
MANCHESTER A

WM01

Sliding mode control I

Chair: Kang, Wei Naval Postgraduate School
Co-chair: Misawa, Eduardo Oklahoma State Univ.

13:00

Sliding surface design for discrete VSS using LQR technique with a preset real eigenvalue

Tang, Choon Yik Univ. of Michigan
Misawa, Eduardo Oklahoma State Univ.

13:20

Decentralized sliding mode control design for hybrid systems

Akar, Mehmet The Ohio State Univ.
Ozguner, Umit The Ohio State Univ.

13:40

Chattering-free sliding mode control with unmodeled dynamics

Krupp, Don NASA Marshall Space Flight Center
Shtessel, Yuri B. Univ. of Alabama at Huntsville

14:00

Youla-parameterization of output feedback sliding mode controller: internal stability and disturbance rejection

Nonaka, Kenichiro Musashi Inst. of Tech.

14:20

Friction compensation via smooth adaptive dynamic surface control

Maulana, Aria Putra Keio Univ.

14:40

Input-output analysis of limit cycling relay feedback control systems

Boiko, Igor SNC-Lavalin

MANCHESTER B

WM02

Adaptive control II

Chair: Amin, S. Massoud Electric Power Research Inst. (EPRI)
Co-chair: Datta, Aniruddha Texas A & M Univ.

13:00

Adaptive internal model control: the discrete-time case

Silva, Guillermo J. Texas A & M Univ.
Datta, Aniruddha Texas A & M Univ.

13:20

Output feedback adaptive robust control of uncertain linear systems with large disturbances

Xu, Li Purdue Univ.
Yao, Bin Purdue Univ.

13:40

Direct pole placement adaptive control for sinusoidal signal tracking

Zhang, Youping United Technologies Research Ctr.

14:00

Iterative unfalsified adaptive control: analysis of the disturbance-free case

Kosut, Robert L. SC Solutions, Inc.

14:20

Model reference adaptive control for a class of nonlinear systems with unknown degrees and uncertain relative degrees

Miyasato, Yoshihiko The Inst. of Statistical Mathematics

14:40

Improving transient behavior of model-reference adaptive control

Costa, Ramon R. COPPE/UFRJ

MANCHESTER C

WM03

Motion & vibration control

Chair: Watkins, John United States Naval Academy
Co-chair: Homaifar, Abdollah North Carolina A & T State Univ.

13:00

On the use of magnetic bearings for global control of fan noise

Watkins, John United States Naval Academy
Piper, George E. United States Naval Academy
O'Brien, Richard United States Naval Academy
Baumann, David C. Oral Roberts Univ.

13:20

Pendulation suppression of a shipboard crane using fuzzy controller

Kimiaghalam, Bahram North Carolina A & T State Univ.
Homaifar, Abdollah North Carolina A & T State Univ.
Bikdash, Marwan U. North Carolina A & T State Univ.

13:40

Why robust control is a solution to the narrow band problem in active noise control

Carmona, J. C. Technopole de Chateau Gombert
Alvarado Martinez, Victor Manuel LAG/ENSIEG/INPG

14:00

Modeling and optimal control design of shipboard crane

Wen, Bing North Carolina A & T State Univ.
Homaifar, Abdollah North Carolina A & T State Univ.
Bikdash, Marwan U. North Carolina A & T State Univ.
Kimiaghalam, Bahram North Carolina A & T State Univ.

14:20

Application of discrete-time gain-scheduled Q-parameterization controllers to magnetic bearing systems with imbalance

Mohamed, Abdelfatah Assiut Univ.
Hassan, Ikbal M. M. Assiut Univ.
Hashem, Adel M. K. Assiut Univ.

14:40

Servo design for a high stiffness linear repulsive magnetic-levitation bearing

Huang, Chao-Ming National Taiwan Univ.
Yen, Jia-Yush National Taiwan Univ.

MANCHESTER D

WM04

Fault detection

Chair: Polycarpou, Marios M. Univ. of Cincinnati
 Co-chair: Qin, S. Joe Univ. of Texas at Austin

13:00

Robust fault diagnosis of state and sensor faults in nonlinear multivariable systems

Trunov, Alexander B. Univ. of Cincinnati
 Polycarpou, Marios M. Univ. of Cincinnati

13:20

Detection and identification of faulty sensors with maximized sensitivity

Qin, S. Joe Univ. of Texas at Austin
 Li, Weihua Univ. of Texas at Austin

13:40

Fault detection for jump discrete systems

Tzes, Anthony Polytechnic Univ.
 Le, Ke Lucent Techn. Bell Laboratories

14:00

Functional safety analysis of reliable control systems using decision by majority

Suyama, Koichi Tokyo Univ. of Mercantile Marine

14:20

On the design of fault diagnosis filters and fault tolerant control

Kabore, Pousga UMIST
 Wang, H. UMIST

14:40

Dynamic fault detection approaches

Stroph, Ralf Univ. of York
 Clarke, T. Univ. of York

MANCHESTER E**WM05****Model predictive control: applications**

Chair: Kouvaritakis, Basil Oxford Univ.
 Co-chair: Wen, John T. RPI

13:00

Dynamic matrix control of a specialty chemical plant with different plantwide control structures

Zhan, Qiang Lehigh Univ.
 Grassi, Vincent G. Air Products & Chemicals, Inc.

13:20

A model predictive fault-tolerant temperature control scheme for hot isostatic pressing furnaces

Gopinathan, Murali Scientific Systems Co., Inc.
 Mehra, Raman K. Scientific Systems Co., Inc.
 Runkle, Joseph C. UltraClad Corp.

13:40

A case study on performance analysis and trouble shooting of an industrial model predictive control system

Kadali, Ramesh Univ. of Alberta
 Huang, Biao Univ. of Alberta
 Tamayo, Edgar Syncrude Canada Ltd.

14:00

Predictive control: propositions for the design methodology

Drogies, S. Darmstadt Univ. of Tech.

De Geest, D.

CNRS

14:20

A design of a strongly stable generalized predictive control using coprime factorization approach

Inoue, Akira Okayama Univ.
 Yanou, Akira Okayama Univ.
 Hirashima, Youichi Okayama Univ.

14:40

Linear matrix inequalities and polyhedral invariant sets in constrained robust predictive control

Lee, Young I Oxford Univ.
 Kouvaritakis, Basil Oxford Univ.

MANCHESTER F**WM06****TUTORIAL: Model predictive control technology, theory and applications**

Chair: Badgwell, Thomas A. Rice Univ.
 Co-chair: Muske, Kenneth R. Villanova Univ.
 Organizer: Badgwell, Thomas A. Rice Univ.
 Co-organizer: Muske, Kenneth R. Villanova Univ.

13:00

Tutorial: model predictive control technology (I)

Rawlings, James B. Univ. of Wisconsin-Madison

14:00

MPL implementation: a project view (I)

Hawkins, Robert B. Aspen Technology, Inc.

14:15

Multivariable control of parallel product dryers (I)

Meier, W. Jeff E.I. du Pont de Nemours and Co.

14:30

Control strategy design using model predictive control (I)

Downs, James J. Eastman Chemical Co.

14:45

Nonlinear model predictive control (I)

Martin, Greg Pavilion Technology, Inc.

REGENCY A**WM07****Nonlinear modeling and control of manufacturing systems II**

Chair: Ben-Amara, Foued National Research Council
 Co-chair: Landers, Robert G. Univ. of Michigan
 Organizer: Ben-Amara, Foued National Research Council
 Co-organizer: Landers, Robert G. Univ. of Michigan

13:00

Stability analysis of nonlinear machining force controllers (I)

Landers, Robert G. Univ. of Michigan
 Lu, Yen-Wen Univ. of California at Los Angeles

13:20
Turning force control systems based on the estimated cutting force signals (I)
 Huh, Kunsoo Hanyang Univ.
 Kim, Jaeok Hanyang Univ.

13:40
A linear estimation algorithm for ARMAX models with time dependent coefficients (I)
 Mrad, R. Ben Univ. of Toronto
 Farag, E. Univ. of Toronto
 Levitt, J. A. Ford Motor Co.

14:00
Detecting nonlinearities in time series of machining processes (I)
 Beule, Dieter Institut fur Theoretische Physik
 Herzel, Hanspeter Institut fur Theoretische Physik
 Uhlmann, Eckart Fruanhofer-Inst. f. Produktion. und Konstruk.
 Krueger, Joerg Fruanhofer-Inst. f. Produktion. und Konstruk.
 Becker, Frank Fruanhofer-Inst. f. Produktion. und Konstruk.

14:20
Linear robust motion control of flexible joint robots part a: modeling (I)
 Ciuca, Frank Univ. of Windsor
 Lahdhiri, Tarek Univ. of Windsor
 ElMaraghy, Hoda A. Univ. of Windsor

14:40
Robust linear motion control of flexible joint robots part b: control (I)
 Lahdhiri, Tarek Univ. of Windsor
 Ciuca, Frank Univ. of Windsor
 ElMaraghy, Hoda A. Univ. of Windsor

REGENCY B

WM08

Hardware-in-the-loop technology for automotive applications

Chair: Powell, Barry K. Ford Research Lab.
 Co-chair: Sivashankar, Narayanan Ford Motor Co.
 Organizer: Phillips, Anthony M. Ford Motor Co.
 Co-organizer: Sureshbabu, Natarajan Ford Motor Co., SRL

13:00
Design and implementation of HIL simulators for powertrain control system software development (I)
 Raman, Shankar Ford Motor Co.
 Sivashankar, Narayanan Ford Motor Co.
 Milam, W. Ford Motor Co.
 Stuart, Walt Visteon Automotive Systems
 Nabi, S. Visteon Automotive Systems

13:20
Driver model uncertainty (I)
 Chen, Liang-Kuang Univ. of Michigan
 Ulsoy, A. Galip Univ. of Michigan

13:40
On real-time simulation of induction motors (I)
 Sureshbabu, Natarajan Ford Motor Co.
 Seshagiri, S. Ford Motor Co.
 Masrur, Abul Ford Motor Co.
 Powell, Barry K. Ford Motor Co.

14:00

An experimental investigation of a CW/CA system for automobiles using hardware-in-the-loop simulations (I)
 Yi, Kyongsu Hanyang Univ.
 Woo, Minsu Hanyang Univ.
 Kim, Sung Ha Kia Motor Co.
 Lee, Seong-chul Kia Motor Co.

14:20
Active steering control based on the estimated tire forces (I)
 Huh, Kunsoo Hanyang Univ.
 Seo, Chanwon Hanyang Univ.
 Kim, Joonyoung Hanyang Univ.
 Hong, Daegun Hanyang Univ.

14:40
Embedded control system implementation and modeling issues (I)
 Erkkinen, Thomas Applied Dynamics, Inc.

REGENCY D

WM09

Control of electrohydraulic systems

Chair: Thompson, David F. Univ. of Cincinnati
 Co-chair: Yao, Bin Purdue Univ.
 Organizer: Thompson, David F. Univ. of Cincinnati
 Co-organizer: Yao, Bin Purdue Univ.

13:00
Alternative robust control strategies for disturbance rejection in fluid power systems(I)
 Pannett, Richard F. Univ. of Bath
 Chawdhry, Pravir K. Univ. of Bath
 Burrows, Clifford R. Univ. of Bath

13:20
A comparison of some control strategies for a hydraulic manipulator (I)
 Tochizawa, M. Univ. of Bath
 Edge, K. A. Univ. of Bath

13:40
Robust stability analysis of large hydraulic control systems (I)
 Kremer, Gregory G. Ohio Univ.

14:00
Feedback design for robust tracking and robust stiffness in flight control actuators using a modified QFT technique (I)
 Thompson, David F. Univ. of Cincinnati
 Pruy, John S. Univ. of Cincinnati
 Shukla, Amit Univ. of Cincinnati

14:20
Adaptive robust motion control of single-rod hydraulic actuators: theory and experiments (I)
 Yao, Bin Purdue Univ.
 Bu, Fanping Purdue Univ.
 Reedy, John Purdue Univ.
 Chiu, George T.-C. Purdue Univ.

14:40
Nonlinear observer based force control of electro-hydraulic actuators (I)
Sun, Hong Purdue Univ.
Chiu, George T.-C. Purdue Univ.

REGENCY E

WM10

Passivity based nonlinear control

Chair: Shahruz, Shahram M. Berkeley Eng. Research Inst.
Co-chair: Li, Perry Y. Univ. of Minnesota

13:00
Master-slave passivity design for stabilization of nonlinear systems
Jankovic, Mrdjan Ford Research Labs
Larsen, Michael Univ. of California at Santa Barbara
Kokotovic, Petar V. Univ. of California at Santa Barbara

13:20
Adaptive passive velocity field control
Li, Perry Y. Univ. of Minnesota

13:40
How to have passively Q-switched lasers self-pulsate
Shahruz, Shahram M. Berkeley Eng. Research Inst.

14:00
Passivity-based induction motor speed control: unknown load torque case
Abdel Fattah, Hossam A. Case Western Reserve Univ.
Loparo, Kenneth Case Western Reserve Univ.

14:20
On multi-dissipative dynamic systems
Thygesen, Uffe H. Tech. Univ. of Denmark

14:40
Dissipativity and stability of nonlinear jump systems
Aliyu, M. D. S. King Fahd Univ. of Petroleum and Minerals

CUNNINGHAM A

WM11

Delay systems

Chair: Kamen, Edward W. Georgia Inst. of Tech.
Co-chair: Suyama, Koichi Tokyo Univ. of Mercantile Marine

13:00
Delay-dependent robust H_∞ control of uncertain linear systems with input delay
Li, Xi Univ. of Alberta
Guay, Martin Univ. of Alberta
Huang, Biao Univ. of Alberta
Fisher, D. Grant Univ. of Alberta

13:20
Steady state offset in predictive control
Ordys, Andrzej W. Univ. of Strathclyde

13:40
Suboptimal dead beat controller for a discrete-time multivariable plant with measurement noise
Kase, Wataru Osaka Inst. of Tech.

14:00

Stability radius of linear delay systems
Son, Nguyen Khoa Hanoi Inst. of Mathematics
Ngoc, Pham Huu Anh Hue Univ.

14:20
Discrete modeling of continuous interval using higher-order integrators
Hsu, Chen-Chien St. John's & St. Mary's Inst. of Tech.
Wang, Wei-Yen Soochow Univ.

14:40
Simple predictor for processes with time delay
Zhang, Weidong Shanghai Jiaotong Univ.
Xu, Xiaoming Shanghai Jiaotong Univ.

CUNNINGHAM B

WM12

Identification II

Chair: Polis, Michael P. Oakland Univ.
Co-chair: Poolla, Kameshwar Univ. of California at Berkeley

13:00
Identification with the Youla parametrization in identification for control
Ansay, Pierre Univ. de Liege
Gevers, Michel Univ. Catholique de Louvain
Wertz, Vincent Univ. Catholique de Louvain

13:20
A comparison of canonical variate analysis and partial least squares for the identification of dynamic processes
Simoglou, Alexandros Univ. of Newcastle
Martin, Elaine Univ. of Newcastle
Morris, A. Julian Univ. of Newcastle

13:40
Identification of MIMO bilinear state space models using separable least squares
Verdult, V. Delft Univ. of Tech.
Verhaegen, Michel H. Delft Univ. of Tech.
Chou, C. T. Delft Univ. of Tech.

14:00
withdrawn

14:20
Thermal power plant dynamics identification
Kulesky, Roland Israel Electric Corp. Ltd.
Hudelman, G. Israel Electric Corp. Ltd.
Hain, Yakov Israel Electric Corp. Ltd.

14:40
On the identification of high-order lightly-damped multivariable systems
Fisher, Darin Univ. of California at Berkeley
Jue, Deborah Univ. of California at Berkeley
Packard, Andrew K. Univ. of California at Berkeley
Poolla, Kameshwar Univ. of California at Berkeley

CUNNINGHAM C

WM13

Learning & estimation

Chair: Parisini, Thomas Politecnico di Milano
Co-chair: El Ghaoui, Laurent M. ENSTA

13:00
A learning and estimation problem arising from in situ control and diagnostics of manufacturing processes
Galarza, Cecilia Univ. of Michigan
Khargonekar, Pramod P. Univ. of Michigan

13:20
Intelligent signal validation system for a cupola furnace, part 2: testing and analysis
Subramanian, Senthil Tennessee Tech. Univ.
Abdelrahman, Mohamed Tennessee Tech. Univ.

13:40
Learning of nonlinear FIR models under uniform distribution
Najarian, Kayvan Univ. of British Columbia
Dumont, Guy A. Univ. of British Columbia
Davies, Michael S. Univ. of British Columbia
Heckman, Nancy E. Univ. of British Columbia

14:00
Input-output data based tracking control
Babinski, Alex Univ. of Illinois at Urbana-Champaign
Tsao, Tsu-Chin Univ. of Illinois at Urbana-Champaign

14:20
Intelligent signal validation system for a cupola furnace, part 1: methodology
Abdelrahman, Mohamed Tennessee Tech. Univ.
Subramanian, Senthil Tennessee Tech. Univ.

14:40
Sliding-window neural state estimation in a power plant heater line
Alessandri, A. CNR-IAN National Research Council
Parisini, Thomas Politecnico di Milano
Zoppoli, Riccardo DIST-Univ. of Genova

WINDSOR A

WM14

Nonconvex optimization methods

Chair: Feron, Eric Massachusetts Inst. of Tech.
Co-chair: Lam, S. H. Princeton Univ.

13:00
Genetic algorithm for single machine scheduling with general early-tardy penalty weights
Yu, Haibin Chinese Academy of Sciences
Xu, Xinhe Northeastern Univ. Shenyang
Xue, Jinsong Chinese Academy of Sciences
Wang, Haobo Chinese Academy of Sciences

13:20
Efficient global optimization using SPSA
Maryak, John L. Johns Hopkins Univ.
Chin, Daniel C. Johns Hopkins Univ.

13:40
A genetic algorithm with a machine order-based representation scheme for a class of job shop scheduling problem
Song, Yingsheng Univ. of Ulster at Jordanstown
Hughes, J. G. Univ. of Ulster at Jordanstown

14:00
Design of L_1 -optimal controllers by multiobjective linear programming
Carvalho, Jose R. H. Univ. of Campinas
Ferreira, Paulo A Valente Univ. of Campinas

14:20
Optimization of bilinear systems using higher-order method
Agrawal, Sunil K. Univ. of Delaware
Xu, Xiaochun Univ. of Delaware
Faiz, Nadeem Univ. of Delaware

14:40
A robust controller for scalar autonomous optimal control problems
Lam, S. H. Princeton Univ.

WINDSOR B

WM15

Robust control II

Chair: Crisalle, Oscar D. Univ. of Florida
Co-chair: Grimble, Michael John Univ. of Strathclyde

13:00
Static output feedback controllers for systems with parametric uncertainty and controller gain variations
Corrado, Joseph R. Georgia Inst. of Tech.
Haddad, Wassim M. Georgia Inst. of Tech.

13:20
Practical H_∞ weighting functions and their application to real-time control of a pilot plant
Hu, Jiankun The Univ. of Melbourne
Bohn, Christian Ruhr-Univ. Bochum
Wu, H. R. Monash Univ.

13:40
On a quasi-convex method for designing robust predictive controllers
Mahon, Harry M. Univ. of Florida
Baab, Charles Univ. of Florida
Crisalle, Oscar D. Univ. of Florida

14:00
Robust speed control of induction motors using adaptive observer
Aloliwi, Bader Michigan State Univ.
Khalil, Hassan K. Michigan State Univ.
Strangas, Elias Michigan State Univ.

14:20
A simple robust control for induction motors
Guerrero-Ramirez, Gerardo National Univ. of Mexico
Tang, Yu National Univ. of Mexico

14:40
Robust regularization of uncertain singular systems
Wang, Dianhui Dalian Maritime Univ.

WINDSOR C

WM16

Stochastic estimation and stability

Chair: Haddad, Abraham H. Northwestern Univ.
Co-chair: Hanson, Floyd B. Univ. of Illinois at Chicago

13:00

Output endpoint weighted generalized predictive control: a polynomial approach

Ebert, Wolfram Humboldt-Univ. of Berlin
Morari, Manfred ETH Swiss Fed. Inst. of Tech.

13:20

On system identification and robust control on Hardy Sobolov space

Venkatesh, Saligrama R. United Technologies Research Ctr.

13:40

Passivity and stability of nonlinear systems with Markarian jump parameters

Aliyu, M. D. S. King Fahd Univ. of Petroleum and Minerals

14:00

Policies for simultaneous estimation and optimization

Lobo, Miguel Sousa Stanford Univ.
Boyd, Stephen P Stanford Univ.

14:20

Stabilization of stochastic quantized control systems

Lee, Kyung-Sup LG Electronics, Inc
Haddad, Abraham H. Northwestern Univ.

14:40

On designing H_∞ controller for a class of nonlinear Markarian jump systems with parametric uncertainties

Boukas, El-Kebir Ecole Polytechnique de Montreal
Shi, Peng Univ. of South Australia
Nguang, Sing Kiong Univ. of Auckland
Agarwal, Ramesh K. Wichita State Univ.

OXFORD

WM17

Control education: a multidisciplinary discussion

Chair: Bequette, B. Wayne Rensselaer Polytechnic Inst.
Co-chair: Agrawal, Sunil K. Univ. of Delaware
Organizer: Bequette, B. Wayne Rensselaer Polytechnic Inst.

13:00

Chemical process control education and practice (I)

Bequette, B. Wayne Rensselaer Polytechnic Inst.
Ogunnaike, Babatunde A. DuPont Central Res. & Engineering

13:20

Discussion of chemical process control education and practice (I)

Fabien, Brian C. Univ. of Washington

13:40

Undergraduate control education: an ME perspective (I)

Agrawal, Sunil K. Univ. of Delaware

14:00

Discussion of undergraduate control education: an ME perspective (I)

Zhu, J. Jim Louisiana State Univ.

14:20

Control education crossing department boundaries (I)

Spong, Mark W. Univ. of Illinois at Urbana-Champaign

14:40

Training simulators enhance process control education (I)

Cooper, D. J. Univ. of Connecticut
Fina, Danielle Univ. of Connecticut

CONNAUGHT

WM18

Control of civil engineering structures II

Chair: Dyke, Shirley J. Washington Univ.
Co-chair: Bergman, Larry A. Univ. of IL at Urbana-Champaign
Organizer: Dyke, Shirley J. Washington Univ.
Co-organizer: Bergman, Larry A. Univ. of IL at Urbana-Champaign

13:00

Smart bridge dampers (SBD) (I)

Patten, W. Neff Univ. of Oklahoma
Sun, J. Univ. of Oklahoma
Zeng, Annie Univ. of Oklahoma

13:20

Active vibration control of multiple buildings connected with active control bridges in response to large earthquakes (I)

Seto, Kazuto Nihon Univ.
Matsumoto, Yukito Nihon Univ.

13:40

Hybrid adaptive robust structural vibration control (I)

Shoureshi, Rahmat Colorado School of Mines
Chaghajerdi, Amir H. Colorado School of Mines
Bell, Mark J. Colorado School of Mines

14:00

Semi-active structural control with variable friction dampers (I)

Nishitani, Akira Waseda Univ.
Nitta, Yoshihiro Waseda Univ.
Ishibashi, Yoji Waseda Univ.
Itoh, Atsushi Waseda Univ.

14:20

Effects of cable sag on the control of cable-stayed bridges subjected to ground motion (I)

Magana, M. E. Oregon State Univ.
Rodellar, Jose Tech. Univ. of Catalonia
Casas, J. R. Tech. Univ. of Catalonia
Sardans, C. Tech. Univ. of Catalonia

14:40

Seismic response control using smart dampers (I)

Yi, Fu Washington Univ.
Dyke, Shirley J. Washington Univ.
Caicedo, Juan M. Washington Univ.
Carlson, J. David Lord Corporation