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ON
CONTROL APPLICATIONS

VOLUME 2 OF 2

IEEE International Conference on Control Applications
held together with

IEEE International Symposium On
Computer Aided Control System Design

August 22-27, 1999

Hapuna Beach Prince Hotel
Kohala Coast-Island of Hawai‘i, Hawai‘i, USA

Sponsored by IEEE Control Systems Society
CCA-MP5
Guidance and Control of Aerospace Vehicles
Co-chair: Stansbery, Donald Questech, Inc

4:20 (I) CCA-219
Hypersonic Guidance via the State-Dependent Riccati Equation Control Method

4:40 (I) CCA-225
Online Identification and Control of Aerospace Vehicles Using Recurrent Networks
Hu, Zhenning, Balakrishnan, S.N. Univ. of Missouri, Rolla

5:00 (I) CCA-231
Motion Planning for Reduced Observability of Autonomous Aerial Vehicles

5:20 (I) CCA-236
Understanding Missile Autopilot Design Using the H_\infty Loop Shaping Design Procedure

5:40 (I) CCA-243
Integrated Missile Guidance and Control: A State Dependent Riccati Differential Equation Approach
Palumbo, Neil F., Jackson, Todd D. Johns Hopkins Univ.

6:00 (I) CCA-249
Air Traffic Control Using Genetic Search Techniques

CCA-MP6
Motion Control
Chair: Ling, Bo Foxboro Co.
Co-chair: Bonivento, C. Univ. of Bologna

4:20 CCA-255
Design of Speed Controllers to Suppress Torsional Vibrations Based on Frequency Characteristics
Matsui, Yoshihiro Tokyo Nat. College of Tech.
Nishida, Hideyuki Fuji Electric Co.
Todaka, Yuji Univ. of Electro-Communications
Takeuchi, Tomoyoshi

CCA-261
Performance Improvement of Multivariable Linear System with Unmeasured External Disturbance
Ling, Bo Foxboro Co.

CCA-267
Error Feedback Sliding Mode Controllers in Output Regulation of Nonlinear Systems
Passini, S., Bonivento, C. Univ. of Bologna

CCA-273
A Minimum-Time Motion Planning Method Based on Phase Space Analysis
Koh, K.C., Aum, H.S. Sun Moon Univ.
Cho, H.S. KAIST

CCA-279
Adaptive Compensation for Pointing and Tracking System Applications
Kennedy, Peter J., Kennedy, Rhonda L. David H. Pollock Consultants
Agard, Ian Northrop Grumman Elec.

CCA-285
Controller Design Involving Gain Scheduling for a Large Scale Pneumatic Muscle Actuator
Phillips, C.A. Wright State Univ.
Krier, M. Air Force Res. Lab.

1999 IEEE CCA
Tuesday, August 24, 1999

Hapuna Ballroom

CCA Plenary Presentation

Uncertainty, Complexity and Learning: Control Perspective

Kimura, Hidenori Univ. of Tokyo
Chair: Hara, Shinji Tokyo Inst. of Tech.

CCA-TuA3
Control of Chemical Processes I
Co-chair: Hangstrup, Mads Aalborg Univ.

10:00 CCA-893
Control of a Continuously Stirred Tank Reactor Using an Asymmetric Solution of the State-Dependent Riccati Equation
Stansbery, Donald T. CACI/TEAS Group
<table>
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<th>Session ID</th>
<th>Title</th>
<th>Speaker(s)</th>
<th>Institution(s)</th>
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<td>10:40</td>
<td>CCA-905</td>
<td>Gain-Scheduled Control of a Fossil-Fired Power Plant Boiler</td>
<td>Hanstrup, Mads E., Stoustrup, Jakob, Andersen, Palle, Pedersen, Tom S.</td>
<td>Aalborg Univ.</td>
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<td>11:00</td>
<td>CCA-910</td>
<td>( H_) Control for a Boiler-Turbine Unit</td>
<td>Tan, Wen, Niu, Yuguang, Liu, Jizhen</td>
<td>North China Electric Power Univ.</td>
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<td>12:00</td>
<td>CCA-921</td>
<td>Linear vs. Nonlinear Control of an Axial Flow Compressor</td>
<td>Fontaine, Dan, Liao, Shengfang, Paduano, James D., Kokotovic, Petar</td>
<td>Univ. of California, Santa Barbara, Massachusetts Inst. of Tech., Univ. of California, Santa Barbara</td>
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<td>10:00</td>
<td>CCA-927</td>
<td>A New RST Cascaded Predictive Control Scheme for Induction Machines</td>
<td>Maaziz, M.K., Boucher, P., Dumur, D.</td>
<td>Service Autom. Supelec</td>
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<td>11:00</td>
<td>CCA-945</td>
<td>A Practical Implementation of a Linear Induction Motor Drive Using New Generation DSP Controller</td>
<td>Tsai, Mi Ching, Chen, Jeng Hu</td>
<td>Nat. Cheng Kung Univ.</td>
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<td>11:20</td>
<td>CCA-950</td>
<td>Transient Dynamics and Motion Control of Induction Motors</td>
<td>Lyshevski, Sergey E.</td>
<td>Purdue Univ., Indianapolis</td>
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<td>12:00</td>
<td>CCA-956</td>
<td>( H_) Design of a Robust Speed Controller for Induction Motors</td>
<td>Chiaverini, Stefano, Figalli, Gennaro, Fusco, Giuseppe</td>
<td>Univ. degli Studi di Cassino</td>
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<td>10:00</td>
<td>CCA-1096</td>
<td>Recent Development on Analysis and Control of Ship's Motions</td>
<td>Ohtsu, Kohei</td>
<td>Tokyo Univ. of Mercantile Marine</td>
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<td>11:00</td>
<td>CCA-1118</td>
<td>Development of Inverse LMI Method and its Applications to Dynamic Positioning System</td>
<td>Yamamoto, Ikuo, Terada, Yuuji</td>
<td>Mitsubishi Heavy Ind.</td>
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11:20 CCA-1768
Global Attitude/Position Regulation for Underwater Vehicles
Boskovic, Dejan M., Krstic, Miroslav
Univ. of California, San Diego

11:40 CCA-1761
Robustness Analysis of Accelerometry Using an Electrostatically Suspended Gyroscope
Fax, J. Alex Hill, Daniel A. Murray, Richard M.

12:00 (I) CCA-1791
Collision Avoidance Control of Ship with Genetic Algorithm
Ito, Masanori, Zhang, Feifei, Yoshida, Norimoto
Tokyo Univ. of Mercantile Marine

12:20 (I) CCA-1785
PID Controller Optimization for Fin Roll Stabilization
Hickey, N.A. Johnson, M.A., Katebi, M.R., Grimble, Michael J.
Univ. Edinburgh Univ. of Strathclyde

CCA-TuA6
Mobile Robot and Vehicle Control
Chair: Larsen, Thomas D. Co-chair: Takemori, Fumiaki
Tech. Univ. of Denmark Tottori Univ.

10:00 CCA-1003
Noncontact Hold and Transfer Control by a Magnetic Robot Hand Attached to a Mobile Robot with Two Independent Drive Wheels
Kojima, Hiroyuki, Yuasa, Yoshitaka, Kobayashi, Toshio
Gunnma Univ.

10:20 CCA-1009
A New Approach for Kalman Filtering on Mobile Robots in the Presence of Uncertainties
Larsen, Thomas D., Andersen, Niels A., Ravn, Ole
Tech. Univ. of Denmark

10:40 CCA-1015
Robust Tracking and Regulation Control for Mobile Robots
Dixon, W.E., Dawson, D.M., Zergeroglu, E., Zhang, F.
Clemson Univ.

11:00 CCA-1021
Design of Kalman Filters for Mobile Robots; Evaluation of the Kinematic and Odometric Approach
Larsen, Thomas D., Hansen, Karsten Lentfer, Andersen, Niels A., Ravn, Ole
Tech. Univ. of Denmark

11:20 CCA-1027
Formation Control of Multiple Autonomous Vehicles
Kang, W. Xi, N.
Naval Postgraduate School Michigan State Univ.

11:40 CCA-1033
Servo Control of Unstable-Wheeled System by Using Disturbance Torque Observer Compensation and Convex Optimization
Takemori, Fumiaki, Iwata, Jun-ichi, Okuyama, Yoshifumi
Tottori Univ.

12:00 CCA-1039
Interactive On-Line Evaluation of Robot Motion Control
Valera, A., Robertsson, A., Nilsson, K., Johansson, R.

CCA-TuM3
Neuro-Fuzzy Control of Chemical Processes
Chair: Wu, M. Co-chair: Coelho, Antonio A. R.
Central South Univ. of Tech. Fed. Univ. of Santa Catarina

2:00 CCA-1044
An Expert Control Strategy Using Neural Networks for the Electrolytic Process in Zinc Hydrometallurgy
Wu, Min Nakano, Michio She, Jin-Hua
Central South Univ. of Tech. Takushoku Univ. Tokyo Univ. of Engr.

2:20 CCA-1050
Neuro-Fuzzy Control of a Steam Boiler-Turbine Unit
Alturki, Fahd A., Abdenour, Adel Ben
King Saud Univ.

2:40 CCA-1056
Prediction of Flooding in an Absorption Column Using Neural Networks
Parthasarathy, Sanjay Gowan, Hitesh Indhar, Praveen
Honeywell Tech. Cen. Honeywell Hi-Spec Solutions Sasol Synthetic Fuels

3:00 CCA-1062
Direct Supervisory Adaptive Fuzzy Controller Applied to pH Control
Nazaruddin, Yul Y., Astrid, P., Samyudia, Y.
Bandung Inst. of Tech.

3:20 CCA-1062
Comparative Study of Parametric and Structural Methodologies in Identification of an Experimental Nonlinear Process
Marchi, Pierre Albert, dos Santos Coelho, Leandro, Coelho, Antonio A.R.
Fed. Univ. of Santa Catarina
3:40 CCA-1068
Adaptive Neural Model Predictive Control of Chemical Process: An Empirical Study
Wang, Dianhui Dalian Maritime Univ.

CCA-TuM4
Electric Motors II
Chair: Ohmori, Hiromitsu Keio Univ.
Co-chair: Reay, Donald S. Heriot-Watt Univ.

2:20 CCA-1073
Sensorless Position Detection Using Neural Networks for the Control of Switched Reluctance Motors
Reay, Donald S., Williams, B.W. Heriot-Watt Univ.

2:40 CCA-1078
Robust D-Stability of Generalized State-Space Systems with One Parameter Uncertainties

3:20 CCA-1084
An Improved Indirect Field Oriented Controller for the Induction Motor

CCA-TuM5
Control Applications in Aerospace Systems
Chair: Kanai, Kimio Nat. Def. Acad.
Org.: Kanai, Kimio Nat. Def. Acad.

2:00 (I) CCA-968
Orbit Determination by Means of Kalman Filter Using Δ – VLBI Data
Asai, Yoshihiko Higashinippon Int. Univ.
Nishimura, Toshimitsu Tokyo Engr. Univ.

2:20 (I) CCA-973
New Method of Capturing Tumbling Object in Space and its Control Aspects
Nakasuka, Shinichhi, Fujiwara, Takeshi Univ. of Tokyo

2:40 (I) CCA-979
Robust Attitude Controller Design of Linear Parameter Varying Spacecraft via Mu Synthesis and Gain Scheduling
Nagashio, Tomoyoki, Kida, Takashi Univ. of Electro-Communications

3:00 (I) CCA-985
An Experimental Investigation of Active and Passive Control of Rotating Stall in Axial Compressors
Prasad, J.V.R., Neumeier, Y., Lal, M., Bae, S.H., Meehan, A. Georgia Inst. of Tech.

3:20 (I) CCA-991
Guidance Performance Analysis of Bank-To-Turn (BTT) Missiles
Lee, Jang Gyu Seoul Nat. Univ.
Han, Hyung Sook Kyungwon Univ.
Kim, Young Jin Seoul Nat. Univ.

3:40 (I) CCA-997
Automatic Approach and Landing for Propulsion Controlled Aircraft by H_ Control
Ochi, Yoshimasa, Kanai, Kimio Nat. Def. Acad.

CCA-TuM6
Mobile Robot and its Control Architecture
Chair: Fujii, Teruo Univ. of Tokyo
Co-chair: Yuh, Junku Univ. of Hawaii
Org.: Fujii, Teruo Univ. of Tokyo

2:00 (I) CCA-1123
A Control System for an Omnidirectional Mobile Robot

2:20 (I) CCA-1129
Decentralized Control of Mobile Robots in Coordination

2:40 (I) CCA-1135
Application of Non-Regressor Based Adaptive Control to Underwater Mobile Platform-Mounted Manipulator
Lee, Pan-Mook KRISO
Yuh, Junku Univ. of Hawaii
CCA-TuP3
Control Applications in Flows and Turbomachines
Chair: Copeland, G. Scott,
Co-chair: Narayanan, Satish
Org.: Copeland, G. Scott
Org.: Narayanan, Satish

4:20 (I)
CCA-1146
Adaptive Detection of Instabilities and Nonlinear Analysis of a Reduced-Order Model for Flutter and Rotating Stall in Turbomachinery
Copeland, G. Scott
Kevrekidis, Ioannis G.
Rico-Martinez, Ramiro

5:00 (I)
CCA-1151
Low-Dimensional Models for Active Control of Flow Separation
Narayanan, Satish,
Khribnik, Alexander I.,
Jacobson, Cis,
Kevrekidis, Y.
Rico-Martinez, Ramiro
Lust, K.

5:20
CCA-730
Nonlinear Control Design for Rotating Stall with Magnetic Bearing Actuators
Wang, Yong
Paduano, James D.
Murray, Richard M.

5:40 (I)
CCA-1157
On the Design of Feedback Controllers for a Convecting Fluid Flow via Reduced Order Modeling
Burns, John A.,
King, Belinda B.
Rubio, Diana

CCA-TuP4
Applications of Adaptive Control for Systems with Nonsmooth Nonlinearities
Chair: Lewis, Frank L.
Co-chair: Cheng, J. John
Org.: Tao, Gang
Org.: Wen, Changyun

4:20 (I)
CCA-1163
Backlash Compensation in Nonlinear Systems Using Dynamic Inversion by Neural Networks
Selmic, Rastko R.,
Lewis, Frank L.

4:40 (I)
CCA-1169
Tracking Control in the Presence of Nonlinear Dynamic Frictional Effects: Robot Extension
Feemster, Matthew,
Dawson, D.M.,
Behal, A.,
Dixon, W.E.

5:00 (I)
CCA-1175
Adaptive Friction Compensation of Servo Mechanisms
Ge, S.S.,
Lee, T.H.,
Ren, S.X.

5:20 (I)
CCA-1181
Adaptive One-Step-Ahead Control with Input Amplitude, Rate, and Acceleration Constraints
Cheng, J. John,
Wang, Yi-Ming

5:40 (I)
CCA-1187
Transient Stability Enhancement of Power Systems by Robust Adaptive Control with Saturation Constraint
Zhang, Ying,
Wen, Changyun,
Soh, Yeng Chai

6:00 (I)
CCA-1193
Adaptive Estimation of Magnetic Bearing Parameters
Balogh, Michael,
Tao, Gang,
Allaire, Paul

CCA-TuP5
Flight Control III
Chair: Mesbahi, Mehran
Co-chair: Ando, Yoshinori

4:20
CCA-1199
A Study of Longitudinal Flight Maneuvers for the CTOL Aircraft Model
Al-Hiddabi, Saif A.,
McClamroch, N. Harris
4:40 CCA-1205
LPV Controller Design for ALFLEX by Using LMI
Ando, Yoshinori,
Tsuge, Hidetaka,
Suzuki, Masayuki
Nagoya Univ.

5:00 CCA-1211
Formation Flying Control of Multiple Spacecraft via Graphs,
Matrix Inequalities, and Switching
Mesbahi, Mehran,
Hadaegh, F.Y.
California Inst. of Tech.

5:20 CCA-1217
Motion Control of Highly-Maneuverable Aircraft
Lychevski, Sergey E.,
Dunipace, Kenneth R.
Purdue Univ., Indianapolis
Colgren, Richard D.
Lockheed Martin Skunk Works

5:40 CCA-1223
The Frequency-Domain Heterogeneous Control Mixer Module
Method for Control Reconfiguration
Zhenyu, Yang,
Huazhang, Shao,
Zongji, Chen
Beijing Univ.

6:00 CCA-1229
High-Performance Direct-Drive Flight Actuators: Advanced
Technology Demonstration
Lychevski, Sergey E.
Purdue Univ., Indianapolis

CCA-TuP6
Inverted Pendulum Control
Chair: Tsachouridis, Vassilios A.
Co-chair: Gafvert, Magnus

4:20 CCA-1235
Robust Control of a Triple Inverted Pendulum
Tsachouridis, Vassilios A.
Univ. of Leicester

4:40 CCA-1241
Multivariable Adaptive Model Output Following Control
System Based on Backstepping Strategy and its Application to
Parallel Inverted Pendulums
Takahashi, Masanori
Ariake Nat. College of Tech.
Mizumoto, Ikuro,
Iwai, Zenta,
Kohzawa, Ryuichi
Kumamoto Univ.

5:00 CCA-1249
Time Optimal Control for the Pendulum-Cart System in Real-
Time
Turnau, A.,
Korytowski, A.,
Szymkat, M.
St. Staszic Tech. Univ.

CCA-1255
Swing Up of an Inverted Pendulum by Simulator-Based
Foresight Control
Uchida, Motomiki,
Nakano, K.
Fukuoka Inst. of Tech.

CCA-1260
Dynamic Model Based Friction Compensation on the Furuta
Pendulum
Gafvert, Magnus
Lund Inst. of Tech

CCA-1266
Adaptive Robust Stabilization of a Class of Nonlinear Systems
with Partially Known Uncertainties
Wu, Hansheng
Hiroshima Prefectural Univ.

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CCA-WA3
Chemical and Biological Processes
Chair: Chen, Shih-Chin
Co-chair: Femat, Ricardo

10:00 CCA-1272
Implementing Supervisory Control for Chemical Batch
Process
Akesson, K.,
Fabian, Martin
Chalmers Univ. of Tech.

10:20 CCA-1278
Transition Control of Paper-Making Processes: Paper Grade
Change
Murphy, Timothy F.,
Chen, Shih-Chin
ABB Ind. Sys., Inc.

10:40 CCA-1284
A Simple Method for Oscillation Diagnosis in Process Control
Loops
Horch, Alexander
Royal Inst. of Tech.

11:00 CCA-1290
Blood Glucose Regulation: An Output Feedback Approach
Femat, Ricardo,
Ruiz-Velazquez, E.
UASLP

11:20 CCA-1294
A Control Relevant Dynamic Model of Grate Sintering
Martinsen, Frode,
Foss, Bjarne A.,
Johansen, Tor Arne
Norwegian Univ. of Sci. & Tech.
11:40 CCA-1300

Optimized Modeling of the Intra Myocardial Coronary Circulation.

Hirayama, H. Asahikawa medical college
Okizaki, A. Asahikawa Medical College
Okita, T. Shizuoka Univ.
Nishimura, T. Ohtta Univ.

12:00 CCA-1306

Adaptive Control of Peristaltic Pumps During Continuous Venovenous Hemofiltration

Morales, Efrain O., Polycarpou, Marios, Hmasilpin, Nat, Bissler, John J. Univ. of Cincinnati

CCA-WA4

System Identification and Signal Modeling

Chair: Yaz, Edwin E. Univ. of Arkansas
Co-chair: Adachi, S. Utsunomiya Univ.

10:00 CCA-1312

System Identification of Anti-Vibration Units in Semiconductor Exposure Apparatus


10:20 CCA-1318

Scale Transform Approach for Impulse Responses Identification

Zhang, Jianguang, Zhang, Jie, Mao, Jianqin Beijing Univ.

10:40 CCA-1324

The Application of Parameter Identification Methods with Competing Systems to Model a Human Interface Device

Phillips, C.A. Wright State Univ.
Krier, M. Air Force Res. Lab.
Long, L. Wright State Univ.
Taylor, S. Wright State Univ.

11:00 CCA-1330

Detection of the Fundamental Frequency in Noisy Enviroment for Speech Enhancement of a Hearing Aid

Yanagisawa, Koichi, Tanaka, Kyoko, Yamaura, Itsuo Shinshu Univ.

11:20 CCA-1336

Selection and Performance of Probabilistic Tables Used in Non-Model Based Signal Prediction

Zeceña, Juan Carlos Cordova, Yaz, Edwin E. Univ. of Arkansas

12:00 CCA-1342

Analysis of $\alpha - \beta - \gamma$ Filters

Tenne, Dirk State Univ. of New York at Buffalo
Singh, Tarunraj State Univ. of New York at Buffalo

CCA-WA5

Control Problems in Heavy-Duty Vehicles

Chair: Canudas de Wit, Carlos Lab. d'Autom. de Grenoble
Co-chair: Tomizuka, M. Univ. of California, Berkeley
Org.: Canudas de Wit, Carlos Lab. d'Autom. de Grenoble

10:00 (I) CCA-1348

Longitudinal and Lateral Control of Heavy-Duty Trucks for Automated Vehicle Following in Mixed Traffic: Experimental Results from the CHAUFFEUR Project

Fritz, Hans DaimlerChrysler AG

10:20 (I) CCA-1353

Speed Control Experiments with an Automated Heavy Vehicle

Tan, Yaolong, Robotis, Andreas, Kanellakopoulos, Ioannis UCLA

10:40 (I) CCA-1359

Automated Lane Guidance of Commercial Vehicles

Tomizuka, M., Tai, M., Wang, J-Y., Hingwe, P. Univ. of California, Berkeley

11:00 (I) CCA-1365

Modeling and Robust Control of Power Steering System of Heavy Vehicles for AHS

Hingwe, P., Tai, M., Tomizuka, M. Univ. of California, Berkeley

11:20 (I) CCA-1371

Stability Analysis via Passivity of the Lateral Actuator Dynamics of a Heavy Vehicle

Canudas de Wit, Carlos, Claeys, Xavier Lab. d'Autom. de Grenoble
Bechart, Hubert Renault Dir. de la Recherche

11:40 (I) CCA-1377

Stability Issues for Vehicle Platooning in Automated Highway Systems

Canudas de Wit, Carlos, Brogliato, Bernard Lab. d'Autom. de Grenoble
CCA-WA6

Mechatronics I

Chair: Saeki, Masami
Co-chair: Lee, Fu-Shin

10:00 CCA-1383
Global Stabilization of Centrifugal Compressors via Stability-Based Switching Controllers
Leonessa, Alexander,
Haddad, Wassim M.,
Li, Hua
Georgia Inst. of Tech.

10:20 CCA-1389
A Chaos Model via Relay Feedback
Sugiki, Akihiko,
Hatakeyama, Shoshiro
Furuta, Katsuhisa
Tokyo Denki Univ.
Tokyo Inst. of Tech.

10:40 CCA-1394
Binary Excitation Based System Identification for Precision Ballscrew Table
Huang, Pai-Yi,
Chen, Yung-Yaw
Nat. Taiwan Univ.

11:00 CCA-1400
Special-Purpose Devices Using Techniques of Discontinuous Control and Setting Adjustment (DC & SA) in Control Applications
Mkrtchian, Vardan,
Hovakimyan, Aramais,
Hunanyan, Armen,
Kchachaturyan, Tigran
State Engr. Univ. of Armenia

11:20 CCA-1406
Modeling of Actuator Systems Using Multilayer Electrostrictive Materials
Lee, Fu-Shin
Huafan Univ.

11:40 CCA-1412
Proposal of a Parallel Supporting Damper with Tendon and Robust Control System Design
Kimura, Junso
Harada, Shigeru
Saeki, Masami
Hiroshima Univ.
Mitsubishi Heavy Ind.
Hiroshima Univ.

12:00 CCA-1418
On the States and Parameters Estimation of Non-Linear Discrete-Time Systems. Design and Experimental Results
Boutayeb, M.,
Aubry, D.,
Darouach, M.
E., Richard
Univ. of Henri Poincare
INRIA-Lorraine

CCA-WM3

Fault Detection and Isolation in Dynamical Systems
Chair: Popescu, Theodor
Co-chair: Gertler, Janos
Org.: Popescu, Theodor

2:00 (I) CCA-1424
Robust Nonlinear Fault Diagnosis: Application to Robotic Systems
Trunov, Alexander,
Polycarpou, Marios
Univ. of Cincinnati

2:20 (I) CCA-1430
Diagnostic Reasoning Based on Means-End Models: Experiences and Future Prospects
Larsson, Jan Eric
Lund Inst. of Tech.

2:40 (I) CCA-1755
Fault Diagnosis of the IFAC Benchmark Problem with a Model-Based Recurrent Neural Network
Gan, Chengu,
Danai, Kourosh
Univ. of Massachusetts

3:00 (I) CCA-1436
Optimal Auxiliary Input for Fault Detection of Systems with Model Uncertainty
Hatanaka, Toshiharu,
Uosaki, Katsuji
Tottori Univ.

3:20 (I) CCA-1442
Detection of Abrupt Changes in Modal Characteristics of a Vibrating Structure - A Case Study
Popescu, Theodor
Res. Inst. for Inf., Bucharest

CCA-WM4

Network and Discrete Event Systems
Chair: Walsh, Gregory C.
Co-chair: Hellgren, Anders

2:00 CCA-1448
Asymptotic Behavior of Networked Control Systems
Walsh, Gregory C.
Beldiman, Octavian,
Bushnell, Linda
Duke Univ.

2:20 CCA-1454
Impact of Flow Control on Quality of Service Driven Packet Scheduling Disciplines
Hayes, David A.,
Rumsewicz, Michael
Andrew, Lachlan L. H.
Royal Melbourne Inst. of Tech.
Univ. of Melbourne

2:40 CCA-1460
Development of State Space Model and Study of Performance Characteristics of Digital Based Excitation Control System ST4B with Single Machine Connected to Infinite Bus
Rangnekar, Saroj
M. A. College of Tech.
3:00 CCA-1466

Admission Control by MDP Theory: A Single-Sample-Path-Based Approach

Wang, Junjie
Univ. of Maryland

3:20 CCA-1472

Deadlock Detection and Controller Synthesis for Production Systems Using Partial Order Techniques

Hellgren, Anders, Fabian, Martin, Lennartson, Bengt
Chalmers Univ. of Tech.

3:40 CCA-1478

Optimization in Markov Decision Problems with Transition-Dependent Cost Functions

Wang, Junjie
Univ. of Maryland
Cao, Xi-Ren
Hong Kong Univ. of Sci. & Tech.

CCA-WM5

Vehicle Suspections
Chair: Yoshida, Kazuo
Keio Univ.
Co-chair: Halfmann, Christoph
Darmstadt Univ. of Tech.

2:00 CCA-1484

Modeling and Identification of the Vehicle Suspension Characteristics Using Local Linear Model Trees

Halfmann, Christoph, Nelles, O., Holzmann, H.
Darmstadt Univ. of Tech.

2:20 CCA-1490

Neuro-Fuzzy Based Modeling of Vehicle Suspension System

Nazaruddin, Yul Y.
Bandung Inst. of Tech.
Yamakita, Masaki
Tokyo Inst. of Tech.

2:40 CCA-1496

Bilinear Disturbance-Accommodating Optimal Control of Semi-Active Suspension for Automobiles

Yoshida, Kazuo, Okamoto, Bunta
Keio Univ.

3:00 CCA-1734

Adaptive Nonlinear Control of Repulsive Maglev Suspension Systems

Huang, Chao-Ming, Chen, Min-Shin, Yen, Jia-Yush
Nat. Taiwan Univ.

3:20 CCA-1502

Active Suspension Control Using a Novel Strut and Active Filtered Feedback: Design and Implementation

Ikenaga, S., Lewis, Frank L., Davis, L., Campos, J., Evans, M., Scully, S.
Univ. of Texas, Arlington

3:40 CCA-1509

Active Vibration Isolation by Adaptive Control
Shaw, Jinsiang
Huafan Univ.

CCA-WM6

Control Integrity in Adverse Operating Conditions
Chair: Belcastro, Celeste
Co-chair: Chang, B.C.
Drexel Univ.
Org.: Belcastro, Celeste

2:00 (I) CCA-1515

A Virtual Closed Loop Remedy for Temporary Sensor Failures
Suh, Jon, Bajpai, Gaurav, Chang, B.C.
Drexel Univ.

2:20 (I) CCA-1519

Characterization of a Recoverable Flight Control Computer System
Malekpour, Mahyar, Torres, Wilfredo

2:40 (I) CCA-1797

Stochastic Perturbation Analysis of Computer Control Systems Subject to Electromagnetic Disturbances
Gray, W. Steven, Gonzalez, Oscar, Dogan, Mustafa
Old Dominion Univ.

3:00 (I) CCA-1525

Detecting Controller Malfunctions in Electromagnetic Environments: Part I: Modeling and Estimation of Nominal System Function
Weinstein, Bernice

3:20 (I) CCA-1531

Detecting Controller Malfunctions in Electromagnetic Environments: Part II-Design & Analysis of the Detector
Belcastro, Celeste

3:40 (I) CCA-1538

Adaptive Estimation and Accommodation of Loss of Control Effectiveness Using a Lyapunov Method
Wu, N. Eva
Binghamton Univ.

CCA-WP1

CAD & Monitoring
Chair: Saito, Osami
Chiba Univ.
Co-chair: Yen, Gary
Oklahoma State Univ.

4:20 CCA-1543

Development of nD Control System Toolbox for Use with MATLAB
Xu, Li
Asahi Univ.
Yamada, Minoru
Gifu Nat. College of Tech.
Saito, Osami
Chiba Univ.
### CCA-WP2
**Intelligent Building Control**
- **Chair:** Samad, Tariq, Honeywell Tech.
- **Co-chair:** So, Albert T.P., City Univ. of Hong Kong
- **Org.:** So, Albert T.P., City Univ. of Hong Kong

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<tr>
<th>Time</th>
<th>CCA-1579</th>
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<tr>
<td>4:20</td>
<td></td>
<td>Development of Air-Conditioning Control Algorithm for Building Energy-Saving</td>
<td>Yamada, Fumio, Yonezawa, Kenzo, Sugawara, Susumu, Nishimura, Nobutaka, Toshiba Corp.</td>
</tr>
<tr>
<td>5:00</td>
<td></td>
<td>A Recipe for Success with Open System</td>
<td>Arnold, Rand, Echelon Corp.</td>
</tr>
<tr>
<td>5:20</td>
<td></td>
<td>Creating Better Business Outcomes through Enterprise Integration with Advanced Building Control Solutions</td>
<td>Miller, Daniel T., Honeywell H&amp;BC Solutions &amp; Services</td>
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</tbody>
</table>

### CCA-WP3
**Control of Communication Networks**
- **Chair:** Takano, Makoto, NTT Res. and Dev. Cen.
- **Co-chair:** Kawashima, Konosuke, NTT Adv. Tech. Corp.
- **Org.:** Takano, Makoto, NTT Res. and Dev. Cen.

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<tr>
<th>Time</th>
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<th>Authors</th>
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<tr>
<td>4:40</td>
<td></td>
<td>Multi-Attribute Learning Mechanism for Network Control and Management</td>
<td>Inoue, Akiya, Yamamoto, Hisao, NTT Service Integration Lab.</td>
</tr>
<tr>
<td>5:00</td>
<td></td>
<td>Stability Analysis of Window-Based Flow Control Mechanism in TCP/IP Networks</td>
<td>Ohsaki, Hiroyuki, Murata, Masayuki, Ushio, Toshimitsu, Miyahara, Hideo, Osaka Univ.</td>
</tr>
<tr>
<td>5:20</td>
<td></td>
<td>Towards Efficient Call Admission Control for State-Dependent Routing in Multirate Networks</td>
<td>Ahlfors, Ulf, Korner, Ulf, Pioro, Michal, Lund Inst. of Tech.</td>
</tr>
<tr>
<td>5:40</td>
<td></td>
<td>Load Balancing and Control for Distributed World Wide Web Servers</td>
<td>Castro, Maurice, Dwyer, Michael, Rumsewicz, Michael, Royal Melbourne Inst. of Tech.</td>
</tr>
<tr>
<td>6:00</td>
<td></td>
<td>Distributed Web Caching Using Hash-Based Query Caching Method</td>
<td>Asaka, Takuya, Miwa, Hiroyoshi, Tanaka, Yoshiaki, Waseda Univ., NTT Service Integration Lab.</td>
</tr>
</tbody>
</table>
CCA-WP4
Manufacturing Systems
Chair: De Keyser, Robin
Co-chair: Takahashi, Katsuhiko

4:20
Robust Output High-Gain Feedback Controllers for the Atomic Force Microscope under High Data Sampling Rate
Hsu, Su-Hau,
Fu, Li-Chen
Nat. Taiwan Univ.

4:40
Simulation-Based Planning and Control of Production Fractals
Sihn, Wilfried,
Lickefett, M.,
Pirron, Joerg
Fraunhofer Inst. For Manufac.

5:00
Model Based Predictive Control in RTP Semiconductor Manufacturing
De Keyser, Robin
Donald, Ill, James
ASM America Inc.

5:20
Development of a Robot Holon Using an Open Modular Controller
Schnell, Jakob,
Andersen, Soren,
Langer, Gilad,
Sorensen, Christian
Tech. Univ. of Denmark

5:40
Applying a Neural Network to the Adaptive Control for JIT Production Systems
Takahashi, Katsuhiko,
Nakamura, Nobuto
Hiroshima Univ.

6:00
Control of Liquid Slosh in an Industrial Packaging Machine
Grundelius, Mattias,
Bernhardsson, Bo
Lund Inst. of Tech.

CCA-WP5
Nonlinear and Gain Scheduled Vehicles Control
Chair: Tseng, H.E.
Co-chair: Ono, Eiichi

4:20
Technical Challenges in the Development of Vehicle Stability Control System
Tseng, H.E.
Madau, D.,
Ashrafi, B.
Brown, T.
Recker, D.
Ford Motor Co.

4:40
Gain-Scheduled Control of a System with Input Constraint by Suppression of Input Derivatives
Nishimura, Hidekazu,
Takagi, Kiyoshi,
Yamamoto, Kohei
Chiba Univ.
A Supervisory Fuzzy Neural Network Controller for Slider-Crank Mechanism
Lin, Faa-Jeng, Fung, Rong-Fong, Lin, Hsin-Hai, Hong, Chih-Ming
Chung Yuan Christian Univ.

Model Reference Adaptive Control with Multi-Rate Type Neural Network for Electro-Pneumatic Servo System
Tanaka, Kanya Yamaguchi Univ.
Yamada, Yuji Kure Inst. Nat. College
Satoh, Taiji
Uchibori, Akihiko Yamaguchi Univ.
Uchikado, Shigeru Tokyo Denki Univ.

Improved Control of Pneumatic Lumber Handling Systems

Compensator Design for the ALFA Adaptive Optics System
Looze, Douglas P., Beker, Orhan Kaspar, Markus, Hippler, Stephan Max Planck Inst. fur Astronom.e

Fault-Tolerant Decentralized Control for Large Space Structures
Kobayashi, Yohji Ikeda, Masao Fujisaki, Yasumasa
Kobe City College of Tech. Osaka Univ. Kobe Univ.

Vibration Suppression Control of Flexible Arms by Using Sliding Mode Method
Chen, Xinkai Guo, Shuxiang Fukuda, Toshio
Tokyo Denki Univ. Kagawa Univ. Nagoya Univ.

Fuzzy Logic Control of a Moving Flexible Manipulator
Chen, Chong, Yin, Yican
Middle Tennessee State Univ.

Structural Design for Reduced-Order H_2 Controller
Hiramoto, Kazuhiro Doki, Hitoshi Obinata, Goro
Akita Univ.

A Scaled Testbed for Vehicle Control: The IRS
Brennan, S., Alleyne, A. Univ. of Illinois, Urbana-Champaign

The University of Toronto RC Helicopter: A Test Bed for Nonlinear Control
Bortoff, Scott A. Univ. of Toronto

Implications of Control-Structure Interaction in the Scaled Structural Control System Testing
Dyke, Shirley J., Jansen, Laura M. Washington Univ.

A Testbed for Nonlinear Flight Control Techniques: The Caltech Ducted Fan
Milam, Mark, Murray, Richard M. California Inst. of Tech.
CCA-ThA2b
Chemical Process Control
Chair: Seborg, Dale E. Univ. of California, Santa Barbara

11:40 CCA-352
Plantwide Control Design and Analysis of a Continuous Polymerization Process Using Optimal Control Methods
Robinson, Derek L., Schnelle, Phillip D. E.I. DuPont de Nemours & Co. McAvoy, Thomas Univ. of Maryland

12:00 CCA-359
Automatic Detection of Excessively Oscillatory Feedback Control Loops
Miao, Tina, Seborg, Dale E. Univ. of California, Santa Barbara

CCA-ThA3
Control of Chemical Processes II
Chair: Erickson, Mark Voyeran Tech.
Co-chair: Leonessa, Alexander Georgia Inst. of Tech.

10:00 CCA-365
Design of a Decentralized Output Feedback Control Law by Solving a Linear Least Squares Problem
Seatzu, Carla Univ. of Cagliari

10:20 CCA-371
Pressure Feedback Reduced-Order Dynamic Compensation for Axial Flow Compression Systems
Haddad, Wassim M., Corrado, Joseph R, Leonessa, Alexander Georgia Inst. of Tech.

10:40 CCA-377
Bifurcation Control of Rayleigh-Benard Convection

11:00 CCA-383
Rapid Process Recipe Optimization for Batch Thermal Reactors
Erickson, Mark A., Shah, S., Gudmundsson, T., Pandey, P. Voyeran Tech.

11:20 CCA-391
Towards Delta Domain in Predictive Control-An Application to the Space Crystal Furnace TITUS
Ebert, Wolfram Humboldt-Univ. of Berlin

11:40 CCA-397
Operation and Control of a Semibatch Reactive Distillation Column
Fernholz, Gregor, Wang, Wei, Engell, Sebastian, Fougner, Kajsa, Bredehoft, Jan-Peter Univ. of Dortmund

12:00 CCA-403
Robust LQ Optimal Controller Designing for Refining Process
Xue, Anke, Lu, Yingquan, Sun, Youxian Zhejiang Univ.

CCA-ThA4
Fuzzy & Neural Network
Chair: Danai, Kourosh Univ. of Massachusetts
Co-chair: Kiji, Junichi Toshiba Co.

10:00 CCA-409
Adjustment Rule Generation for Static Systems
Kiji, Junichi Toshiba Corp.

10:20 CCA-415
New Robust and Optimal Designs for Takagi-Sugeno Fuzzy Control Systems
Tanaka, Kazuo, Hori, Tsuyoshi Univ. of Electro-Communications
Wang, Hua O. Duke Univ.

10:40 CCA-421
Fuzzy-Logic-Based Guidance Law Design for Missile Systems
Lin, Chih-Min, Mon, Yi-Jen Yuan-Ze Univ.

11:00 CCA-427
Neural Network Assisted Control Loop Tuner
Wojsznis, Willy K., Blevins, Terry L., Thiele, Dirk Fisher-Rosemount Systems

11:20 CCA-432
FEP Learning Algorithm: Application to Direct Self-Learning Control
Mendil, Boubekeur Univ. of Bejaia
Benmhammed, Khier Univ. of Setif

11:40 CCA-1749
Model-Based Recurrent Neural Network for Modeling Nonlinear Dynamic Systems
Gan, Chengyu, Danai, Kourosh Univ. of Massachusetts

12:00 CCA-436
Feedforward IIIR Active Noise Control Using Genetic Algorithm
Kim, Jong Boo Induk Inst. of Tech.
Lee, Tae Pyo Hyundai Motors Co.
Yim, Kook Hyun Taesan Precision co.
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<td>10:00</td>
<td>CCA-442</td>
<td>Force Tracking Control for Active Suspensions-Theory and Experiments</td>
<td>Chantranuwathana, Supavut, Peng, Huei</td>
<td>Univ. of Michigan</td>
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<td>11:00</td>
<td>CCA-460</td>
<td>In-Cylinder Measurement for Engine Cold Start Control</td>
<td>Tunestal, Per, Wilcutts, Mark, Lee, Albert T., Hedrick, J. Karl</td>
<td>Univ. of California, Berkeley</td>
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<td>10:00</td>
<td>CCA-478</td>
<td>Passive Walking Robot QUARTET</td>
<td>Osuka, Koichi, Fujitani, Tatsuya, Ono, Toshiro</td>
<td>Osaka Pref. Univ.</td>
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<td>10:20</td>
<td>CCA-484</td>
<td>Walking of a Biped Robot with Passive Ankle Joints</td>
<td>Yi, Keon Young</td>
<td>Kwangwoon Univ.</td>
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<td>10:40</td>
<td>CCA-490</td>
<td>Biologically Inspired Adaptive Dynamic Walking of the Quadruped on Irregular Terrain</td>
<td>Fukuoka, Yasuhiro, Nakamura, Hiroyuki, Kimura, Hiroshi</td>
<td>Univ. of Electro-Communications</td>
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<td>11:00</td>
<td>CCA-496</td>
<td>Analysis and Design of Running Robots in Touchdown Phase</td>
<td>Ikeda, Takayuki, Iwatani, Yasushi, Suse, Koichi, Mita, Tsutomu</td>
<td>Tokyo Inst. of Tech.</td>
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<td>11:40</td>
<td>CCA-508</td>
<td>Dynamic Modeling of Flexure Jointed Hexapods for Control Purposes</td>
<td>McInroy, John E.</td>
<td>Univ. of Wyoming</td>
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<td>2:00</td>
<td>CCA-514</td>
<td>Estimation and Control of Vibrations of Circular Saws</td>
<td>Wang, Xiaochun G., Xi, Fengfeng Jeff, Li, Daming, Qin, Zhong</td>
<td>Integrated Manufac. Tech. Inst.</td>
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New Simple Adaptive Control Subject to Disturbances and Application to Torsional Vibrational Suppression
Mine, M., Date, K., Ohmori, Hiromitsu, Sano, Akira, Nishida, Hideyuki
Fuji Electric Co.

Control of Elevator Having Parametric Vibration Using LPV Control Method
Rijanto, Estiko, Muramatsu, Takashi, Tagawa, Yasutaka
Tokyo Univ. of Agric. and Tech.

Vibration Reduction with Specified-Swing Input Shapers
Singhose, William, Mills, Bart, Seering, Warren
Georgia Inst. of Tech., Massachusetts Inst. of Tech.

Input Shaper Design for Double-Pendulum Planar Gantry Cranes
Kenison, Michael, Singhose, William
Georgia Inst. of Tech.

Limiting Excitation of Unmodeled High Modes with Negative Input Shapers
Singhose, William, Grosser, Karen
Georgia Inst. of Tech.

Robust and Nonlinear Control of Magnetic Bearings
Chair: Fujita, Masayuki
Co-chair: Knope, Carl R.
Org.: Fujita, Masayuki
Kanazawa Univ.

Magnetic Suspension and Vibration Control of Beams for Non-Contact Processing
Trumper, David L., Weng, Ming-chih, Ritter, Robert J.
Massachusetts Inst. of Tech.

Sliding Mode Nonlinear Control of Magnetic Bearings
Torres, Mauricio, Sira-Ramirez, Hebertt, Escobar, Gerardo
C.N.R.S. - Supelec, CINVESTAV-IPN, C.N.R.S. - Supelec

Uncertain Model and Mu-Synthesis of a Magnetic Bearing
Namerikawa, Toru, Fujita, Masayuki
Kanazawa Univ.

Low-Order Mu-Synthesis Controller Design for a Large Boiler Feed Pump Equipped with Active Magnetic Bearings
Losch, Florian, Gähler, Conrad, Herzog, Raoul
Swiss Fed. Inst. of Tech. Zurich, MECOS Traxler

Mu-Control of a High Speed Spindle Thrust Magnetic Bearing
Fittro, Roger L., Knope, Carl R.
Univ. of Virginia

Adaptive Unbalance Vibration Control of Magnetic Bearing System Using Frequency Estimation for Multiple Periodic Disturbances with Noise
Nonami, Kenzo, Liu, Zi-he
Chiba Univ.
CCA-ThM4
Power Systems Control I
Chair: Bevrani, Hassan
Co-chair: Owens, David H.

2:00 CCA-609
Nonlinear Control of Non-Minimum Phase Systems:
Application to the Voltage and Speed Regulation of Power Systems
Okou, Aime Francis,
Akhrif, Ouassima,
Dessaint, Louis-A.
École de Tech. Superieure

2:20 CCA-616
Robust Load Frequency Controller in a Deregulated Environment: A Mu-Synthesis Approach
Bevrani, Hassan
West Regional Electric Co.

2:40 CCA-622
Fuzzy Logic in Voltage and Reactive Power Control in Power Systems
Ekel, P.Ya.,
Terra, L.D.B.,
Junyes, M.F.D.
Catholic Univ. of Minas Gerais
de Oliveira, F.J.A.,
Kowalschuck, R.,
Taguti, T.Y.
Parana State Energy Co.

3:00 CCA-628
Stability Analysis of the International Space Station Electrical Power System
Ly, J.H.,
Truong, C.
Aerospace Corp.

3:20 CCA-634
Robust Control of Gas Generator in a 1.5 MW Gas Turbine Engine
Gomma, H. W.,
Owens, David H.
Univ. of Exeter

3:40 CCA-640
Unsupervised Neural Network for Fault Detection and Classification in Dynamic Systems
Pei, Xiaoyin,
Chowdhury, Fahmida N.
Univ. of Southwestern Louisiana

CCA-ThM5
ABS and Adaptive Control
Chair: Singh, Tarunraj
Co-chair: Groning, Ingolf

2:00 CCA-646
A Sliding Mode Nonlinear Control Strategy for Anti-Lock Braking Systems
Taheri, Saied
Amirkabir Univ. of Tech.

2:20 CCA-648
Adaptive Fuzzy Logic Control of an Anti-Locking Braking System
Kokes, Guy,
Singh, Tarunraj
SUNY at Buffalo

3:00 CCA-652
Hardware-In-The Loop Simulator for ABS/TCS
Lee, Jae-Cheon
Keimyung Univ.
Suh, Myung-Won
Sung-Kyun-Kwan Univ.

3:20 CCA-658
Design of a State Control for a Solid-Coupled Magnetic Levitation Transport System
Groning, Ingolf,
Zickermann, Richard,
Henneberger, Gerhard
Aachen Inst. of Tech.

3:40 CCA-662
Road Friction Estimation Using Adaptive Observer with Periodical Sigma-Modification
Nishira, Hikaru
Univ. of Tokyo
Kawabe, Taketoshi
Nissan Motor Co.
Shin, Seiichi
Univ. of Tokyo

CCA-ThM6
Robot Control
Chair: Safonov, Michael G.
Co-chair: Shimizu, K.

2:00 CCA-668
An Experimental Facility for Nonlinear Robot Control
van Beek, Bert
Oce-Tech. B.V.
de Jager, Bram
Eindhoven Univ. of Tech.

2:20 CCA-674
IMC Design with Limiting Properties of LQR and its Application to Trajectory Tracking Control
Suzuki, R.,
Doi, M.,
Kobayashi, N.,
Furuya, S.
Kanazawa Inst. of Tech.

2:40 CCA-680
Unfalsified Direct Adaptive Control of a Two-Link Robot Arm
Tsao, Tung-Ching
Spectrum Astro, Inc
Safonov, Michael G.
Univ. of Southern California
CCA-ThP1
Motion and Vibration Control via Command Shaping
Chair: Meckl, Peter H. Purdue Univ.
Co-chair: Singhose, William Georgia Tech.
Org.: Meckl, Peter H. Purdue Univ.

4:20 (I) CCA-707
Benchmarking Optimal Control Strategies for Flexible Systems
Reynolds, Michael C., Meckl, Peter H. Purdue Univ.

4:40 (I) CCA-713
An Expert System for the Design of Input Shapers
French, Lila Massachusetts Inst. of Tech.
Singhose, William Georgia Inst. of Tech.
Seering, Warren Massachusetts Inst. of Tech.

5:00 (I) CCA-719
Comparison of Command Shaping Controllers for Suppressing Payload Sway in a Rotary Boom Crane
Lewis, Derek Seagate Tech.
Parker, Gordon G. Michigan Tech. Univ.
Driessen, Brian, Robinett, Rush D. Sandia Nat. Lab.

5:20 (I) CCA-1774
Command Shaping Boom Crane Control System with Nonlinear Inputs
Parker, Gordon G. Michigan Tech. Univ.
Groom, Kenneth,
Hurtado, Johnny,
Robinett, Rush D.
Leban, Frank Sandia Nat. Lab.

5:40 (I) CCA-725
Achieving Fast Motions in Semiconductor Manufacturing Machinery
Meckl, Peter H. Purdue Univ.
Umemoto, Kazunobu NEC Corp.

CCA-ThP2
Control of Magnetic Bearings and Steppers
Chair: Wang, Y. California Inst. of Tech.
Co-chair: Torres, Mauricio CNRS

4:40 CCA-737
Elimination of Imbalance Vibrations in Magnetic Bearing Systems Using Discrete-Time Gain-Scheduled Q-Parameterization Controllers

5:20 CCA-749
Direct Closed-Loop Identification of Magnetic Suspension System
Sun, Lianming, Ohmori, Hiromitsu, Sano, Akira Keio Univ.

CCA-ThP3
Control of Semiconductor Manufacturing Processes
Chair: Smith, Roy Univ. of California, Santa Barbara
Co-chair: Poolla, Kameshwar Univ. of California, Berkeley
Org.: Smith, Roy Univ. of California, Santa Barbara

4:20 (I) CCA-761
Control of a III-V Epitaxial MOCVD Process Using Ultraviolet Absorption Concentration Monitoring
Gaffney Flynn, Monique S. Litton Guid. & Cont. Sys.
Smith, Roy, Abraham, Patrick, DenBaars, Steven P. Univ. of California, Santa Barbara

4:40 (I) CCA-767
Piloting Epitaxy through Ellipsometric Feedback
Warnick, Sean C., Dahleh, Munther A. Massachusetts Inst. of Tech.

5:00 (I) CCA-773
Real-Time Estimation of Patterned Wafer Parameters Using In-Situ Spectroscopic Ellipsometry
Galarza, Cecilia G., Khargonekar, Pramod P., Terry, Jr, Fred L. Univ. of Michigan

5:20 (I) CCA-779
Real-Time Plasma Etch Control Using In-Situ Sensors and Neural Networks
Stokes, David, May, Gary S. Georgia Inst. of Tech.
Micro-Sensor Arrays for Calibration, Control, and Monitoring of Semiconductor Manufacturing Processes
Fisher, Darin, Freed, Mason, Spanos, Costas, Poola, Kameshwar
Univ. of California, Berkeley

Interprocess Run-To-Run Feedforward Control for Wafer Patterning
Wagner, Aaron B. Ruegsegger, Steven M. Freudenberg, James S., Grinard, Dennis S.
Univ. of Michigan IBM

Emulating Large, Time Varying Rotary Power Loads At Low Cost
McInroy, John E., Legowski, S.F., Morris, C.M., Muknahallipatna, S., Bershinsky, V.
Univ. of Wyoming

Robust Controller Design for Simultaneous Control of Throttle Pressure and Megawatt Output in a Power Plant Unit
Zhao, Haipeng Li, Wei Taft, Cyrus Bentsman, Joseph
Univ. of Illinois at Urbana-Champaign Univ. of Illinois, Urbana-Champaign EPRI & C Gen. Univ. of Illinois, Urbana-Champaign

Nonlinear and Linear Robust Control of Switching Power Converters
Bevrani, Hassan Abrishamchian, M., Sarani-shad, N.
West Regional Electric Co. K.N. Toosi Univ. of Tech.

Nonlinear Variable Speed Control of Wind Turbines
Song, Y.D., Dhinakaran, B.
North Carolina A&T State Univ.

Reduced-Order Estimation of Power System Harmonics Using Set Theory
Andreou, Spyros, Yaz, Edwin E., Olejniczak, Kraig J.
Univ. of Arkansas Centenary College

Optimization-Based Tuning and Coordination of Flexible Damping Controllers for Bulk Power Systems
Kamwa, I. Trudel, G., Lefebvre, D.
Inst. de Recherche d'Hydro-Quebec TransEnergie, Hydro-Quebec

Automotive Control
Chair: Lyshevski, Sergey E. Co-chair: Kolmanovsky, Ilya
Purdue Univ., Indianapolis Ford Res. Lab.

Diesel-Electric Drivetrains for Hybrid-Electric Vehicles: New Challenging Problems in Multivariable Analysis and Control
Lyshevski, Sergey E.
Purdue Univ., Indianapolis

Automation Concept for a New Dynamical Engine Test Stand
Schmidt, Martin, Kessel, Jens-Achim
Darmstadt Univ. of Tech.

Intake Oxygen Concentration Estimation for DI Diesel Engines
Lyshevski, Sergey E., Sinha, A.S.C.
Purdue Univ., Indianapolis Cummins Engr. Co., Inc.

Lyapunov Recursive Design of Robust Tracking Control with $L_\infty$-Gain Performance for Electrically-Driven Robot
Ishii, Chiharu Shen, Tielong Qu, Zhihua
Ashikaga Inst. of Tech. Sophia Univ. Univ. of Central Florida

Robot Manipulators
Chair: Muramaki, Toshiyuki Co-chair: Tomei, Patrizio
Keio Univ. Univ. of Roma

Lyapunov Recursive Design of Robust Tracking Control with $L_\infty$-Gain Performance for Electrically-Driven Robot
Ishii, Chiharu Shen, Tielong Qu, Zhihua
Ashikaga Inst. of Tech. Sophia Univ. Univ. of Central Florida
4:40 CCA-869
Decentralized Control of Cooperative Manipulators Based on Virtual Force Transmission Algorithm
Itoh, Masanao, Murakami, Toshiyuki, Ohnishi, Kouhei Keio Univ.

5:00 CCA-875
Robust Adaptive Friction Compensation for Tracking Control of Robots
Tomei, Patrizio Univ. of Roma

5:20 CCA-881
Robust Output Feedback Control of Robot Manipulators Using High-Gain Observer
Shin, Eui Seok, Lee, Kang Woong Hankuk Aviation Univ.

5:40 CCA-887
An Approach to Robust Hierarchical Impedance Control in Redundant Manipulator
Ishii, Kunihiko, Fujimoto, Yasutaka, Murakami, Toshiyuki, Ohnishi, Kouhei Keio Univ.