

REGULAR PAPERS

Control Theory and Applications

Tracking Performance Improvement for Operator-based Nonlinear Robust Control of Wireless Power Transfer Systems with Uncertainties

X. Gao and M. Deng 545

Variable Gains Sliding Mode Control

S. Alvarez-Rodríguez, G. Flores, and N.A. Ochoa 555

Maximum Likelihood-based Multi-innovation Stochastic Gradient Method for Multivariable Systems

H. Xia, Y. Ji, Y. Liu, and L. Xu 565

Couple-group  $L_2/L_\infty$  Consensus of Nonlinear Multi-agent Systems with Markovian Switching Topologies

X. Li, C. Zhou, J. Zhou, Z. Wang, and J. Xia 575

Relaxed Robust Stabilization Conditions for Nonhomogeneous Markovian Jump Systems with Actuator Saturation and General Switching Policies

N.H.A. Nguyen and S.H. Kim 586

Design of the Linear Quadratic Structure Based Predictive Functional Control for Industrial Processes Against Partial Actuator Failures Using GA Optimization

X. Hu, H. Zou, and L. Wang 597

Output Feedback Tracking Control of Flat Systems via Exact Feedforward Linearization and LPV Techniques

L. Chen and Y. Jia 606

Disturbance Observer-based Adaptive Fault-tolerant Dynamic Surface Control of Nonlinear System with Asymmetric Input Saturation

L. Wang, H.-J. Gong, and C.-S. Liu 617

New Stochastic Stability Criteria for Nonlinear Neutral Markovian Jump Systems

H. Zhang, J. Cao, and L. Xiong 630

A Modified FOPID Versus  $H_\infty$  and  $\mu$  Synthesis Controllers: Robustness Study

S. Seyedtabaai 639

A Parametric Method of Linear Functional Observers for Linear Timevarying Systems

D.-K. Gu, L.-W. Liu, and G.-R. Duan 647

Robust  $H_\infty$  Filtering for Average Dwell Time Switching Systems via a Nonmonotonic Function Approach

Y. Xie, J. Wen, and L. Peng 657

Adaptive Unscented Kalman Filter Based Estimation and Filtering for Dynamic Positioning with Model Uncertainties

F. Deng, H.-L. Yang, and L.-J. Wang 667

A New Approach to Receding Horizon State Estimation for LTI Systems in the Presence of Non-uniform Sampled Measurements

J.A. Isaza-Hurtado, J. J. Martinez, and H.A. Botero-Castro 679

Robust Decentralized Fault Estimation for Loss of Actuator Effectiveness of Multi-motor Web-winding System

X. Chu, X. Nian, M. Sun, H. Wang, and H. Xiong 691

LPV Modeling and Tracking Control of Dissimilar Redundant Actuation System for Civil Aircraft

S. Ijaz, M.T. Hamayun, H. Anwaar, L. Yan, and M.K. Li 705

Robust Control for Electric Fuel Pump with Variant Nonlinear Loads Based on a New Combined Sliding Mode Surface

R. Ding, L. Xiao, and X. Jin 716

Robot and Applications

Simultaneous Localization and Mapping in the Epoch of Semantics: A Survey

M. Suleh and G.-W. Kim 729

Patch-based Stereo Direct Visual Odometry Robust to Illumination Changes

J. H. Jung, S. Heo, and C. G. Park 743

Consensus Based Control Algorithm for Nonlinear Vehicle Platoons in the Presence of Time Delay

P. Yang, Y. Tang, M. Yan, and X. Zhu 752

Onboard Real-time Object Surface Recognition for a Small Indoor Mobile Platform Based on Surface Component Ratio Histogram

H.-W. Chae, H. Yu, and J.-B. Song 765

A Generalized Input-output-based Digital Sliding-mode Control for Piezoelectric Actuators with Non-minimum Phase Property

H. Ma, Y. Li, and Z. Xiong 773

Robust Adaptive Sliding Mode Neural Networks Control for Industrial Robot Manipulators

V. T. Yen, W. Y. Nan, and P. V. Cuong 783

Intelligent Control and Applications

Methodology for Evolving Fuzzy Kalman Filter Identification

D. S. Pires and G. L. de Oliveira Serra 793

Finite Time State Estimation of Complex-valued BAM Neutral-type Neural Networks with Time-varying Delays

R. Guo, Z. Zhang, C. Lin, Y. Chu, and Y. Li 801

**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.

A Joint Publication of Institute of Control, Robotics and Systems and the Korea Institute of Electrical Engineers

# 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

Professor Kyoung Kwan Ahn  
University of Ulsan, Ulsan, Korea  
E-mail: Hamidreza.karimi@polimi.it

Professor Hamid Reza Karimi  
Politecnico di Milano, Milan, Italy  
E-mail: Hamidreza.karimi@polimi.it

Professor Euntai Kim  
Yonsei University, Seoul, Korea  
E-mail: etkim@yonsei.ac.kr

Professor Won-jong Kim  
Texas A&M University, TX, United States  
E-mail: wjkim@tamu.edu

Professor Doo Yong Lee  
KAIST, Daejeon, Korea  
E-mail: leedy@kaist.ac.kr

Professor Jay H. Lee  
KAIST, Daejeon, Korea  
E-mail: jayhlee@kaist.ac.kr

Professor Young IL Lee  
Seoul National University of Science and Technology  
Seoul, Korea  
E-mail: yilee@seoultech.ac.kr

Professor Myotaeg Lim  
Korea University, Seoul, Korea  
E-mail: mlim@korea.ac.kr

Professor Fumitoshi Matsuno  
Kyoto University, Kyoto, Japan  
E-mail: Matsuno@me.kyoto-u.ac.jp

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

Professor Chan Gook Park  
Seoul National University, Seoul, Korea  
E-mail: chanpark@snu.ac.kr

Professor Ju Hyun Park  
Yeungnam University, Kyongsan, Korea  
E-mail: jessie@ynu.ac.kr

Professor PooGyeon Park  
POSTECH, Pohang, Korea  
E-mail: ppg@postech.ac.kr

Professor Fuchun Sun  
Tsinghua University, Beijing, P.R. China  
E-mail: fcsun@tsinghua.edu.cn

Professor Guang-Hong Yang  
Northeastern University, Liaoning, P.R. China  
E-mail: yangguanghong@ise.neu.edu.cn

#### 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** Jinyoung You, ICROS, Korea

#### ASSOCIATE EDITORS

Changsun Ahn, Pusan National University, Busan, Korea  
Choon Ki Ahn, Korea University, Seoul, Korea  
Hyo-Sung Ahn, GIST, Gwangju, 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  
Pirhas Ben-Tzvi, George Washington University, Washington, USA  
Mohammed Chadli, Univ. of Picardie Jules Verne, Amiens, France  
Jun Cheng, Hubei University for Nationalities, Hubei, China  
Min-Sen Chiu, National University of Singapore, Singapore  
Kyu-jin Cho, Seoul National University, Seoul, Korea  
Andrea Cristofaro, University of Camerino, Camerino, Italy  
Juxiang Dong, Northeastern University, Liaoning, China  
Takahiro Endo, Kyoto University, Kyoto, Japan  
Soohee Han, POSTECH, Pohang, Korea  
Wei He, University of Science and Technology Beijing, Beijing, China  
Changchun Hua, Yanshan University, Qinhuangdao, China  
Pilwon Hur, Texas A&M University, College Station, TX, U.S.A.  
Yingmin Jia, Beihang University, Beijing, China  
Bin Jang, NUAA, Nanjing, China  
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  
Dong-Joong Kang, Pusan National University, Busan, Korea  
Arkadii Kim, The Russian Academy of Sciences (Ural Branch), 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  
H. Jin Kim, Seoul National University, Seoul, Korea  
Jongrae Kim, University of Leeds, Leeds, UK  
Kyeong-Hwa Kim, Seoul Nat'l Univ. of Sci. and Tech., 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, College Station, TX, U.S.A.  
Oh Min 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, Bohai University, Liaoning, China  
Shihua Li, Southeast University, Nanjing, China  
Yangmin Li, University of Macau, Macau, China  
Huaping Liu, Tsinghua University, Beijing, China  
Yan-Jun Liu, Liaoning University of Technology, Liaoning, China  
Changki Mo, Washington State University Tri-Cities, WA, U.S.A.  
Un-Chul Moon, Chung-Ang University, Seoul, Korea  
Hyun Myung, KAIST, Daejeon, Korea  
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, USA  
Yongping Pan, National University of Singapore, Singapore  
Shinsuk Park, Korea University, Seoul, Korea  
Sukho Park, DGIST, Daegu, Korea  
Muhammad Rehan, PIEAS, Islamabad, Pakistan  
Chang-Kyung Ryo, Inha University, Incheon, Korea  
Seok Chang Ryu, Texas A&M University, College Station, TX, U.S.A.  
Atsushi Satoh, Iwate University, Iwate, Japan  
William Singhose, Georgia Institute of Tech., Atlanta, GA, U.S.A.  
Young Ik Son, Myongji University, Kyunggi, Korea  
Xiaoje 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  
Huanqing Wang, Carleton University, Ottawa, Canada  
Auggie Widjotriatmo, Institut Teknologi Bandung, Bandung, Indonesia  
Zheng-Guang Wu, Zhejiang University, Zhejiang, China  
Xiangpeng Xie, Nanjing Univ. of Posts and Telecommunications, Jiangsu, China  
Sooyeong Yi, Seoul National 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, Pohang, Korea  
Ding Zhai, Northeastern University, Liaoning, China  
Dan Zhang, City University of Hong Kong, Kowloon Tong, Hong Kong  
Xian-Ming Zhang, Swinburne University of Technology, Melbourne, Australia  
Guangdeng Zong, Qufu Normal University, Shandong, China

**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>