

# **2013 3rd International Conference on Control, Instrumentation, and Automation**

**(ICCIA 2013)**

**Tehran, Iran  
28-30 December 2013**



**IEEE Catalog Number: CFP1379S-POD  
ISBN: 978-1-4799-3118-7**

## Table of Contents

---

---

1. “Adaptive Control of A Two Axis Gimbal System” Mohammad Khayatian, Paknoush Karim Aghae	<a href="#">1</a>
2.” Time Delay Robust AQM for Internet Congestion Control” Mahdi Alinaghizadeh Ardestani, Mohammad Taghi Hamidi Beheshti, Mahmoud Najafi	<a href="#">6</a>
3. “Optimal PID Tuning Based On Krill Herd Optimization Algorithm” Amirhossein Alikhani, Amir Abolfazl Suratgar, Kayvan Nouri, Mina Nouredanesh, Sarah Salimi	<a href="#">11</a>
4. “Bilateral Control of Teleoperation Systems via Robust PID Controllers Based on LMI” Amir Roshandel, Alireza Khosravi, Alireza Alfi	<a href="#">16</a>
5. “Formulation of Transparency in Bilateral Teleoperation Systems: A Robust Approach” Maryam Salimifar, Hamid Reza Taghirad, Bitra Fallahi	<a href="#">22</a>
6.” A New Adaptive Sliding-Based Congestion Control Strategy for a Large Scale TCP/IP Network with Differentiated Services” Hossein Shokouhi Nejad, Amir Rikhtehgar Ghiasi	<a href="#">28</a>
7.” A Singularity-Free Approach for Safe Interaction of Robot Assisted Rehabilitation, Based on Model-Free Impedance Control” Iman Sharifi, Ali Doustmohammadi, Heidar Ali Talebi	<a href="#">36</a>
8.” Robust Stabilization of Uncertain Non-Homogeneous Markov Jump Linear Systems” Mona Faraji-Niri, Mohammad Reza Jahed-Motlagh, Mojtaba Barkhordari-Yazdi	<a href="#">42</a>
9. “Fuzzy Optimized Control Based on T-S Model for Satellite Attitude Control System to Reduce Limit Cycle”	

Sobutyeh Rezanezhad, Nematollah Ghahramani.....	47
10. “Robust Model Predictive Control Based on MRAS for Satellite Attitude Control System”	
Fateme Pirouzmand, Nematollah Ghahramani.....	53
11. “Hybrid PV/Wind Power System Control for Maximum Power Extraction and Output Voltage Regulation”	
Siavash Taghipour Broujeni, Seyed Hamid Fathi, Javad Shokrollahi Moghani.....	59
12. “Observer-Based Robust Model Predictive Control of a Class of Nonlinear Systems With Both State and Input Delays”	
Shabnam Pourdehi, Seyed Vahid Naghavi, Ali Akbar Safavi.....	65
13. “Application of Extended Kalman Filter to Chaos Synchronization”	
Valiollah Ghaffari, Fereydoon Shabaninia.....	7
14. “The Design of Robust Fractional Order PI Controller for Liquid Level Control of a Spherical Tank”	
Mojtaba Yousefi, Tahere Binazadeh, Mohammad Hosein Shafiei.....	77
15. “Transient Performance Improvement Using Composite Nonlinear Feedback and Integral Sliding Surface for Matched and Unmatched Uncertain MIMO Linear Systems”	
Saleh Mobayen, Mohammad Hasan Asemami, Vahid Johari Majd.....	83
16. “A Novel Two-Phased Flow Meter Design Using MEMS Pressure Meters Array”	
Sina Asadi, Amir Ashkan Mokhtari, Amir Abolfazl Suratgar, Erfan Khodabandeh, Ali Karimi.....	89
17. “Observer-based Direct Adaptive Neural Control for a Class of Nonlinear Non-Affine Systems with Unknown Control Direction”	
Zahra Ramezani, Mohammad Reza Jahed-Motlagh, Mohammad Mahdi Arefi.....	95
18. “Comparison of H-inf and GIPC Control Methods for Attitude Control of Rigid Spacecrafts”	

Sayed Kazem Mousaviyanfard Dehkordi, Abdorreza Kashaninia, Mehrzad Nasirian.....	101
19. “Adaptive Finite-Time Controller for Synchronization of Non-Identical Chaotic Systems with Nonlinear Input”	
Maryam Kazerooni, Shabnam Pourdehi, Ahad Soltani Sarvestani, Razieh Soltani Sarvestani.....	107
20. “Synchronization of Two Lur’e Differential Inclusions with Input Sector Nonlinearity and Unknown Parameters”	
Ali Abooei, Mohammad Haeri.....	113
21. “Design of Optimal Output Sliding Mode Control for Discrete-Time Systems and Improving the Response Rate Using the CNF Method”	
Hadi Behruz, Mohammad Hosein Shafiei, Tahereh Binazadeh.....	119
22. “Robust $\mu$ -Modification Output Feedback Adaptive Control for Systems with Input Saturation”	
Babak Ebrahimi Lame, Hamid Khaloozadeh, Ali Khaki Sedigh.....	125
23. “Adaptive Sliding Mode Controller Design for Power Converters of Fuel cell System”	
Tayebeh Erfanmanesh, Maryam Dehghani.....	130
24. “Parametric Optimization by Using a Canonical Observable Realization”	
Vahid Bahrami, Mojtaba Mahmoodi, Mohammad Ali Nekoui.....	136
25. “Stabilization of Networked Control Systems Using Switched Time-delay Systems Theory”	
Mojgan Valedin Asl, Reza Mahboobi Esfanjani.....	141
26. “BIBO Stability of Shift-Varying 2-D Systems Using Wave Model”	
Reza Babaloo, Mahdi Rezvani, Masoud Shafiee.....	145
27. “Multidisciplinary Modeling and Position Control of an Electro-Hydrostatic Actuation System Using an Adaptive PID Controller Based on NeuroFuzzy Network”	

Mohammad Javad Mirshojaeian Hosseini, Soheil Alidoosti, Mahdi Aliyari Shoorehdeli.....	149
28. “Design and Manufacturing of Resonance Frequency Detector to Actuating Resonant Sensors”	
Mohammad Reza Nayeri, Yaser Shirmohamadi, Hamid Khaloozadeh.....	155
29. “Predict Time Series Using Extended, Unscented, and Cubature Kalman Filters Based on Feed-Forward Neural Network Algorithm”	
Behrouz Safarinejadian, Mohammad Amin Tajeddini, Abdolrahman Ramezani.....	159
30. “State and Parameter Estimation of CSTR Using Joint-UKF”	
Navid Vafamand, Behrouz Safarinejadian.....	165
31. “Gas-Oil Ratio Self Tuning Controller in Gas Lift System”	
Mohsen Gheybi, Azad Mirzaee, Heidar Ali Talebi, Amir Abolfazl Souratgar.....	170
32. “Adaptive Fault Tolerance in Automotive Vehicle Using Control Allocation Based on the Pseudo Inverse Along the Null Space for Yaw Stabilization”	
Shahab Tohid, Ali Khaki Sedigh.....	174
33. “Actuator Fault Detection and Estimation for a Class of Nonlinear Systems”	
Maryam Shahriari kahkeshi, Farid Sheikholeslam.....	180
34. “An the Design of an Autopilot for Roll Motion in an Airpalne Using LQR and Flexible Dynamic Modle”	
Hassan Bayani, Jalal hajipour.....	186
35. “Condenser Temperature Control of an Ethylene Terephthalate Polymerization Reactor Using Fuzzy Logic and Classic Control Methods”	
Ali Sohrabi, Mehdi Rafizadeh.....	192
36. “Design of a Quadratic Linear Tracking Controller to Minimize Battery Power Consumption of a 2-DOF MEMS Vibratory Gyroscope”	
Ehsan Ranjbar, Amir Abolfazl Suratgar.....	198

37. “Delayed Time-Varying Singular Systems Analysis with Legendre Polynomials”  
seyed Abbas Zeynabi, Masoud Shafiee.....[203](#)
38. “Digital Measurement of Evaporation Based on Oversampling Technique”  
Shahriar Alipour, Paknosh Karim Aghaee.....[209](#)
39. “Adaptive Fourier Series-Based Control of Electrically Driven Robot Manipulators”  
Saeed Khorashadizadeh, Mohammad Mehdi Fateh.....[213](#)
40. “Optimal Attitude Control of a Quadrotor UAV Using Adaptive Neuro-Fuzzy Inference System (ANFIS)”  
Sina Rezazadeh, Mahdi Alinaghizadeh Ardestani, Parichehr Shahidi Sadeghi.....[219](#)
41. “Design of an Adaptive Controller for a 2-DOF MEMS Vibratory Gyroscope to Obtain Perfect Tracking and Angular Velocity Estimation with Noise, Disturbance and Parameter Variation Analysis”  
Ehsan Ranjbar, Amir Abolfazl Suratgar, Mansour Kabganian.....[224](#)
42. “Model-Based Fault Detection of a Nonlinear System Using Interval Type-2 Fuzzy Systems with Non-singleton Type-2 Fuzzification”  
Hossein Monirvaghefi, Mahdi Aliyari Shoorehdeli.....[231](#)
43. “Sliding Mode Formation Control and Target Tracking for a Team of Mobile Robots Using Decentralized and Distributed Kalman Filter”  
Ahmadreza Saadatkah, Yahya Kheyri, Ghazaleh Hadian, Vahid Johari Majd.....[237](#)
44. “Nonlinear Control Schemes for an Uncertain Micro-Cantilever Beam: a Simulation Study”  
Mohammad Ali Attarzadeh, Pouya Jamali.....[243](#)
45. “An Intelligent Fuzzy Control Scheme for Mechatronic Model of a Standard-Wheeled Omni-Directional mobile Robot”  
Pouya Jamali, Omid Sohrabi, Seyed Masoud Tabatabaei, Navid Seifipour.....[249](#)
46. “Dynamic Obstacle Avoidance and Target Tracking for a Swarm of Robots Using Distributed Kalman Filter”

Ghazaleh Hadian, Yahya Kheyri, Ahmadreza Saadatkah, Vahid Johari Majd.....	<a href="#">255</a>
47. “Identification and Nonlinear Control of a Ball-Plate System Using Neural Networks”	
Mohammad Hossein Bigharaz, Farhad Safaei, Ahmad Afshar, Amir Abolfazl Suratgar.....	<a href="#">260</a>
48. “Optimal Sliding Mode Controller for Asymmetrical DC-DC Series Resonant Converter Using Genetic Algorithm”	
Amir Foghani, Seyed Masoud Barakati, Seyed Hamzeh Moosapour.....	<a href="#">263</a>
49. “Nonlinear Disturbance Observer for Flexible-Link Manipulators Based on Flexural Rate Estimation”	
Aida Rashidinejad, Seyed Kamaledin Yadavar Nikravesh, Heidar Ali Talebi.....	<a href="#">269</a>
50. “A New Method for 2-D AR Model Parameter Estimation”	
Mahdi Zeinali, Masoud Shafiee.....	<a href="#">274</a>
51. “A New Heart Motion Estimation for Robotic Assisted Beating Heart Surgery Using ECG Based Covariance Resetting”	
Ehsan Rezai, Iman Sharifi, Heidar Ali Talebi, Seyed Kamaloddin Yadavar Nikravesh .....	<a href="#">279</a>
52. “Adaptive Stabilization of Switched Nonlinear Systems in Parametric Output Feedback Form”	
Zahra Noroozi, Alireza Khayatian.....	<a href="#">284</a>
53. “Fault Detection in Kerman Combined Cycle Power Plant Boilers by Means of Support Vector Machine Classifier Algorithms and PCA”	
Mehran Berahman, Ali Akbar Safavi, Majid Rostami Shahrabaki.....	<a href="#">290</a>
54. “Design and Implementation of Weft Density Feedback Control System on Weaving Loom”	
Atieh Almasi Zefrehyee, Mohamad Amani Tehran, Hooshang Nosrati, Marzieh Aghajani.....	<a href="#">296</a>
55. “Vibration Suppression of a Flexible Shaft System Using Indirect Adaptive Control”	

Mehrnaz Salehian, Sara Sattarzadeh, Heidar Ali Talebi, Mohammad Bayat, Ali Asehabi.....	301
56. “Robust Output Tracking of Non-affine Magnetic Suspension System”	
Mohammad Ali Rahgoshay, T. Binazadeh, Mohammad Hosein Shafiee.....	307
57. “Decomposition of First-Order Hybrid Petri Nets for Hierarchical Control of Manufacturing Systems”	
Saeede Nazari Goldar, Ali Doustmohammdi, Solmaz Babayi Ajabshir.....	311
58. “Fault Detection and Isolation in Singular Bilinear Systems”	
Sara Mansourinasab, Javad Askari.....	317
59. “A Distributed Adaptive Algorithm for Speeding Up Consensus in Networked Multi-Agent Systems”	
Ehsan Omid, Farzaneh Abdollahi.....	323
60. “Robust PEB Controller Design for Teleoperation”	
Arash Arjmandi, S. Khosravi, Hamid Reza Taghirad.....	328
61. “Combined Gradient and Iterative Learning Control Method for Magnetostatic Inverse Problem”	
Alireza Dehghani, Paknoosh Karimaghaee, Alireza Khayatian.....	334
62. “Model Predictive Based Dynamic Path Planning for Single Target Tracking and Formation”	
Mohammad Khosravi, Hossein Moradi Pari, Mohammad Haeri.....	340
63. “Fuzzy Model Reference Adaptive Control Based on PID for Fundamental and Typical Industrial Plants”	
Saeed Solouki, Mohammad Pooyan.....	345
64. “Brain-Inspired Modular Controller with Fuzzy Module Selection”	
Hamed Haghghi, Farzaneh Abdollahi, Shahriar Gharibzadeh.....	351