2017 5th International Conference on Control, Instrumentation, and Automation (ICCIA 2017)

Shiraz, Iran 21-23 November 2017



IEEE Catalog Number: CFP1779S-POD ISBN: 978-1-5386-2135-6

Copyright \odot 2017 by the Institute of Electrical and Electronics Engineers, Inc. All Rights Reserved

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

*** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.

 IEEE Catalog Number:
 CFP1779S-POD

 ISBN (Print-On-Demand):
 978-1-5386-2135-6

 ISBN (Online):
 978-1-5386-2134-9

Additional Copies of This Publication Are Available From:

Curran Associates, Inc 57 Morehouse Lane Red Hook, NY 12571 USA Phone: (845) 758-0400 Fax: (845) 758-2633

E-mail: curran@proceedings.com Web: www.proceedings.com



Table of Contents		
Control and Analysis of the Vehicle Motion Using Sliding Mode Controller and Carsim Software	1	
Ehsan Khalili, Jafar Ghaisari, Mohammad Danesh		
Radial Basis Function Neural Network-based Control for Uncertain Nonlinear Systems with Unknown Dead-Zone Input	6	
Maryam Shahriari-kahkeshi		
Kalman filter based sensor fault detection and identification in an electro- pump system	12	
Monir Rezaee, Nargess Sadeghzadeh-Nokhodberiz, Javad Poshtan		
Fuzzy Logic Soft-Switch Controller for Networked Control Systems Benyamin Haghniaz Jahromi, Seyed Mohammad Taghi AlModarresi, Pooya Hajebi	18	
Asymptotic Stability of Linear Descriptor Systems with Time-Delay by Designing Delay Margin	23	
Fatemeh Zahedi, Mohammad Haeri		
Robust Identification of Neuro-Fractional-Order Hammerstein Systems	27	
Mohammad-Reza Rahmani Mehdi Abadi, Mohammad Farrokhi Discrete Linear Quadratic Control of Uncertain Switched System		
Maryam Baluchzadeh, Ali Karimpour, Naser Pariz	32	
Centralized and Decentralized Adaptive Control of Non-Uniform Platoon of		
Vehicles: Constant Time Gap Strategy	38	
Hossein Chehardoli, Mohammad R. Homaeinezhad		
Mathematically Modeling of Imperfect Polarized Laser Beam in Laser		
Encoders for Automotive Applications	44	
Saeed Olyaee, Abdollah Gorgani Firoozjah, Alieh Naraghi		
Fractional Order Adaptive Fuzzy Terminal Sliding Mode Controller Design for a Knee Joint Orthosis with Nonlinear Disturbance Observer	49	
Hadi Delavari, Roya Jokar	49	
Nested Saturation Control Based on the Extended State Observer: Twin		
Rotor MIMO System	55	
Samad Amini, Behzad Ahi, Mohammad Haeri		
Interval Type-2 Fuzzy Set Application in Fault Detection for Chemical		
Reactor with TLBO Algorithm	60	
Mohammad Hossein Enjavimadar, Behrouz Safarinejadian, Mohiyeddin		
Mozaffari A Fault Diagnosis Approach for Electrical Induction Motors via Energetic		
Based Scheme	66	
Hamid Behzad, Mohammad Ali Sadrnia, Ahmad Darabi, Amin Ramezani		
Some Issues of Creating the New Generation of Upper Level Control		
Systems of NPP APCS	74	
Alexey Poletykin, Elena Jharko, Nadir Mengazetdinov, Vitaly Promyslov		

Model-free Chaos Control in a Chaotic Henon-like System using Takens	
Embedding Theory	80
Reza Hajiloo, Hassan Salarieh, Aria Alasty	
Robust Control of a Non-minimum Phase System in Presence of Actuator	
Saturation	86
Y. Salehi, M. A. Sheikhi, M. Motaharifar, H. D. Taghirad	
Application of Speech Analytics in Information Space Monitoring Systems	92
Mais Farkhadov, Valentin Smirnov, Alexander Eliseev	94
Automated System to Control the Technical Condition of Gas and Gas-	
Condensate Wells Located in the Russian Far North. A review based on	
Exploitation Data	98
O.B. Arno, O.A. Nikolaev, A.K. Arabsky, A.V. Merkulov, S.I. Gunkin, G.E. Vit,	
D.A. Shilov, E.G. Talybov , S.A. Kirsanov , M.P. Farkhadov	
Induced L ₂ -norm observer-based controller design for continuous-time	400
polytopic LPV systems	103
Motahare Abbasghorbani, Mohammad Hasan Asemani	
Dynamic Observer-based Controller Design for Polytopic LPV Systems	108
Mehdi Mohammadi, Mohammad Hassan Asemani, Mohammad Mehdi Arefi	
Modified Composite Nonlinear Feedback for Non-step Output Tracking of	
Multi-Input Multi-Output Linear Discrete-time Singular Systems with	114
Actuator Saturation	117
Emad Jafari, Tahereh Binazadeh	
A Modified Fruit Fly Optimization Algorithm and Its Application to Control	
of Robot Manipulators	120
Farhad Mehdifar, Hesam Seyed Gholami, Hamed Kharrati, and Mohammad	
An Experimental Study of Modeling and Solf Tuning Degulator Design for	
An Experimental Study of Modeling and Self-Tuning Regulator Design for an Electro-Hydro Servo-System	126
Anahita Moradmand P., Hamid Khaloozadeh	120
Adaptive fuzzy formation control for a class of uncertain nonlinear multi-	
agent systems	132
F. Baghbani, M.R. Akbarzadeh-T, M.B. Naghibi Sistani	134
Nonlinear Optimal Control of Air Handling Unit via State Dependent	
Riccati Equation Approach	138
Fariba Bouzari Liavoli, Ahmad Fakharian	130
Unmeasurable Premise Avoidance in T-S Fuzzy Observers	
Hoda Moodi, Danyal Bustan	144
•	
Robust Model Predictive Control of discrete-time delayed positive systems	150
Hamed Mehrivash, Mohammad Hossein Shafiei	
Double-Stage Grid-Connected Photovoltaic System With POSLL Converter	155
Using PI Resonant Controller	155
S.A.A. Fallahzadeh, N.R. Abjadi, A. Kargar Ontimal Integral Sliding Mode for Speed Control of Paymonent Magnet	
Optimal Integral Sliding Mode for Speed Control of Permanent Magnet Synchronous Motor	1/1
·	161
Fatemeh Khorsand, Reza Shahnazi, Esmaeil Fallah Choulabi	

Backstepping Fractional Terminal Sliding Mode Voltage Control of an	
Islanded Microgrid	167
Hadi Delavari, Sina Naderian	
Wave-based Control of Suspended Cable Driven Parallel Manipulators	173
S. A. Khalilpour, H. D. Taghirad, H. Habibi	1/3
Modern methods to collect, store, and process big data in large-scale systems	179
Alexander Eliseev, Dmitry Kachalov, Mais Farkhadov	
State-Dependent Impulsive Observer Design for Nonlinear Time-Delay	100
Systems	183
Nasrin Kalamian, Hamid Khaloozadeh, Moosa Ayati	
State Estimation of VTOL Octorotor for Altitude Control by using Hybrid Extended Kalman Filter	189
Mohsen Rahmati, Mohammad Reza Arvan, Babak N. Araabi	169
Nonlinear Dynamic Surface Control Design for Ball and Beam System with	
Parameter Uncertainties	195
Maryam Shahriari-kahkeshi	193
Pareto Optimal Fractional PID for Position Control of Ultrasonic Motor	
Khatereh Mohammadi, Reza Shahnazi	201
Emotional Controller (BELBIC) for positive output Luo converter	
N. R. Abjadi, M. Mahdavi, H. Akbari	206
Interactive Online Learning, E-education Platform with Multimedia	
Computer Technologies and Internet-Based Laboratories	212
Mais Farkhadov, Sergey Vaskovsky, Lev Nadeinsky	212
Computational Load Reduction in Model Predictive Control of Nonlinear	
Systems via Decomposition	216
Saeed Adelipour, Mahdi Rastgar, Mohammad Haeri	
An Analytical Eigenvalue Assignment of Linear Time-Delay Systems Using	
Lambert W Function	222
Moien Nemati, Farzad Hashemzadeh, Mahdi Baradarannia, AR Ghiasi	
Comparison of Iterative and Recursive Algorithms for Identifying a Solar	
Power Plant System	228
Kiavash Hossein Sadeghi, Abolhassan Razminia, Emad Roshandel	
A State Transition Based Approach to Explicit Solution of the LQR Problem	234
Valiollah Ghaffari	237
Application of Observer-Based Sliding Mode Controller in Dynamic	
Positioning Systems	238
Alireza Hosseinnajad, Mohammad Danesh, Mehdi Loueipour	
Set-point Control of LED Luminaires for Daylight Harvesting	244
S. Attarchi, M. Moallem	277
Multi-Zone HVAC Control System Design	
Using Feedback Linearization	249
Mariam Elnour, Nader Meskin	
Leakage Diagnosis Using Closed-Form Solution and Linear Observer	255
Masoud Derakhshan, Mohammad Haeri	200

Adaptive Control Application on Syringe Pump Pressure Control Systems in Oil and Gas Industries	259
Paknoosh Karimaghaee, Ali Hosseinzadeh, Ata Amidi, Emad Roshandel	20)
A High Precision Magnetic Based Linear Displacement Sensor	
Paknoosh Karimaghaee, Ata Amidi, Emad Roshandel	265
Fault Tolerant Control of Differential Drive Mobile Robots Using Sliding	
Mode Controller	270
Parisa Yazdjerdi, Nader Meskin	270
Delay-Independent L ₁ Controller for Linear Systems with Time-Varying	
Delay	275
Mohammad Safarzadeh Nobarian, Moien Nemati, Farzad Hashemzadeh	
Pure Pursuit Guidance and Sliding Mode Control of an Autonomous	
Underwater Vehicle for Pipeline Tracking	279
Zahra Fereidan Sfahani, Ahmadreza Vali, Vahid Behnamgol	
Low-Cost Home Automation Using Arduino and Modbus Protocol	
Zahra Hafezi, Sedighe Rajabi, Zeinab Shayan, Vahid Hassanpour, Mohammad	284
Mehdi Arefi	
Second-Order Decentralized Safe Consensus of Inter-Connected	
Heterogeneous Vehicular Platoons	290
Hossein Chehardoli, Mohammad R. Homaeinezhad	
Broken-bar rotor fault detection in squirrel-cage induction motors at	
presence of sensor faults using adaptive Unscented kalman filter	296
Omid zandi, Javad Poshtan	
Interleaved Boost Converter with Reactive Power Control and Harmonic	
Reduction Capability	301
Ehsan Bagheri, Nima Tashakor, Ebrahim Farjah, Teymoor Ghanbari	
A comparison between some pattern recognition based fault diagnosis	20-
methods of induction motor	307
Azadeh Gholaminejad, Javad Poshtan	
A Suitable Power Sharing Control of Parallel-Connected Inverters in	212
Microgrids Farrad Ingii Valid Angum Ehughim Farrigh Towns on Charlesia	313
Farzad Iraji, Vahid Azarm, Ebrahim Farjah, Teymoor Ghanbari	
Finite-Time Distributed Error Observer Design for Multi-Agent Systems with Chaotic or Hyper-Chaotic Dynamics	319
Ali Motamed Oroaya Fini, Mahdi Pourgholi	319
Kinematics and Workspace Analysis of a Novel Parallel Mechanism with	
Kinematic Redundancy	
Fatemeh Heiran, Bahman Nouri Rahmat Abadi, Sajjad Taghvaei, Ramin	325
Vatankhah	
Comparison of Model Predictive Controller and Min-Max Approach for	
Aircraft Engine Fuel Control	331
Morteza Montazeri-Gh, Ali Rasti, Amin Imani	
Adaptive Optimal Tracking Control for a Class of Nonlinear Systems with	
Fully Unknown Parameters	337
Hossein Mohammadi, Hamid Shiri	

Robust Guaranteed Cost Control for a Class of Large Scale Networked	
Control Systems	343
Mohammad Mahdi Azimi, Ali A Afzalian, Reza Ghaderi	
Configuration Space Approach to Analysis of Consensus and Formation	240
Sajjad Taghvaei, Mohammad Eghtesad	349
Extended State Observer-based Backstepping Control for Depth Tracking	
of the Underactuated AUV	354
Niloofar Gharesi, Zainab Ebrahimi, Anis Forouzandeh, Mohammad Mehdi Arefi	
An Efficient Method for Solution of the Linear Hybrid Optimal Control	
Problem	359
B. Tavassoli, H. A. Salehi	
Iterative Calculation of Optimal Control Trajectories for Nonlinear Systems	365
H. A. Salehi, B. Tavassoli	303
Design, Implementation and Installation of a Hybrid Renewable Energy	
System at Sultan Qaboos University	371
N. Hosseinzadeh, M. Al-Badi	