korea

Kyoungchul Kong, KAIST, Daejeon, Korea

Joseph Kwon, Texas A&M University, TX, USA

Ohmin Kwon, Chungbuk National University, Cheongju, Korea

Dongjun Lee, Seoul National University, Seoul, Korea

Ho Jae Lee, Inha University, Incheon, Korea

Jong Min Lee, Seoul National University, Seoul, Korea

Hongbo Li, Tsinghua University, Beijing, China

Hongyi Li, Guangdong University, Guangzhou, China

Shihua Li, Southeast University, Nanjing, China

Yangmin Li, The Hong Kong Polytechnic University, Kowloon, Hong Kong

Huaping Liu, Tsinghua University, Beijing, China

Yajuan Liu, North China Electric Power University, Beijing, China

Yan-Jun Liu, Liaoning University of Technology, Liaoning, China

Changki Mo, Washington State University Tri-Cities, WA, U.S.A.

Saleh Mobayen, University of Zanjan, Zanjan, Iran

Un-Chul Moon, Chung-Ang University, Seoul, Korea

Aldo Jonathan Munoz-Vazquez, Texas A&M University, Texas, U.S.A.

Hyun Myung, KAIST, Daejeon, Korea

Noman Naseer, Air University, Islamabad, Pakistan

Sing Kiong Nguang, University of Auckland, Auckland, New Zealand

Quoc Chi Nguyen, Ho Chi Minh City University of Technology, Ho Chi Minh, Viet Nam

Vu Huy Nguyen, Lawrence Livermore National Laboratory, CA, U.S.A.

Kwang-Kyo Oh, Sunchon National University, Jeonnam, Korea

Sehoon Oh, DGIST, Daegu, Korea

Yongping Pan, National University of Singapore, Singapore

Shinsuk Park, Korea University, Seoul, Korea

Sukho Park, DGIST, Daegu, Korea

Wenhai Qi, Qufu Normal University, Rizhao, China

Muhammad Rehan, Pakistan Institute of Engineering and Applied Sciences, Pakistan

Seok Chang Ryu, Texas A&M University, TX, USA

Atsushi Satoh, Iwate University, Iwate, Japan

Young Ik Son, Myongji University, Kyunggi, Korea

Xiaojie Su, Chongqing University, Chongqing, China

Young Soo Suh, University of Ulsan, Ulsan, Korea

Ning Sun, Nankai University, Tianjin, China

Sangkyung Sung, Konkuk University, Seoul, Korea

Yang Tang, East China Univ. of Sci. and Tech., Shanghai, China

Mien Van, Queen's University Belfast, Belfast, Ireland

Huanqing Wang, Carleton University, Ottawa, Canada

Yueying Wang, Shanghai University, Shanghai, China

Augie Widoyatriatmo, Institut Teknologi Bandung, Indonesia

Zheng-Guang Wu, Zhejiang University, Zhejiang, China

Xiangpeng Xie, Nanjing Univ. of Posts and Telecommunications, Jiangsu, China

Seung-Joon Yi, Pusan National University, Pusan, Korea

Sooyeong Yi, Seoul Nat'l Univ. of Sci. and Tech., Seoul, Korea

Jun Yoneyama, Aoyama Gakuin University, Kanagawa, Japan

Sung Jin Yoo, Chung-Ang University, Seoul, Korea

Son-Cheol Yu, POSTECH, Gyeongbuk, Korea

Ding Zhai, Northeastern University, Liaoning, China

Dan Zhang, University of Technology Zhejiang, Zhejiang, China

Xian-Ming Zhang, Swinburne University of Technology, Melbourne, Australia

Zhijia Zhao, Guangzhou University, Guangzhou, China

Guangdeng Zong, Qufu Normal University, Shandong, China

Seung-Joon Yi, Pusan National University, Pusan, Korea

#### Former EDITOR-IN-CHIEF

Myung Jin Chung, KAIST, Daejeon, Korea

Jin Bae Park, Yonsei University, Seoul, Korea

Jae-Bok Song, Korea University, Seoul, Korea

Young Hoon Joo, Kunsan Nat'l University, Chonbuk, Korea

**MANUSCRIPT EDITOR** Kaeun Choi, ICROS, Korea

**CONTACT OFFICE** : Institute of Control, Robotics and Systems, Suseo Hyundai-Ventureville 723, Bamgogae-ro 1-gil 10, Gangnam-gu, Seoul 06349, Korea. Tel: +82-2-6949-5806 Fax: +82-2-6949-5807, E-mail: journal@ijcas.com

Published by Institute of Control, Robotics and Systems and the Korean Institute of Electrical Engineers. Distributed by Springer. Printed by Dream Media.  This journal is published monthly, on the first day of each month.  This journal was supported by the Korean Federation of Science and Technology Societies Grant funded by the Korean Government(Ministry of Education).  Subscription information is available at <http://www.ijcas.com> where full-text is available.  It is printed on acid-free paper.  Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

# Information for Authors

International Journal of Control, Automation, and Systems

#### Aims and Scope

The International Journal of Control, Automation, and Systems (IJCAS) is a monthly published periodical. As of 2003, it is a joint publication of Institute of Control, Robotics and Systems (ICROS) and the Korean Institute of Electrical Engineers (KIEE). The purpose of the journal is to establish a high quality archival periodical presenting state of the art, recent advances and practical applications of control, automation and systems engineering. In the journal, the three technical areas included are: Control Theory and Applications, Robot and Applications, Intelligent Control and Applications.

Two types of contributions are regularly considered:

- (1) *Regular Papers*: Presentation of significant research, development or application of control concepts and normally limited to ten pages in final form.
- (2) *Technical Notes and Correspondence*: Brief technical notes, comments on published areas or established control topics, corrections to papers, and notes published in the Journal. Manuscripts up to five pages are allowed in final form.

#### Conditions of Publication

Submission of a manuscript implies that it has not been copyrighted, published, submitted, nor accepted for publication elsewhere. All submitted manuscripts should be as concise as possible. Longer manuscripts may be considered, but have a proportionately lower probability of acceptance.

#### Peer-Review

All manuscripts are treated as confidential and peer-reviewed by anonymous reviewers selected by Editorial Board. The corresponding author is notified possible of the editor's decision to accept, reject, or request revision of manuscripts. When the final revised manuscript is completely acceptable according to IJCAS format and criteria, it is scheduled for publication in the next available issue.

#### Submission by Internet

Manuscripts can be submitted electronically via our website. This can be done by visiting the IJCAS website at <http://ijcas.com> and following the instructions. Only PDF file is accepted and authors should embed all the fonts needed to print the paper.

#### Manuscript Preparation

- (1) Manuscripts must be written in English and the TeX source-file should be prepared in a LaTeX format (by using IJCAS.cls). Other file formats are accepted also as long as the manuscript is typeset in two-column and single-space structure; however the conversion process by the IJCAS may result in 1 to 3 month delay in the printing process.
- (2) Authors of an accepted manuscript will be required to provide the text of the final version of their manuscript on the website <http://ijcas.com>.

(3) The preferred formats for graphics are TIF, EPS, and JPG formats. High-contrast line figures should be prepared with 600 dpi resolution, and color/gray figures should be prepared with more than 300 dpi resolution. The color figures should be clearly seen even though they are printed back and white printers.

(4) Brief biographies and either clear glossy photographs of the authors or TIF, EPS, and JPG files of the figures should be added in the last page.

#### Manuscript Style

- (1) First page must contain:
  - a) Title of paper, author(s), and affiliation(s);
  - b) Abstract (not exceeding 300 words for Regular Papers or 75 words for Technical Notes and Correspondence, and without equations, references, or footnotes);
  - c) Keywords (at least four key words or phrases);
  - d) Complete mailing address and e-mail address;
  - e) Preferred address for correspondence and return of proofs; and,
  - f) Footnotes (if desired) containing acknowledgement of financial or other support.
- (2) Provide an introduction that includes a statement of the purpose and contribution of the paper.
- (3) References should be cited within the text in numerical order according to their order of appearance. The numbered reference citation should be enclosed in brackets, e.g., "KF is proven in [1]. Dorf [2] introduced another method."
- (4) References should appear at the end of the paper. Example: [1] G. D. Hong, "Call for papers," *IEEE Trans. on Automatic Control*, AC-7, no. 1, pp. 100-105, January 1999.
- [2] C. H. Dorf, *Modern Control Systems*, Addison-Wesley, 1999.
- [3] G. D. Hong, "A way to success," *Proc. of American Control Conference*, San Diego, pp. 106-110, June 1999.

#### Copyright

It is the policy of the IJCAS to own the copyright to the technical contributions that it publishes on behalf of the interests of the IJCAS, its authors, and their employers, and to facilitate the appropriate reuse of this material to others.

#### Page Charge and Reprints

Authors should be charged for publication to make a contribution to defray part of the publication cost. A page charge form (USD 300 under 8 pages) is sent to the authors with proofs. Author will receive 1 hard copy of journal only if the reprint charge (USD 100) is honored.

#### Overlength Page Charge

An overlength page charge is imposed on all papers exceeding 8 pages in length, including illustrations. The charge is USD 100 per page for each page over the first eight.

Institute of Control, Robotics and Systems  
The Korean Institute of Electrical Engineers

Suseo Hyundai-Ventureville 723, Bamgogae-ro 1-gil 10, Gangnam-gu, Seoul 06349, Korea  
TEL: +82-2-6949-5806 / Fax: +82-2-6949-5807 / e-mail: journal@ijcas.com / <http://www.ijcas.com>