A General Framework for Decentralized Estimation
Walter H. Chung Univ. of California at Los Angeles
Jason L. Speyer Univ. of California

A Decentralized Approach to Control Civil Structures
Hassan Hashemian California State Univ., Los Angeles
Helen Ryaciotaki-Boussalis California State Univ., Los Angeles

Global Decentralized Adaptive Control Large Scale Nonlinear Systems Without Strict Matching
Sandeep Jain Polytechnic Univ.
Farshad Khorrami Polytechnic Univ.

FRIDAY MORNING SESSION
PLENARY SESSION III — GRAND III
8:00 — 8:50 Adaptive Control with a French Touch
Iain D. Landau G.R. Automatique

Chair Isaac Kaminer Naval Post-Graduate School
Cochair Antonio Pascoal Inst. Superior Tecnico

Anthony Healey Naval Post-Graduate School
Antonio Pascoal Inst. Superior Tecnico
Fernando Lobo Pereira Inst. for Sys. & Robotics

9:35 — 9:55 Survey of Unmanned Air Vehicles
R.M. Howard Naval Post-Graduate School
Isaac Kaminer Naval Post-Graduate School

9:55 — 10:15 A Tri-level Control System for Coordination of Hover Control Modes of the NPS Phoenix: In Water Experiments
Anthony Healey Naval Post-Graduate School
S.B. Marco Naval Post-Graduate School
R.B. McGhee Naval Post-Graduate School
D.P. Brutzman Naval Post-Graduate School
S.H. Kwak Loral Defense Systems Inc.
10:15—10:35
Flight Control System Design for a Small
Unmanned Aircraft
Chester D. Ozimina Naval Research Lab.
Steve K. Tayman Naval Research Lab.
Harvey E. Chaplin Naval Research Lab.

10:35—10:55
Ded Implementation of a Trajectory Tracking Controller
for a Fixed Wing Unmanned Air Vehicle
Isaac Kaminer Naval Post-Graduate School
E. Hallberg Naval Post-Graduate School
Antonio Pascoal Inst. Superior Tecnico

10:55—11:15
Design and Implementation of a Trajectory Tracking
Controller for an Autonomous Underwater
Vehicle (AUV)
Carlos Silvestre Inst. Superior Tecnico
P. Oliveira Inst. Superior Tecnico
Antonio Pascoal Inst. Superior Tecnico
D. Fryxell Inst. Superior Tecnico

FA 02 Fifth Ave
Robust Control Applications

Chair Wei-Min Lu California Inst. of Tech.
Cochair Andy Packard Univ. of California at Berkeley

9:15 — 9:35
Linear Controller for an Inverted Pendulum Having
Restricted Travel - A High-and-low Gain Approach
Zongli Lin State Univ. of New York at Stony Brook
Ali Saberi Washington State Univ.
Michael M. Gutmann Washington State Univ.
Y.A. Shamash State Univ. of New York at Stony Brook

9:35 — 9:55
Robust and Adaptive Tracking Control of a Rigid Link
In a Cross Flow
Catalin F. Baicu Clemson Univ.
Christopher D. Rahn Clemson Univ.
Darren M. Dawson Clemson Univ.

9:55—10:15
An LFT Approach to Autopilot Design for Missiles
Yun Huang California Inst. of Tech
Wei-Min Lu California Inst. of Tech.

10:15—10:35
Robust Adaptive Control for Non-linear End
Milling Process
Steven Kooi (none)
9:15 — 9:35
Adaptive Control of Partially Known Systems
Gang Tao Univ. of Virginia

9:35 — 9:55
Variable Structure Model Reference Adaptive Control Based on Two-degree-of-freedom Compensators Scheme
Shiro Masuda Okayama Univ.
Akira Inoue Okayama Univ.

9:55 — 10:15
Symbolic Computation Aided Design of Observers for a Class of Nonlinear Control Systems
Gildas Besancon Lab. d'Auto. de Grenoble
Guy Bornard Polytechnic Inst. Grenoble

10:15 — 10:35
Discrete-time Adaptive Control of Systems with Multi-segment Piecewise-Linear Nonlinearities
Gang Tao Univ. of Virginia
Ming Tian Univ. of Virginia

10:35 — 10:55
Nonlinear Learning Control for a Class of Nonlinear Systems Based on Lyapunov's Direct Method
C. Ham Univ. of Central Florida
Zhihua Qu Univ. of Central Florida
Joseph H. Kaloust Univ. of Central Florida

10:55 — 11:15
Adaptive Output-feedback Nonlinear Control with Parameter Convergence
J-S Lin Univ. of California at Los Angeles
Ioannis Kanellakopoulos Univ. of California
Calculation of the Structured Singular Value with Gradient Based Optimization Algorithms
Cheng Yi Katholieke Univ. Leuven
Jeroen Dehaene Katholieke Univ. Leuven
Bart De Moor Katholieke Univ. Leuven

A Proof of Stability of All-Pass Pade Approximants to C-s
Chyi Hwang National Chung Cheng Univ.
Ying-Chin Lee National Cheng Kung Univ.

Gain Scheduling Optimization by Genetic Algorithms
Lt. Col. Stuart Kramer, PhD Air Force Inst. of Tech.

Cube Collect: A New Strategy to Make Efficient the Classical Cell-to-Cell Algorithms
Salvatore Baglio Univ. degli Studi di Catania
L. Fortuna Univ. di Catania
Matteo Lo Presti Fuzzy Logic Research Group
Giovanni Muscato Univ. di Catania

Fused Multi-sensor Data using a Kalman Filter Modified with Interval Probability Support
Mohamed A. Zohdy Oakland Univ.
Aftab Ali Khan Oakland Univ.
Paul Benedict Oakland Univ.

Optimal Control of Linear Singularly Perturbed Systems
Nabil Derbel Ecole Nationale d'Ingenieurs de Sfax
Mohamed Ben Ali Kamoun Sfax National Eng. School
FA 05 Vashon I
Worst Case Control Relevant Identification

Chair  Jie Chen  Univ. of California
Cochair  Le Yi Wang  Wayne State Univ.

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Jonathan H. Friedman  Univ. of Michigan
Pramod P. Khargonekar  Univ. of Michigan

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Mario Milanese  Politecnico di Torino

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Krishan Nagpal  Univ. of Iowa

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I. Chen  Massachusetts Inst. of Tech.
Munther A. Dahleh  Massachusetts Inst. of Tech.
John N. Tsitsiklis  Massachusetts Inst. of Tech.

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Jie Chen  Univ. of California

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Pertti M. Makila  Abo Akademi Univ.

FA 06 Vashon II
Cruise Control

Chair  Alex Alexandridis  General Motors Co., Rsch. & Dev. Center
Cochair  J. Karl Hedrick  Univ. of California at Berkeley

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St. Germann  Tech. Univ. of Darmstadt
Rolf Isermann  Darmstadt Univ. of Tech.
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Kazuyuki Kobayashi Oakland Univ.
Ka Chai Cheok Oakland Univ.
Kajiro Watanabe Hosei Univ.

9:55 — 10:15
Autonomous Intelligent Cruise Control using Both Front and Back Information for Tight Vehicle Following Maneuvers
C.C. Chien Univ. of Southern California
Youping Zhang Univ. of Southern California

10:15 — 10:35
Speed Control of Heavy-duty Vehicles via Fuel Command
D. Yanakiev Univ. of California at Los Angeles
Ioannis Kanellakopoulos Univ. of California

10:35 — 10:55
Learning Control Based on Pattern Recognition Applied to Vehicle Cruise Control Systems
B.S. Zhang Univ. of Westminster
I. Leigh Univ. of Westminster
J.R. Leigh Univ. of Westminster

10:55 — 11:15
Vehicle Longitudinal Control using an Adaptive Observer for Automated Highway Systems
Sei-Bum Choi Univ. of California at Berkeley
J. Karl Hedrick Univ. of California at Berkeley

FA 07 Whldbey
Spacecraft Control I

Chair
Helen Ryacirotaki-Boussalis
California State Univ., Los Angeles

Cochair
Suresh M. Joshi NASA Langley Research Ctr.

9:15 — 9:35
A Preferred Trajectory Steering Law for Spacecraft with Redundant CMGs
Mark D. Kuhns Arizona State Univ.
Armando A. Rodriguez Arizona State Univ.

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Brett Newman Old Dominion Univ.
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John E. McLinroy Univ. of Wyoming
Jeffrey Mellstrom Jet Propulsion Labs.

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C. Lucisano Notre Dame Univ.
Michael Lemmon Notre Dame Univ.

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Sahjendra N. Singh Univ. of Nevada, Las Vegas
Woosoon Yim Univ. of Nevada

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Yon-Ping Chen National Chiao-Tung Univ.
Shih-Che Lo National Chiao-Tung Univ.

FA 08 Orcas
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Chair Robert P. Judd Ohio University
Cochair Robert P. Van Til Oakland Univ.

9:15 — 9:35
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Mark A. Shayman Univ. of Maryland
Ratnesh Kumar Univ. of Kentucky

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X. H. Xu Northeastern Univ. of Tech.
R.A. Cuninghame-Green Univ. of Birmingham

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Lawrence E. Holloway Univ. of Kentucky

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Control - A First Example ......................................3157
J. Gunnarsson Linkoping Univ.
J. Plantin Linkoping Univ.
Modeling DES using a Modified Colored Petri Nets
Xiaoou Li Northeastern Univ. of Tech.
X. H. Xu Northeastern Univ. of Tech.

Inductive Inference of Logical DES Controllers using the L Algorithm
Xiaojun Yang Notre Dame Univ.
Michael Lemmon Notre Dame Univ.
Panos J. Antsaklis Notre Dame Univ.

Critical Review of All Available Undergraduate Process Control Textbooks
James B. Rawlings Univ. of Texas at Austin

The Syllabus for Undergraduate Process Control Education
Jeffrey C. Kantor Notre Dame Univ.

Undergraduate Control Education as Preparation for Industrial Practice
Charles F. Moore Univ. of Tennessee

Undergraduate Process Control Education: An Industrial Perspective
James J. Downs Eastman Chemical Co.

Available Textbooks and Curricula for the Graduate Process Control Course
Duncan A. Mellichamp Univ. of California at Santa Barbara

A Specific Curriculum for a Graduate Process Control Course
Tse-Wel Wang Univ. of Tennessee
Control of Two-Time-Scale Nonlinear Systems with Disturbances
Panagiotis D. Christofides Univ. of Minnesota
Prodromos Daoutidis Univ. of Minnesota

A Nonlinear Approach to the Problem of Composition Control
Salvador Padilla Centro de Investigacion en Polimeros
Jesus Alvarez Univ. Autonoma Metropolitana
Teresa Lopez Univ. Auto. Metropolitana-Iztapal

A Robust Predictive Controller Synthesis for Uncertain Nonlinear
Yi-Shyong Chou National Taiwan Inst. of Tech.
Wei Wu National Taiwan Inst. of Tech.

Experimental Comparison of Advanced Control Techniques on a Lab-scale Distillation Column
Amit Gupta ABB Simcon, Inc.
R. Russell Rhinehart Texas Tech Univ.

Stabilization of Systems with Input Constraints
Navneet Kapoor Univ. of Minnesota
Prodromos Daoutidis Univ. of Minnesota

Measurement - Feedback for a Class of Nonlinear Processes
Jesus Alvarez Univ. Autonoma Metropolitana

Calculation of a Minimal Order Nonlinear Robust Servo-regulator
Qingwei Li Univ. of Illinois at Chicago
Jie Huang American GNC Corp.
Adaptive Feedback Linearization using Multivariable Spline Functions
Rajinderjeet S. Minhas Univ. of Toronto
Scott A. Bortoff Univ. of Toronto

On Unknown Input Observers for Bilinear Systems
C. Mechmeche Univ. de Nancy I
Michel Zasadzinski RARAL
Mohamed Darouach Univ. de Nancy
H. Rafaralahy Univ. de Nancy

Semi-global Output Regulation for Linear Systems Subject to Input Saturation - A Low-and-high Gain Design
Zongli Lin State Univ. of New York at Stony Brook
Ravi Mantri Washington State Univ.
Ali Saberi Washington State Univ.

Control System Analysis and Design Upon the Lyapunov Method
Sergey Lyashevskiy Purdue Univ., Indianapolis
Andrew U. Meyer N.J. Inst. of Tech.

Nonlinear Modification of Positive-real LQG Compensators for Enhanced Disturbance Rejection and Energy Dissipation
Robert T. Bupp Univ. of Michigan
Joseph R. Corrado Univ. of Michigan
Dennis S. Bernstein Univ. of Michigan
Vincent T. Coppola Univ. of Michigan

Chair Alexander Gregov Univ. of Duisberg
Cochair George J. Vachtsevanos Georgia Inst. of Tech.

Multilayer Fuzzy Control of Multivariable Processes by Direct Decomposition
Alexander E. Gegov Univ. of Duisberg

Tuning and Analysis of a Fuzzy Logic Controller Based on Gain and Phase Margins
Jian-Xin Xu National Univ. of Singapore
Chen Liu National Univ. of Singapore
Chang C. Hang National Univ. of Singapore
9:55—10:15
A Design Method for Vehicle Dynamic Systems Based on Fuzzy Logic Control
T. P. Leung Hong Kong Polytechnic
Zhou Qi-jie South China Univ. of Tech.
Mao Zhong-yuan South China Univ. of Tech.
Yu De-jiang Hong Kong Polytechnic

10:15—10:35
A Multivariable Decoupling Design of an ROV Depth Control System, a Direct Adaptive Fuzzy
SMC Approach
A. Trebi-Ollennu Cranfield Univ.
Barry A. Stacey Cranfield Univ.
Brian A. White Cranfield Univ.

10:35—10:55
A New Design of Adaptive Robust Fuzzy Controller for Nonlinear Systems
Feng-Yih Hsu National Taiwan Univ.
Li-Chen Fu National Taiwan Univ.

10:55—11:15
Fuzzy Performance Management of IEEE 802.4 Token Bus Networks
Sangho Lee Pusan National Univ.
Joon-woo Son Pusan National Univ.
Suk Lee Pusan National Univ.

FA 13 Olympic
Fault Detection with Neural Networks

Chair Hayrani Oz Ohio State Univ.
Cochair Christopher N. D’Souza Wright Patterson Air Force Base

9:15—9:35
A Neural Network Based Adaptive Fault Detection Scheme
Rajiv Sreedhar Univ. of Texas at Austin
Benito Fernandez Univ. of Texas at Austin
Glenn Y. Masada Univ. of Texas at Austin

9:35—9:55
Residual Evaluation for Fault Detection and Isolation with RCE Neural Networks
Birgit Koppen-Seiliger Univ. of Duisberg
Paul M. Frank Univ. of Duisberg
A. Wolff Tech. Univ. Hamburg-Harburg

9:55—10:15
Modeling and Compensation of Frictional Uncertainties in Motion Control: A Neural Network Based Approach
M. Kemal Ciliz Bogazici Univ.
Masayoshi Tomizuka Univ. of California at Berkeley
A Novel Fault Prediction Technique using Model Degradation Analysis
B. Lennox Univ. of Newcastle Upon Tyne
Gary A. Montague Univ. of Newcastle Upon Tyne

Failure Diagnosis using the State Chi-square Test and the ARTMAP Neural Networks
Ren Da American GNC Corp.
Ching-Fang Lin American GNC Corp.

Neural Network Representation of Fatigue Damage Dynamics
Chen-Jung Li Penn State Univ.
Asok Ray Penn State Univ.

Chair Chza-Hszang Menq Ohio State Univ.
Cochair Nader Sadegh Georgia Inst. of Tech.

Stability of PDF Controller with Stick-slip Friction Crevice
Chih-Jung Huang National Taiwan Univ.
Jia-Yush Yen National Taiwan Univ.
Shu-Shung Lu National Taiwan Univ.

Friction Estimation In a Planar Electrohydraulic Manipulator
Shahram Tafazoli-Bilandi Univ. of British Columbia
Clarence W. de Silva Univ. of British Columbia
P.D. Lawrence Univ. of British Columbia

Precision Single-axis Motion Control System with Friction Compensation
Amos El-Roy New Jersey Inst. of Tech.
Bernard Friedland New Jersey Inst. of Tech.

Experiments on Robust Friction Compensation: The Inverted Pendulum Case
R. Aimar Politecnico di Torino
Marina Indri Politecnico di Torino
T. Stomboli Politecnico di Torino
Basilio Bona Politecnico di Torino
10:35 — 10:55
Robust Compensation Techniques for DC Servomechanisms Subject to Stiction and Parametric Uncertainties using Sliding Mode Estimation
Samir Mittal Ohio State Univ.
Chza-Hszang Menq Ohio State Univ.

10:55 — 11:15
An Impact Model of Mechanical Backlash for Control System Analysis
J. Christian Gerdes Univ. of California at Berkeley
Vijay Kumar Univ. of Pennsylvania

FA 15 Cascade II
Flexible Robots

Chair Wayne J. Book Georgia Inst. of Tech.
Cochair Ina Sharf Univ. of Victoria

9:15 — 9:35
Predictive End-point Trajectory Control of Elastic Manipulators
Woosoon Yim Univ. of Nevada
Sahjendra N. Singh Univ. of Nevada, Las Vegas

9:35 — 9:55
Colocated and Noncolocated Control Design via μ-synthesis for Flexible Manipulators
Mansour Karkoub Univ. of Minnesota
Gary John Balas Univ. of Minnesota
Kumar Tamma Univ. of Minnesota

9:55 — 10:15
Identification and Gain Scheduled Vibration Control of an Experimental Two-link Flexible Manipulator
Richard I. Mitford Hughes Space and Communication Company
Samuel F. Asokanthan Univ. of Queensland

10:15 — 10:35
Active Damping of a Large Flexible Manipulator with a Short-reach Robot
I. Sharf Univ. of Victoria

10:35 — 10:55
Robust Observer for Flexible-link Manipulators Control
Ahmed S. Zaki Univ. of Windsor
W.H. ElMaraghy Univ. of Windsor
Evaluation of Reduced-order Controllers on a Two-link Flexible Manipulator
David E. Bossert Univ. of Washington
Uy-Loi Ly Univ. of Washington
Juris Vagners Univ. of Washington

10:55 — 11:15

FA 16 Magnolia Suite
Robust Control I

Chair
Keith Glover Univ. of Texas at Arlington
Cochair
Kai Liu Univ. of Texas at Arlington

9:15 — 9:35

Robust Controller Design for a Class of Uncertain Multivariable Systems
Osvaldo E. Agamennoni Univ. Nacional del Sur
J.L. Figueroa Univ. of Sydney
J.A. Romagnoli Univ. of Sydney

9:35 — 9:55

Sufficient Conditions for Pertaining the Number of Both Stable and Unstable Roots of Schur Polynomial Under Deviations of Its Coefficients
E. K. Kornoushenko Inst. of Control Sciences
A. S. Bernstein Inst. of Control Sciences

9:55 — 10:15

Robust Controller for Matrix Second Order Systems with Structured Uncertainty
Anjali M. Diwekar Ohio State Univ.
Rama K. Yedavalli Ohio State Univ.

10:15 — 10:35

Robust Stability Bounds for Sampled-data Systems
Jelel Ezzine King Fahd Univ. of Petro & Minerals

10:35 — 10:55

On Structures Singular Values of Reciprocal Matrices
Shigeru Yamamoto Osaka Univ.
Hidenori Kimura Osaka Univ.

10:55 — 11:15

The Robustness Analysis of Uncertain Systems Described by Vector-matrix Differential Equations
Shijie Xu EARAL-IUT de Longwy
Mohamed Darouach Univ. de Nancy
J. Schaefers CRP-HT
### FA 17 Queen Anne Suite
#### Robust Control III

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<th>Univ. of Wisconsin at Madison</th>
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**9:15 — 9:35**

Stabilization of Uncertain Systems via Linear Robust Control

Sergey Lyashevskiy  
*Purdue Univ., Indianapolis*

Yaobin Chen  
*Purdue Univ., Indianapolis*

**9:35 — 9:55**

Computation of the Frequency Response of Interval Systems

Jyh-Jia Chen  
*National Cheng Kung Univ.*

**9:55 — 10:15**

Classes of Discrete Linear Systems Having Common Quadratic Lyapunov Functions

Y. Mori  
*Kyoto Inst. of Tech.*

Takehiro Mori  
*Kyoto Inst. of Tech.*

Y. Kuroe  
*Kyoto Inst. of Tech.*

**10:15 — 10:35**

Stability of Inclusions of Linear Type

N.E. Barabanov  
*St. Petersburg Elect. Eng. Univ.*

**10:35 — 10:55**

Output Tracking with Bounded Induced L2 Norm

Xin H. Yang  
*Univ. of California*

Fen Wu  
*Univ. of California*

Andy Packard  
*Univ. of California at Berkeley*

**10:55 — 11:15**

Design of Observer-based Robust Controller

Drriss Mehdi  
*ESIP-LAI*

Mohammed Al Hamid  
*ESIP-LAI*

Michel Zasadzinski  
*RARAL*

---

### FA 18 Capitol Suite
#### Linear Systems III

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<th>Chair</th>
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<td>Engin Yaz</td>
<td><em>Univ. of Arkansas</em></td>
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Mohammed Sami  
*Fadali Univ. of Nevada*

Engin Yaz  
*Univ. of Arkansas*
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W. Y. Yan Univ. of Western Australia
K. L. Teo Univ. of Western Australia

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Bean San Goh Univ. of Western Australia

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Ali Saberi Washington State Univ.
Zongli Lin State Univ. of New York at Stony Brook
Anton A. Stoorvogel Eindhoven Univ. of Tech.

FRIDAY MID-DAY SESSION

FM 01 Grand II
Air Traffic Automation

Chair Rhonda A. Slattery NASA Ames Rsch. Ctr.
Cochair Yiyuan Zhao Univ. of Minnesota

1:15 — 1:35
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Jon Schreur Smith Industries

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Daniel J. Brudnicki MITRE Corp.
Daniel B. Kirk MITRE Corp.

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Yiyuan Zhao Univ. of Minnesota

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Rosa M. Oseguera NASA Langley Research Ctr.
David H. Williams NASA Langley Research Ctr.
2:35 — 2:55
Inter Operability Issues for Efficient Air Traffic Management
Paul van Tulder Boeing Commercial Airplane Co.

2:55 — 3:15
Evolutionary Air Traffic Control Compatible Flight Management Systems
Robert L. Schultz Honeywell Tech. Center
Mary Jo Hoffman Honeywell Tech. Center

Chair Michael P. Polis Oakland Univ.
Cochair Andrzej W. Olbrot Wayne State Univ.

1:15 — 1:35
Robust Lyapunov Control with Perturbation Estimation
Jairo T. Moura Univ. of Connecticut
Nejat Olgac Univ. of Connecticut

1:35 — 1:55
Optimal Scaled $H_\infty$ FI Synthesis with Real Parametric Uncertainty
Richard C. Lind Univ. of Minnesota
Gary John Balas Univ. of Minnesota
Andy Packard Univ. of California at Berkeley

1:55 — 2:15
Robust Controller Design: Mixed $H_2$ Performance Optimization for Linear Discrete-time Systems
Jiann-shiou Yang Univ. of Minnesota
Michael E. Zervakis Univ. of Minnesota, Duluth

2:15 — 2:35
LMI-based Output Feedback Controller Design
Izumi Masubuchi Osaka Univ.
Atsumi Ohara Osaka Univ.
Nobuhide Suda Osaka Univ.

2:35 — 2:55
Simplified Output Control via Parallel Compensation
John D. Finney Georgia Inst. of Tech.
Bonnie S. Heck Georgia Inst. of Tech.

2:55 — 3:15
Positive Real Controller Design with $H_\infty$ Norm Performance Bound - an LMI Approach
Xin Chen Rensselaer Polytechnic Inst.
FM 03 Grand Crest
Nonlinear and Adaptive Flight Control

Chair  Marc Bodson  Univ. of Utah
Cochair  Philip R. Chandler

1:15 — 1:35
An Adaptive Algorithm with Information-dependent Data Forgetting
Marc Bodson  Univ. of Utah
3485

1:35 — 1:55
A Self-designing Receding Horizon Optimal Flight Controller
D.G. Ward  Barron Associates, Inc.
3490

1:55 — 2:15
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Philip R. Chandler  Wright Patterson Air Force Base
Meir Pachter  Air Force Inst. of Tech.
M. Mears  Wright Patterson Air Force Base
3495

2:15 — 2:35
Discontinuous Receding Horizon Control with State Constraints
Hannah H. Michalska  McGill Univ.
3500

2:35 — 2:55
Neural Network and Fuzzy Logic Approach to Aircraft Reconfigurable Control Design
C.-Y. Chiang  Univ. of Southern California
Hussein M. Youssef  Lockheed Advanced Dev. Co.
3505

2:55 — 3:15
Learning the Nonlinear Inverse Flight Dynamics using Radial Basis Functions
Sherif M. Botros  Charles River Analytics, Inc.
Alper K. Caglayan  Charles River Analytics, Inc.
G.L. Zacharias  Charles River Analytics, Inc.
3510

FM 04 Bainbridge
Motor Control

Chair  Naim A. Kheir  Oakland Univ.
Cochair  Li-Chen Fu  National Taiwan Univ.

1:15 — 1:35
Robust Adaptive Control of Induction Motors Without Flux Measurements
Chi-Man Kwan  Univ. of Texas at Arlington
Frank L. Lewis  Univ. of Texas at Arlington
Kais Yeung  Univ. of Texas at Arlington
3515
1:35 — 1:55
On Speed Control of Induction Motors
Romeo Ortega Univ. de Compiègne
Per Johan Nicklasson Univ. of Trondheim
Gerardo Espinosa-Perez Univ. de Mexico

1:55 — 2:15
Exponentially Stable Field-oriented PI-controller for Speed Regulation of Induction Motor
Jaion-Shea Chang National Taiwan Univ.
Li-Chen Fu National Taiwan Univ.

2:15 — 2:35
A Sliding-mode Based Smooth Adaptive Robust Controller for Friction Compensation
G. Song Columbia Univ.
Y. Wang Columbia Univ.
Lilong Cai Hong Kong Univ. of Science & Tech.
Richard W. Longman Columbia Univ.

2:35 — 2:55
Design and Implementation of an Induction Motor Drive using Sliding-mode Control Scheme
Jian-Shiang Chen National Tsing Hua Univ.
Jyh-Shiaan Yang National Tsing Hua Univ.

2:55 — 3:15
Decentralized Sliding Mode Control in Inertial Navigation Systems
Yuri B. Shtessel Univ. of Alabama, Huntsville

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FM 05 Vashon I
Integration of Identification and Control

Chair
Joan D. Landau Lab. d'Auto. de Grenoble
Cochair
Arthur J. Helmicki Univ. of Cincinnati

1:15 — 1:35
A Minimax Approach to Nonconvex Coupled LMI Problems
Pramod P. Khargonekar Univ. of Michigan
Enrique Baeyens Univ. of Michigan

1:35 — 1:55
The Joint Closed Loop Identification and Control Design-theoretical Issues and Applications
Alina Voda Lab. d'Auto. de Grenoble
Joan D. Landau Lab. d'Auto. de Grenoble

1:55 — 2:15
H∞ Identification-based Robust Control System Design
Anju Bahri Univ. of Cincinnati
Arthur J. Helmicki Univ. of Cincinnati
Identification of Biological Systems using Reverse-correlation Techniques
Gregory J. Wolodkin Univ. of California at Berkeley
Kameshwar Poolla Univ. of California at Berkeley

A State-Space Model Identification of Closed-Loop System Based on Subspace Method
Tohru Katayama Kyoto Univ.

Integrated Inferential Estimation and Control
F. Brunet-Manquat Univ. of Newcastle Upon Tyne
Mark Willis Univ. of Sydney
Ming T. Tham Univ. of Newcastle

Calculation of the Time to Lane Crossing and Analysis of Its Frequency Distribution
Chiu-Feng Lin Univ. of Michigan
A. Galip Ulsoy Univ. of Michigan

Design of Entry and Exit Maneuvers of IVHS
Dattaprabodh N. Godbole Univ. of California at Berkeley
Farokh Eskafi Univ. of California at Berkeley
Ekta Singh Univ. of California at Berkeley
Pravin Varaiya Univ. of California at Berkeley

Partitioned Lane Assignment Strategies for Balancing Excess Lane Capacity on AHS
Juraj V. Medanic Univ. of Illinois at Urbana-Champaign
Deepa Ramaswamy Univ. of Illinois at Urbana-Champaign
William R. Perkins Univ. of Illinois at Urbana-Champaign
Rahim Benekohal Univ. of Illinois at Urbana-Champaign

Nonlinear-gain-optimized Controller Development and Evaluation for Automated Emergency Vehicle Steering
Dirk E. Smith Louisiana State Univ.
John M. Starkey Purdue Univ.
Robert E. Benton Louisiana State Univ.
2:35 — 2:55
Design of an Extended Architecture for Degraded Modes of Operation of IVHS

John Lygeros  Univ. of California at Berkeley
Dattaprabodh N. Godbole  Univ. of California at Berkeley
Mireille E. Broucke  California PATH

2:55 — 3:15
Driving Safely in Smart Cars

Anuj Puri  Univ. of California at Berkeley
Pravin Varaiya  Univ. of California at Berkeley

FM 07 Whidbey
Spacecraft Control II

Chair  Suresh M. Joshi  NASA Langley Research Ctr.
Cochair  David S. Bayard  California Inst. of Tech.

1:15 — 1:35
Verification Procedure for On-orbit Controllers for the MIT Middeck Active Control Experiment

Mark E. Campbell  Massachusetts Inst. of Tech.
Simon Grocott  Massachusetts Inst. of Tech.
Jonathan P. How  Stanford Univ.
David W. Miller  Massachusetts Inst. of Tech.
Edward F. Crawley  Massachusetts Inst. of Tech.

1:35 — 1:55
Low-cost Active Anti-gravity Suspension System

Shankar Jagannathan  Satcon Tech. Corp.
Ralph C. Fenn  Satcon Tech. Corp.
Bruce G. Johnson  Mechtronics

1:55 — 2:15
Global Stabilization of Multibody Spacecraft using Quaternion-based Nonlinear Control Law

A.G. Kelkar  NASA Langley Research Ctr.
Suresh M. Joshi  NASA Langley Research Ctr.

2:15 — 2:35
State Space Characterization and Robust Stabilization of Dissipative LTI Systems

Sandeep Gupta  NASA Langley Research Ctr.
Suresh M. Joshi  NASA Langley Research Ctr.

2:35 — 2:55
Stability of Non-linear Motions of a Satellite

Rahul Chattergy  Univ. of Hawaii
2:55 — 3:15
Jet Firing Strategy to Minimize Structural Loads
Nazareth S. Bedrossian C.S. Draper Lab.
J. Lepanto C.S. Draper Lab.
N. Adams C.S. Draper Lab.
John W. Sunkel NASA Johnson Space Center
T. Hua NASA Johnson Space Center

FM 08 Orcas
Queueing Issues In Manufacturing

Chair
James R. Perkins Boston University

Cochair
Placid M. Ferreira Univ. of Illinois at Urbana-Champaign

1:15 — 1:35
Scheduling Multiple Part-types In an Unreliable Single Machine Manufacturing System
James R. Perkins Boston Univ.
R. Srikant AT&T Bell Labs.

1:35 — 1:55
The FCFS Service Discipline: Stable Network Topologies, Bounds on Traffic Burstiness and Delay, and Control by Regulators
Gil I. Winograd Univ. of Illinois
P. R. Kumar Univ. of Illinois

1:55 — 2:15
Production Controls in Stochastic Tandem Two-machine Systems with State Constraints
N.T. Fong The Chinese Univ. of Hong Kong
Xun Yu Zhou The Chinese Univ. of Hong Kong

2:15 — 2:35
Deadlock Detection and Avoidance for a Class of Manufacturing Systems
Robert P. Judd Ohio Univ.
Tariq Nadeem Faiz Ohio Univ.

2:35 — 2:55
Deadlock Avoidance Policies for Automated Manufacturing Cells
Spiridon A. Reveliotis Univ. of Illinois at Urbana-Champaign
Placid M. Ferreira Univ. of Illinois at Urbana-Champaign

2:55 — 3:15
A Methodology for Intelligent Sensor Validation and Fusion Used In Tracking and Avoidance of Objects for Automated Vehicles
Satnam Alag Univ. of California at Berkeley
Kal Goebel Univ. of California at Berkeley
Alice Agogino Univ. of California at Berkeley
Chair  Kamal Youcef-Toumi  Massachusetts Inst. of Tech.
Cochair  Bjarne A. Foss  Univ. of Trondheim

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Bjarne A. Foss  Univ. of Trondheim

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Francis Wong  Massachusetts Inst. of Tech.

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Sheng Liu  Massachusetts Inst. of Tech.
Haruhiko Asada  Massachusetts Inst. of Tech.

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Ravinder Venugopal  Univ. of Michigan
Miin-Nan Lee  Univ. of Michigan
Andrew G. Sparks  Univ. of Michigan
Peter D. Washabaugh  Univ. of Michigan
Dennis S. Bernstein  Univ. of Michigan

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Cochair: Srinivas Palanki FAMU/FSU College of Eng.

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Oscar D. Crisalle Univ. of Florida
Mario Sznaier Penn State Univ.

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D. Grant Fisher Univ. of Alberta
Sirish L. Shah Univ. of Alberta

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Brian Cooley Auburn Univ.

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Kenneth R. Muske Univ. of Texas at Austin

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Manfred Morari California Inst. of Tech.

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Morten Rostgaard Tech. Univ. of Denmark
N.K. Poulsen Tech. Univ. of Denmark

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Chair: Timothy Burg Clemson Univ.
Cochair: Alok Sinha Penn State Univ.

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Darren M. Dawson Clemson Univ.

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Fang-Bo Yeh Tunghai Univ.

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Victor C. Atten Defence Research Establishment-Suffield
Howard M. Schwartz Carleton Univ.

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A.S. Lewis Penn State Univ.

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Chair Ka Chai Cheok Oakland Univ.
Cochair Kazuyuki Kobayashi Oakland Univ.

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John Lygeros Univ. of California at Berkeley

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Kevin Passino Ohio State Univ.
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S.Q. Zhu  Univ. of Texas at Arlington
Kai Liu  Univ. of Texas at Arlington

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Reza Langari  Texas A & M Univ.

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Chair  S. T. Venkataraman  Jet Propulsion Labs.
Cochair  Asok Ray  Penn State Univ.

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Alistair K. Chan  Univ. of Cincinnati
Georges A. Becus  Univ. of Cincinnati

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Yung C. Shin  Purdue Univ.

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J.D. Mason  Univ. of Reading
Elmawati L Sutanto  Univ. of Reading

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Rolf Isermann  Darmstadt Univ. of Tech.

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Eric M. Gross  Toshiba Corp.
Control of Mechanical Actuators

Chair: Brian C. Fabien  Univ. of Washington
Cochair: Dennis S. Bernstein  Univ. of Michigan

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Adaptive Virtual Balancing for a Magnetic Rotor with Unknown Mass Imbalance
Kai-Yew Lum  Univ. of Michigan
Sanjay P. Bhat  Univ. of Michigan
Dennis S. Bernstein  Univ. of Michigan
Vincent T. Coppola  Univ. of Michigan

1:35—1:55
Sensor Effectiveness Coefficients for Piezoelectric Materials
B. R. Patnaik  Univ. of Waterloo
G.R. Heppler  Univ. of Waterloo
W.J. Wilson  Univ. of Waterloo

1:55—2:15
Adaptive Control of Robot Manipulators Including Motor Dynamics
H. Yu  Univ. of Sussex
Sydney Lloyd  Univ. of Sussex

2:15—2:35
Dynamics and Control of Piezotube Actuators for Subnanometer Precision Applications
Tetsuo Ohara  Massachusetts Inst. of Tech.
Kamal Youcef-Toumi  Massachusetts Inst. of Tech.

2:35—2:55
A Robust Control Compensates for Hardware Deficiency In the Plant: Time Delay Control for the Brushless DC Motor Drive
Jung-Hoon Lee  Agency for Defense Development
Young-Cheol Lee  Agency for Defense Development
Sang-Yeal Lee  Agency for Defense Development

2:55—3:15
Experimental Application of an Observer-Based Feedback Linearizing Controller to an Electromagnetic Suspension
Scott Thielman  Univ. of Washington
Brian C. Fabien  Univ. of Washington
FM 15 Cascade II
Vibration Control

Chair Neil Singer Convolve, Inc.
Cochair Gunnar Hillerstrom Lulea Univ. of Tech.

1:15 — 1:35
Adaptive Suppression of Vibrations - A Repetitive Control Approach
Gunnar Hillerstrom Lulea Univ. of Tech.

1:35 — 1:55
Exact Fuel/time Optimal Control of the Benchmark Two-mass/spring System
Tarunraj Singh State Univ. of New York

1:55 — 2:15
Vibration Reduction using Multi-hump Extra-Insensitive Input Shapers
William Singhose Massachusetts Inst. of Tech.
Lisa Porter Massachusetts Inst. of Tech.
Neil Singer Convolve, Inc.

2:15 — 2:35
H2 Synthesis for Active Vibration Isolation
T. Tupper Hyde Massachusetts Inst. of Tech.
Edward F. Crawley Massachusetts Inst. of Tech.

2:35 — 2:55
Structural Property Changes Due to Piezoelectric Material Bonding: A Numerical Example
B. R. Patnaik Univ. of Waterloo
G.R. Heppler Univ. of Waterloo
W.J. Wilson Univ. of Waterloo

2:55 — 3:15
Frequency Shaping of a Hydraulic Speaker using H∞ Control Theory
Takao Fuji Osaka University
T. Tsujino Kyushu Inst. of Tech.
T. Sugano Nippon Steel Corp.
H. Kitayama Ishikawajima-Harima Heavy Ind. Co., Ltd.
M. Hayashi Ishikawajima-Harima Heavy Ind. Co., Ltd.
N. Shikano Ishikawajima-Harima Heavy Ind. Co., Ltd.
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F. Della Croce Politecnico di Torino

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C.V. Hollot Univ. of Massachusetts
Roberto Tempo Politecnico di Torino

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You-xian Sun Zhejiang Univ.

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Michel Zasadzinski RARAL
Mohamed Darouach Univ. de Nancy
Driss Mehdi ESIP-LAII
Chair  Michael Bridges  Univ. of Michigan
Cochair  Kenneth K. Butts  Ford Motor Co.

1:15 — 1:35
A Finite Memory Observer Structure of Continuous Descriptor Systems
F. Kratz  LAUT-ENSEM
S. Boughdiri  Univ. de Nancy
W. Nuninger Inst. National Poly. de Lorraine

1:35 — 1:55
Implementation of Classical Linear Controllers with Strong Derivative Actions
Chih-Chiang Cheng  National Sun Yat-Sen Univ.
Jyh-Cherng Leu  National Sun Yat-Sen Univ.

1:55 — 2:15
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Eiji Kondo  Kyushu Univ. 36

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Marc Bodson  Univ. of Utah

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Sophie Tarbouriech  LAAS-CNRS
C. Burgat  LAAS-CNRS

2:55 — 3:15
Dynamic Output Feedback Compensation for Systems with Input Saturation
Feng Tyan  Univ. of Michigan
Dennis S. Bernstein  Univ. of Michigan
An Iterative Solution to the Finite-Time Linear Quadratic Optimal Feedback Control Problem
Randal W. Beard Rensselaer Polytechnic Inst.
George Saridis Rensselaer Polytechnic Inst.

A Hybrid Approach to Optimal Control Problems with Nondifferential Constraints
James R. Cloutier Wright Lab.
Christopher N. D'Souza Wright Patterson Air Force Base

On Global Optimality Conditions in NonConvex Optimal Control Problems
Alexander Strekalovsky Irkutsk State Univ.

Application of the Linear-quadratic Control Theory to the Solution of Special Nonconvex Problems of Global Constrained Optimization
Alexey S. Matveev St. Petersburg Univ.

Computation of Optimal Control for Integral and Differential Algebraic Systems
Feng-Sheng Wang National Chung Cheng Univ.
Ji-Pyng Chiou National Chung Cheng Univ.

Optimal Feedforward Tracking Controller Design
Steven Chingyei Chung Feng-Chia Univ.
Wencheng Feng-Chia Univ.
Jangjong Wang Feng-Chia Univ.