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**1999 IEEE CCA/CACSD  
Monday, August 23, 1999**

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Hapuna Ballroom

**CCA/CACSD Opening Remarks  
8:20 - 8:30**

**General Chairs**

Gruebel, Georg	DLR Oberpfaffenhofen
McClamroch, N. Harris	Univ. of Michigan
Sano, Akira	Keio Univ.

Hapuna Ballroom

**CACSD Plenary Presentation  
8:30 - 9:30**

***Modelica -A Language for Physical System  
Modeling, Visualization, and Interaction***

Elmqvist, Hilding	Dynasim AB
Chair: Varga, Andras	DLR Oberpfaffenhofen

8:30	CACSD-630
<i>Modelica -A Language for Physical System Modeling, Visualization, and Interaction</i>	
Elmqvist, Hilding,	Dynasim AB
Mattsson, Sven Erik	DLR Oberpfaffenhofen
Otter, Martin	

Mauka

**CACSD-Panel  
Perspectives of CACSD**

Chair: Gruebel, Georg	DLR Oberpfaffenhofen
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CACSD-297

<i>Perspectives of CACSD: Embedding the Control System Design Process into a Virtual Engineering Environment</i>	
Gruebel, Georg	DLR Oberpfaffenhofen

7:00 p.m – 9:00 p.m.

**Panelists**

Gruebel, Georg	DLR Oberpfaffenhofen, DE
Elmqvist, Hilding	Dynasim AB, SE
Safonov, Michael G.	Univ. of Southern California, US
Levine, William S.	Univ. of Maryland, US
Engell, Sebastian	Univ. Dortmund, DE
Varsamidis, Thomas	Univ. of Wales, Bangor, UK
Schrage, Daniel P.	Georgia Inst. of Tech., US

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**CACSD-MA1**

**Computational Tools for Modeling Uncertain Systems**

Chair: Beck, Carolyn	Univ. of Illinois, Urbana-Champaign
Co-chair: D'Andrea, Raffaello	Cornell Univ.
Org.: Beck, Carolyn	Univ. of Illinois, Urbana-Champaign
Org.: D'Andrea, Raffaello	Cornell Univ.

10:00 (I)	CACSD-1
<i>Symbolic and Numerical Software Tools for LFT-Based Low Order Uncertainty Modeling</i>	
Varga, Andras,	
Looye, Gertjan	DLR Oberpfaffenhofen

10:20 (I)	CACSD-7
<i>Computer-Aided Uncertainty Modeling of Nonlinear Parameter-Dependent Systems, Part I: Theoretical Overview</i>	
Belcastro, Christine M.,	
Morelli, Eugene A.,	
Lim, Kyong B.	NASA Langley Res. Cen.

10:40 (I)	CACSD-16
<i>Computer-Aided Uncertainty Modeling of Nonlinear Parameter-Dependent Systems, Part II: F-16 Example</i>	
Belcastro, Christine M.,	
Lim, Kyong B.,	
Morelli, Eugene A.	NASA Langley Res. Cen.

11:00 (I)	CACSD-24
<i>Software for Modeling, Analysis, and Control Design for Multidimensional Systems</i>	
D'Andrea, Raffaello	Cornell Univ.

11:20 (I)	CACSD-28
<i>The Validation of Model Sets on the Basis of Closed-Loop Feedback System Generated Data</i>	
Dullerud, Geir E.	Univ. of Illinois, Urbana-Champaign
Smith, Roy	Univ. of California, Santa Barbara

11:40 (I)	CACSD-34
<i>Model Reduction of Complex Systems in the Linear-Fractional Framework</i>	
Lall, Sanjay	California Inst. of Tech.
Beck, Carolyn	Univ. of Illinois, Urbana-Champaign

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**CACSD-MA2**

**Hybrid Systems and Real-Time Simulation**

Chair: Branicky, Michael S.	Case Western Reserve Univ.
Co-chair: Ravn, Ole	Tech. Univ. of Denmark
Org.: Lemmon, Michael	Univ. of Notre Dame

10:00 (I)	CACSD-97
<i>An Environment for Model-Checking of Logic Control Systems with Hybrid Dynamics</i>	
Kowalewski, S.,	
Bauer, N.,	
Preussig, J.,	
Stursberg, O.,	
Treseler, H.	Univ. of Dortmund

10:20 (I)	CACSD-103	11:00 (I)	CACSD-219
<i>Modular Verification of a Fault-Tolerant Active Structure Controller: An Example</i>	Cadence Berkeley Labs	<i>Towards a More Efficient Approach to Automotive Embedded Control System Development</i>	ETAS Inc.
Wong-Toi, Howard		Smith, Michael H., Elbs, Martin	
10:40 (I)	CACSD-109	11:20 (I)	CACSD-225
<i>Fast Marching for Hybrid Systems</i>	Case Western Reserve Univ.	<i>A Qualitative Analysis of Automatic Code Generation Tools for Automotive Powertrain Applications</i>	Motorola Virtual Garage
Branicky, Michael S., Hebbar, Ravi		Wybo, David, Putti, David	
11:00	CACSD-115	11:40 (I)	CACSD-231
<i>Real-Time Distributed Software-In-The-Loop Simulation for Distributed Control Systems</i>	Seoul Nat. Univ.	<i>Software Architectures for OSEK/VDX Applications Using MATRIXx TM and AutoCode TM</i>	Integrated Systems, Inc.
Kwon, Wook Hyun, Choi, Seong-Gyu		Martin, Todd A.	
11:20	CACSD-120		Makai
<i>Simulation and Animation in Simulink and VRML</i>	Tech. Univ. of Denmark	<b>CCA-MA4</b>	
Ravn, Ole, Larsen, Thomas D., Andersen, Nils A.		<b>Metal Processing</b>	
11:40	CACSD-126	Chair: Takahashi, Ryouichi	Sumitomo Metal Ind.
<i>Development of Software for the Hard Real-Time Controller Using Feature-Oriented Reuse Method and CASE Tools</i>		Co-chair: Takatsu, Haruo	Yokogawa Electric Corp.
Choi, Byoung Wook, Jang, K.B., Kim, C.H., Wang, K.S. Kang, K.C.	LG Ind. Sys. Pohang Univ. of Sci. & Tech.	Org.: Takahashi, Ryouichi	Sumitomo Metal Ind.
	Mauka	10:00 (I)	CCA-1
<b>CACSD-MA3</b>		<i>Modeling for Control of Blast Furnace</i>	Univ. of Tokyo
<b>Automatic Code Generation for Automotive Applications</b>		Tsumura, Kouji	
Chair: Toeppe, Steve	Ford Motor Co.	10:20 (I)	CCA-7
Co-chair: Ruekgauer, Andreas	dSpace Inc.	<i>Directional Considerations When Tracking Time-Variant Parameters</i>	
Org.: Toeppe, Steve	Ford Motor Co.	Waller, Matias, Saxen, Henrik	Abo Akademi Univ.
10:00 (I)	CACSD-200	10:40 (I)	CCA-13
<i>Automatic Code Generation Requirements for Production Automotive Powertrain Applications</i>	Ford Motor Co.	<i>Hybrid Neural Network Multivariable Predictive Controller for Handling Abnormal Events in Processing Applications</i>	
Toeppe, Steve, Bostic, Dave, Ranville, Scott, Rzemien, Kevin		Mathur, Anoop, Parthasarathy, Sanjay, Gaikwad, Sujit	Honeywell Tech. Cen.
10:20 (I)	CACSD-207	11:00 (I)	CCA-18
<i>Using BEACON to Generate Embedded Software from Simulink Models</i>	Applied Dynamics Int.	<i>On the Possibility of Looperless Rolling on Hot Rolling Process</i>	
Englehart, Matthew		Katori, Hideo, Hirayama, Ryu, Ueyama, Takatsugu Furuta, Katsuhisa	Nippon Steel Corp. Tokyo Inst. of Tech.
10:40 (I)	CACSD-213	11:20 (I)	CCA-23
<i>Production Quality Code Generation from Simulink Block Diagrams</i>	dSpace GmbH	<i>Strip Gage and Tension Control At Cold Tandem Mill Based on I.L.Q. Design Theory</i>	
Hanselmann, Herbert, Kiffmeier, U., Koester, L., Meyer, M., Ruekgauer, A.		Kadoya, Y., Ooi, T., Washikita, Y. Seiki, Y.	Sumitomo Metal Ind. Toshiba Corp.

11:40 CCA-29  
*Application of Multivariable Technique in Temperature Control of Reheating Furnaces*  
 Wang, Zhongjie,  
 Shao, Cheng,  
 Chai, Tianyou Northeastern Univ.

12:00 \*  
*Nonlinear Model Predictive Control for the Isothermal Extrusion of Aluminum*  
 Steiner, Max ETH

**CCA-MA5**

**Flight Control I**

Chair: Yurkovich, Stephen Ohio State Univ.  
 Co-chair: Keel, Lee H. Tennessee State Univ.

10:00 CCA-33  
*Receding Horizon FIR Filter with Estimated Horizon Initial State and its Application to Aircraft Engine Systems*  
 Han, Soo Hee,  
 Kim, Pyung Soo,  
 Kwon, Wook Hyun Seoul Nat. Univ.

10:20 CCA-39  
*Bayesian Belief Networks for Fault Identification in Aircraft Gas Turbine Engines*  
 Mast, Timothy A.,  
 Reed, Aaron T.,  
 Yurkovich, Stephen Ohio State Univ.  
 Ashby, Malcolm,  
 Adibhatla, Shrider GE Aircraft Engr.

10:40 CCA-45  
*Control Structure Design Methods Applied to a Jet Engine*  
 Harefors, Melker Volvo Aero Corp.

11:00 CCA-51  
*Receding Horizon Control of the Caltech Ducted Fan: A Control Lyapunov Function Approach*  
 Jadbabaie, Ali,  
 Yu, Jie California Inst. of Tech.  
 Hauser, John Univ. of Colorado

11:20 CCA-57  
*QFT Based Robust/Fault Tolerant Flight Control Design for a Remote Pilotless Vehicle*  
 Wu, Shu-Fan Nanjing Univ. of Aeronautics & Astronautics  
 Grimble, Michael J. Univ. of Strathclyde  
 Wei, Wei Nanjing Univ. of Aeronautics & Astronautics

11:40 CCA-63  
*Fault Tolerant Controller Design for Large Space Structures*  
 Ahmad, S. S. Allied Signal Power Systems Inc.  
 Lew, J. S.,  
 Keel, Lee H. Tennessee State Univ.

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**CCA-MA6**

**Integrated Design of Passive and Active Elements in Control Systems**

Chair: Obinata, Goro Akita Univ.  
 Co-chair: Skelton, Robert E. Univ. of California, San Diego  
 Org.: Obinata, Goro Akita Univ.

10:00 (I) CCA-69  
*Generation of Structural Design Constraints for Spaceborn Precision Pointing Systems*  
 Becker, Gregory,  
 Cubalchini, Ronald,  
 Tham, Quang,  
 Anagnost, John Raytheon Systems Co.

10:20 (I) \*  
*Smart Tensegrity Structures: A Novel Concept for Spacecraft Structural Control*  
 Skelton, Robert E. Univ. of California, San Diego

10:40 (I) CCA-75  
*Integrated Structural and Control Design for Structural Systems via LMI*  
 Mayzus, Alexander,  
 Grigoriadis, Karolos Univ. of Houston

11:00 (I) CCA-80  
*Redesign of Closed Loop System for Integrated Design of Structure and its Vibration Control System*  
 Adachi, Kazuhiko,  
 Sakamoto, Koji,  
 Iwatsubo, Takuzo Kobe Univ.

11:20 (I) CCA-86  
*Integrated Design of Structure and Control System Considering Performance and Stability*  
 Kajiwara, Itsuro,  
 Nagamatsu, Akio Tokyo Inst. of Tech.

11:40 (I) CCA-92  
*Integrated Optimal Design of Passive and Active Elements for Hard Disk Servo Systems*  
 Obinata, Goro,  
 Saito, Koji,  
 Hiramoto, Kazuhiko,  
 Doki, Hitoshi Akita Univ.

12:00 (I) CCA-97  
*Integrated System Design by Separation*  
 Iwasaki, Tetsuya Tokyo Inst. of Tech.

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<b>CACSD-MM1</b>				
<b>Numerical Methods for Systems</b>				
Chair: Mehrmann, Volker	Tech. Univ. of Chemnitz			
Co-chair: Misra, Pradeep	Wright State Univ.			
Org.: Van Dooren, Paul	Univ. Catholique de Louvain			
Org.: Mehrmann, Volker	Tech. Univ. of Chemnitz			
2:00 (I)		CACSD-40		
<i>On Invariant Subspaces of Hamiltonian Matrices</i>				
Mehrmann, Volker,				
Xu, Hongguo	Tech. Univ. of Chemnitz			
2:20 (I)		CACSD-46		
<i>Numerical Solution of Linear Quadratic Control Problems for Descriptor Systems</i>				
Benner, Peter	Univ. of Bremen			
Byers, Ralph	Univ. of Kansas			
Mehrmann, Volker,				
Xu, Hongguo	Tech. Univ. of Chemnitz			
2:40 (I)		CACSD-52		
<i>The Photon Diffusion Equation: Forward and Inverse Problems</i>				
Syrmos, Vassilis L.,				
Yin, J.,				
Yun, D.Y.Y.	Univ. of Hawaii, Manoa			
Misra, Pradeep	Wright State Univ.			
3:00 (I)		CACSD-58		
<i>Two Point Boundary Value and Periodic Eigenvalue Problems</i>				
Van Dooren, Paul	Univ. Catholique de Louvain			
3:20 (I)		CACSD-64		
<i>Solving Linear and Quadratic Matrix Equations on Distributed Memory Parallel Computers</i>				
Benner, Peter	Univ. of Bremen			
Quintana-Orti, Enrique S.,				
Quintana-Orti, Gregorio	Univ. Jaime			
		Milo		
<b>CACSD-MM2</b>				
<b>Object Oriented Modeling and Simulation</b>				
Chair: Elmquist, Hilding	Dynasim AB			
Co-chair: Engell, Sebastian	Univ. of Dortmund			
Org.: Mattsson, Sven Erik	Dynasim AB			
Org.: Otter, Martin	DLR Oberpfaffenhofen			
2:00 (I)		CACSD-132		
<i>An Object-Oriented Model for Hybrid Control Systems</i>				
Carpanzano, Emanuele,				
Ferrarini, Luca,				
Maffezzoni, Claudio	Pol. di Milano			
2:20 (I)		CACSD-138		
<i>Recipe-Driven Batch Processes: Event Handling in Hybrid System Simulation</i>				
Fritz, Martin	Software Design & Manag. GmbH			
Liefeldt, Andreas,				
Engell, Sebastian	Univ. of Dortmund			
2:40 (I)				CACSD-144
<i>Combining Information Technology Components and Symbolic Equation Manipulation in Modeling and Simulation of Mechatronic Systems</i>				
Diaz-Calderon, Antonio,				
Paredis, Christiaan J. J.,				
Khosla, Pradeep K.				Carnegie Mellon Univ.
3:00 (I)				CACSD-151
<i>Hybrid Modeling in Modelica Based on the Synchronous Data Flow Principle</i>				
Otter, Martin				DLR Oberpfaffenhofen
Elmqvist, Hilding,				
Mattsson, Sven Erik				Dynasim AB
3:40				CACSD-158
<i>Physical Modeling with Multipoles</i>				
Mann, Herman				Czech Tech. Univ.
		Mauka		
<b>CACSD-MM3</b>				
<b>Automatic Code Generation</b>				
Chair: Erkkinen, Tom J.	Applied Dynamics Int.			
Co-chair: Zurawka, Thomas	ETAS GmbH			
Org.: Erkkinen, Tom J.	Applied Dynamics Int.			
Org.: Zurawka, Thomas	ETAS GmbH			
2:00 (I)				CACSD-237
<i>Safety-Critical Software Generation</i>				
Erkkinen, Tom J.	Applied Dynamics Int.			
2:20 (I)				CACSD-243
<i>Component-Node-Network: Three Levels of Optimized Code Generation with ASCET-SD</i>				
Honekamp, Uwe,				
Reidel, Justus,				
Werther, Kai,				
Zurawka, Thomas,				
Beck, Thomas				ETAS GmbH
2:40 (I)				CACSD-249
<i>On the Compilation of Statecharts Models into Target Code for Embedded Systems</i>				
Erpenbach, Edwin,				
Stroop, Joachim,				
Rammig, Franz J.				Univ. of Paderborn
3:00				CACSD-255
<i>Using the Adaptive Blockset for Simulation and Rapid Prototyping</i>				
Ravn, Ole				Tech. Univ. of Denmark
3:20 (I)				CACSD-261
<i>Redefining the Process for Development of Embedded Software</i>				
Bryant, Steven E.	Army-Space and Missile Def. Com.			
Key, Kent	Military Tech., Inc.			



2:20	CCA-170	5:20 (I)	CACSD-85
<i>Design of a Tracking System Using N-Delay Two-Degree-Of-Freedom Control and its Application to Hard Disk Drives</i>	Takakura, Shinji Toshiba Res. & Dev. Cen.	<i>High-Performance Algorithms and Software for Systems and Control Computations</i>	Sima, Vasile Van Huffel, Sabine Res. Inst. for Inf., Bucharest Katholieke Univ. Leuven
2:40	CCA-176	5:40	CACSD-91
<i>Integrated Design for High Robust Performance with Quick Time-Response: An Application to Head Positioning Control of a Hard Disk</i>	Hara, Shinji, Nishio, Masashi Maruyama, Tsugito Tokyo Inst. of Tech. Fujitsu Lab. LTD.	<i>Numerical Linear Control Library – a Mathematica-Based Integrated Environment with the Modern Control Algorithms</i>	Datta, Biswa Nath, Sarkissian, Daniil Northern Illinois Univ.
3:00	CCA-182	Milo	
<i>Following Control of a Hard Disk Drive by Using Sampled-Data <math>H_\infty</math> Control</i>	Hirata, Mitsuo, Atsumi, Takenori, Murase, Akiyo, Nonami, Kenzo Chiba Univ.	<b>CACSD-MP2</b> <b>Fault Detection and Diagnosis</b>	Chair: Popescu, Theodor Co-chair: Gertler, Janos Org.: Popescu, Theodor Org.: Gertler, Janos Res. Inst. for Inf., Bucharest George Mason Univ. Res. Inst. for Inf., Bucharest George Mason Univ.
3:20	CCA-187	4:20 (I)	CACSD-164
<i>H2-Control with Acceleration Feedback for a Micro Positioning System</i>	Robl, Christian, Englberger, Gerhard, Farber, Georg Tech. Univ. Munich	<i>Direct Identification of Optimal Nonlinear Parity Models</i>	Gertler, Janos, Hu, Yongtong George Mason Univ.
3:40	CCA-193	4:40 (I)	CACSD-170
<i>Multiobjectives Design of a Multirate Output Controller</i>	Shen, Liang, Er, Meng Joo Nanyang Tech. Univ.	<i>Estimation, Compression and Classification of Volterra Kernels with Application to Process Diagnosis</i>	Aiordachioaie, Dorel, Ceanga, Emil Dunarea de Jos Galati Univ.
Koa		5:00 (I)	CACSD-176
<b>CACSD-MP1</b> <b>Numerical Methods and Software</b>	Chair: Van Dooren, Paul Co-chair: Benner, Peter Org.: Van Dooren, Paul Org.: Mehrmann, Volker Univ. Catholique de Louvain Univ. of Bremen Univ. Catholique de Louvain Tech. Univ. of Chemnitz	<i>The Implications of the Object/Unified Modeling Language Approach to the Problem of Fault Detection and Isolation in Dynamical Systems</i>	Fodor, George A. Grantner, Janos L. Driankov, Dimitar ABB Western Michigan Univ. Univ. of Linkoping
4:20 (I)	CACSD-70	5:20 (I)	CACSD-182
<i>Initializing Newton's Method for Discrete-Time Algebraic Riccati Equations Using the Butterfly SZ Algorithm</i>	Fassbender, Heike, Benner, Peter Univ. of Bremen	<i>Change Detection in Signals Using Linear Regression Models</i>	Popescu, Theodor Res. Inst. for Inf., Bucharest
4:40 (I)	CACSD-75	5:40 (I)	CACSD-188
<i>An Arithmetic for Rectangular Matrix Pencils</i>	Benner, Peter Byers, Ralph Univ. of Bremen Univ. of Kansas	<i>Computer Aided Design of Failure Detection and Identification and Adaptive Reconfigurable Control Systems for Aerospace Applications</i>	Boskovic, Jovan D., Gopinathan, Murali, Mehra, Raman K. Sci. Systems Co., Inc.
5:00 (I)	CACSD-81	6:00	CACSD-194
<i>Stability Radii of Polynomial Matrices</i>	Genin, Yves, Van Dooren, Paul Univ. Catholique de Louvain	<i>Component-Based Modeling and Diagnosis of Process-Control Systems</i>	Provan, Gregory, Chen, Yi-Liang Rockwell Sci. Cen.

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<b>CACSD-MP3</b>			
<b>CACSD Learning via Internet</b>			
Chair: Schmid, Christian	Ruhr-Univ.		
Co-chair: Kennedy, Diane C.	Ryerson Pol. Univ.		
Org.: Schmid, Christian	Ruhr-Univ.		
4:40 (I)	651		
<i>Ryerson Initiatives in Integrating the Internet, Multimedia Components, and Hand-On Experimentation into Problem-Based Control Education</i>			
Zywno, Malgorzata S.,			
Kennedy, Diane C.	Ryerson Pol. Univ.		
5:00 (I)	CACSD-273		
<i>DynaMit -Internet Based Education Using CACSD</i>			
Loehl, T.,			
Pegel, S.,			
Klatt, K.-U.,			
Engell, Sebastian	Univ. of Dortmund		
Schmid, Christian,			
Ali, A.	Ruhr-Univ. Bochum		
5:20 (I)	CACSD-279		
<i>The Virtual Lab for Controlling Real Experiments via Internet</i>			
Roehrig, Christof,			
Jochheim, Andreas	Univ. of Hagen		
5:40 (I)	CACSD-285		
<i>Multimedia Courseware for Basic Control Theory</i>			
Jochheim, Andreas,			
Gerke, Michael,			
Laaser, Wolfram	Univ. of Hagen		
6:00 (I)	CACSD-291		
<i>Using the World Wide Web for Teaching Control Systems Design</i>			
Henry, Jim	Univ. of Tennessee at Chattanooga		
	Makai		
<b>CCA-MP4</b>			
<b>Combustion Dynamics and Control</b>			
Chair: Banaszuk, Andrzej,			
Co-chair: Jacobson, Clas	United Tech. Res. Cen.		
Org.: Banaszuk, Andrzej,			
Org.: Jacobson, Clas	United Tech. Res. Cen.		
4:20 (I)	CCA-199		
<i>Linear and Nonlinear Analysis of Controlled Combustion Processes. Part I: Linear Analysis</i>			
Banaszuk, Andrzej,			
Jacobson, Clas,			
Khibnik, Alexander I.	United Tech. Res. Cen.		
Mehta, Prashant	Cornell Univ.		
4:40 (I)			CCA-206
<i>Linear and Nonlinear Analysis of Controlled Combustion Processes. Part I: Nonlinear Analysis</i>			
Banaszuk, Andrzej,			
Jacobson, Clas,			
Khibnik, Alexander I.		United Tech. Res. Cen.	
Mehta, Prashant		Cornell Univ.	
5:00 (I)			*
<i>Controlling Flame Speed Using Countercurrent Shear</i>			
Strykowski, Paul,			
Forliti, D.		Univ. of Minnesota	
5:20 (I)			*
<i>LES Methods for Gas Turbine Instability Modeling</i>			
Yang, Vigor		Pennsylvania State Univ.	
5:40 (I)			CCA-213
<i>Role of Actuation in Combustion Control</i>			
Hathout, J.P.,			
Fleifil, Mahmoud,			
Annaswamy, Anuradha,			
Ghoniem, A.F.		Massachusetts Inst. of Tech.	
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<b>CCA-MP5</b>			
<b>Guidance and Control of Aerospace Vehicles</b>			
Chair: Cloutier, James R.		Air Force Res. Lab.	
Co-chair: Stansbery, Donald		Questech, Inc	
Org.: Cloutier, James R.		Air Force Res. Lab.	
4:20 (I)			CCA-219
<i>Hypersonic Guidance via the State-Dependent Riccati Equation Control Method</i>			
Cloutier, James R.,			
Zipfel, Peter H.		Air Force Res. Lab.	
4:40 (I)			CCA-225
<i>Online Identification and Control of Aerospace Vehicles Using Recurrent Networks</i>			
Hu, Zhenning,			
Balakrishnan, S.N.		Univ. of Missouri, Rolla	
5:00 (I)			CCA-231
<i>Motion Planning for Reduced Observability of Autonomous Aerial Vehicles</i>			
McFarland, Michael B.,			
Zachery, Randy A.,			
Taylor, Brian K.		Air Force Res. Lab.	
5:20 (I)			CCA-236
<i>Understanding Missile Autopilot Design Using the <math>H_\infty</math> Loop Shaping Design Procedure</i>			
Urban, Thomas J.,			
Iwaskiw, A. Pete,			
Iglesias, Pablo		Johns Hopkins Univ.	

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*  
 Cheng, V.H.L.,  
 Crawford, L.S.,  
 Menon, P.K. Optimal Synthesis, Inc.

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**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,  
 Todaka, Yuji Fuji Electric Co.  
 Takeuchi, Tomoyoshi Univ. of Electro-Communications

4:40 CCA-261  
*Performance Improvement of Multivariable Linear System with Unmeasured External Disturbance*  
 Ling, Bo Foxboro Co.

5:00 CCA-267  
*Error Feedback Sliding Mode Controllers in Output Regulation of Nonlinear Systems*  
 Marconi, L.,  
 Passini, S.,  
 Bonivento, C. Univ. of Bologna

5:20 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

5:40 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.

6:00 CCA-285  
*Controller Design Involving Gain Scheduling for a Large Scale Pneumatic Muscle Actuator*  
 Repperger, D.W. Air Force Res. Lab.  
 Phillips, C.A. Wright State Univ.  
 Krier, M. Air Force Res. Lab.

**1999 IEEE CCA/CACSD  
 Tuesday, August 24, 1999**

Hapuna Ballroom

**CCA Plenary Presentation**

8:30 - 9:30

***Uncertainty, Complexity and Learning: Control Perspective***

Kimura, Hidenori Univ. of Tokyo

Chair: Hara, Shinji Tokyo Inst. of Tech.

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**CACSD-TuA1**

**Computer Algebra in CACSD**

Chair: Ogunye, Ayowale B. Air Products and Chem., Inc.  
 Co-chair: Kwatny, Harry G. Drexel Univ.  
 Org.: Ogunye, Ayowale B. Air Products and Chem., Inc.

10:00 (I) CACSD-640  
*A Computer Algebra Approach to Undersea Vehicle Dynamics*  
 Kwatny, Harry G. Drexel Univ.  
 Salter, Eric Tech.-Sci., Inc.  
 Ammeen, Edward S. Naval Surface Warfare Cen.  
 Blankenship, Gilmer L. Univ. of Maryland

10:20 (I) CACSD-303  
*Solution of Unilateral and Bilateral Diophantine Equations Using Symbolic Computation*  
 Ogunye, Ayowale B. Air Products and Chem., Inc.

10:40 (I) CACSD-309  
*Symbolic Computation in Nonlinear Control System Modeling and Analysis*  
 de Jager, Bram Eindhoven Univ. of Tech.

11:00 (I) \*  
*A Maple Toolbox for Measuring Nonlinearity in Process Control*  
 McLellan, P.J. Queen's Univ.  
 Guay, Martin Univ. of Alberta

11:20 (I) CACSD-315  
*Symbolic Manipulation of Rational Matrices and Applications*  
 Karampetakis, N. P.,  
 Tzekis, P. Aristotle Univ. of Thessaloniki

11:40 CACSD-321  
*A Computer Aided Technique to Derive the Class of Realizable Transfer Function Matrices of a Control System for a Prescribed Order Controller*  
 Tagawa, Yasutaka Tokyo Univ. of Agric. and Tech.  
 Tagawa, Ryozauro Hokkaido Univ.



		Milo		Mauka
<b>CACSD-TuA2</b>				
<b>CACSD Environments and Tools</b>				
Chair: Kucera, Vladimir		Inst. of Inf. Theory and Autom.		Air Force Res. Lab.
Co-chair: Varsamidis, Thomas		Univ. of Wales		Aalborg Univ.
10:00		CACSD-380		CCA-893
<i>Polynomial Toolbox and State Feedback Control</i>				
Kucera, Vladimir		Inst. of Inf. Theory and Autom.		
Sebek, M.		Czech Tech. Univ.		Air Force Res. Lab.
Henrion, Didier		LAAS-CNRS		CACI/TEAS Group
10:20		CACSD-386		CCA-899
<i>Implementation Issues of a Unified Information Model-Based CACE Integrated Environment</i>				
Varsamidis, Thomas,				Univ. Pol. de Valencia
Hope, Sian,				
Jobling, Christopher P.		Univ. of Wales		CNRS
10:40		CACSD-392		CCA-905
<i>Use of a Prototype CACE Integration Framework Based on the Unified Information Model</i>				
Varsamidis, Thomas,				
Hope, Sian,				
Jobling, Christopher P.		Univ. of Wales		Aalborg Univ.
11:00		CACSD-398		CCA-910
<i>Bringing Metacomputing to Scilab</i>				
Desprez, Frederic		INRIA Rhone-Alpes		
Fleury, Eric		LORIA, INRIA		
Gomez, Claude,				
Steer, Serge		INRIA Rocquencourt		
Ubeda, Stephane		LIP-ReMaP		North China Electric Power Univ.
11:20		CACSD-404		CCA-915
<i>Sampled-Data Control Toolbox: A Software Package via Object-Oriented Programming</i>				
Fujioka, Hisaya,				Honeywell Tech. Cen.
Yamamoto, Yutaka		Kyoto Univ.		Czech Tech. Univ.
Hara, Shinji		Tokyo Inst. of Tech.		
11:40		CACSD-410		CCA-921
<i>MATLAB Based Tools for 2D Linear Systems with Application to Iterative Learning Control Schemes</i>				
Gramacki, J.,				
Gramacki, A.,				
Galkowski, K.		Tech. Univ. of Zielona Gora		
Rogers, E.		Univ. of Southampton		
Owens, D.H.		Univ. of Sheffield		
<b>CCA-TuA3</b>				
<b>Control of Chemical Processes I</b>				
Chair: Cloutier, James R.				Air Force Res. Lab.
Co-chair: Hangstrup, Mads				Aalborg Univ.
10:00				CCA-893
<i>Control of a Continuously Stirred Tank Reactor Using an Asymmetric Solution of the State-Dependent Riccati Equation</i>				
Cloutier, James R.				Air Force Res. Lab.
Stansbery, Donald T.				CACI/TEAS Group
10:20				CCA-899
<i>Nonlinear Time-Scaling for Analysis and Controller Design of Reaction Systems</i>				
Moya, P.				Univ. Pol. de Valencia
Netto, M.S.,				
Ortega, R.				CNRS
Pico, J.				Univ. Pol. de Valencia
10:40				CCA-905
<i>Gain-Scheduled Control of a Fossil-Fired Power Plant Boiler</i>				
Hanstrup, Mads E.,				
Stoustrup, Jakob,				
Andersen, Palle,				
Pedersen, Tom S.				Aalborg Univ.
11:00				CCA-910
<i>H<sub>∞</sub> Control for a Boiler-Turbine Unit</i>				
Tan, Wen,				
Niu, Yuguang,				
Liu, Jizhen				North China Electric Power Univ.
11:20				CCA-915
<i>Nonlinear MPC and Inferential Sensing for PVC Production</i>				
Havlena, V.				Honeywell Tech. Cen.
Barva, P.				Czech Tech. Univ.
12:00				CCA-921
<i>Linear vs. Nonlinear Control of an Axial Flow Compressor</i>				
Fontaine, Dan				Univ. of California, Santa Barbara
Liao, Shengfang,				
Paduano, James D.				Massachusetts Inst. of Tech.
Kokotovic, Petar				Univ. of California, Santa Barbara
<b>CCA-TuA4</b>				Makai
<b>Electric Motors I</b>				
Chair: Tsai, M.C.				Nat. Chen Kung Univ.
Co-chair: Fusco, Giuseppe				Univ. degli Studi di Cassino
10:00				CCA-927
<i>A New RST Cascaded Predictive Control Scheme for Induction Machines</i>				
Maaziz, M.K.,				
Boucher, P.,				
Dumur, D.				Service Autom. Supelec

10:20	CCA-933		10:40 (I)	CCA-1110
<i>Analysis, Design, and Control of Advanced Brushless Synchronous Machines with Power Converters</i>			<i>Thruster Assisted Position Mooring System for Turret Anchored FPSOs</i>	
Lyshevski, Sergey E.,			Sorensen, Asgeir J.	Norwegian Univ. of Sci. & Tech.
Sinha, A.S.C.	Purdue Univ., Indianapolis		Strand, Jann Peter	ABB Ind.
Wylam, William,			Fossen, Thor I.	Norwegian Univ. of Sci. & Tech.
Cho, Peter	Delco Remy America, Inc.			
10:40	CCA-939		11:00 (I)	CCA-1118
<i>Rotor Position Detection of a Switched Reluctance Motors Using FM Technique</i>			<i>Development of Inverse LMI Method and its Applications to Dynamic Positioning System</i>	
Wang, Y. J.,			Yamamoto, Ikuo,	
Sun, Y.Y.,			Terada, Yuuzi	Mitsubishi Heavy Ind.
Huang, C.C.,				
Tsai, M.C.	Nat. Cheng Kung Univ.		11:20	CCA-1768
			<i>Global Attitude/Position Regulation for Underwater Vehicles</i>	
11:00	CCA-945		Boskovic, Dejan M.,	
<i>A Practical Implementation of a Linear Induction Motor Drive Using New Generation DSP Controller</i>			Krstic, Miroslav	Univ. of California, San Diego
Tsai, Mi Ching,				
Chen, Jeng Hu	Nat. Cheng Kung Univ.		11:40	CCA-1761
			<i>Robustness Analysis of Accelerometry Using an Electrostatically Suspended Gyroscope</i>	
11:20	CCA-950		Fax, J. Alex	California Inst. of Tech.
<i>Transient Dynamics and Motion Control of Induction Motors</i>			Hill, Daniel A.	Boeing Elec. Systems & Missile Def.
Lyshevski, Sergey E.	Purdue Univ., Indianapolis		Murray, Richard M.	California Inst. of Tech.
11:40	CCA-956		12:00 (I)	CCA-1791
<i>H<sub>∞</sub> Design of a Robust Speed Controller for Induction Motors</i>			<i>Collision Avoidance Control of Ship with Genetic Algorithm</i>	
Chiaverini, Stefano,			Ito, Masanori,	
Figalli, Gennaro,			Zhang, Feifei,	
Fusco, Giuseppe	Univ. degli Studi di Cassino		Yoshida, Norimoto	Tokyo Univ. of Mercantile Marine
12:00	CCA-962		12:20 (I)	CCA-1785
<i>On Robust Stability of Two Flux Observers for Induction Machines</i>			<i>PID Controller Optimization for Fin Roll Stabilization</i>	
Medvedev, Alexander	Lulea Univ. of Tech.		Hickey, N.A.	Univ. Edinburgh
			Johnson, M.A.,	
			Katebi, M.R.,	
			Grimble, Michael J.	Univ. of Strathclyde

Hau

### CCA-TuA5

#### Ship Motions and Offshore Structures

Chair: Terada, Yuuji,

Co-chair: Yamamoto, Ikuo

Org.: Terada, Yuuji

Mitsubishi Heavy Ind.

Mitsubishi Heavy Ind.

10:00 (I) CCA-1096

*Recent Development on Analysis and Control of Ship's*

*Motions*

Ohtsu, Kohei

Tokyo Univ. of Mercantile Marine

10:20 (I) CCA-1104

*Controlling Line Tension in Thruster Assisted Mooring*

*Systems*

Aamo, Ole Morten,

Fossen, Thor I.

Norwegian Univ. of Sci. & Tech.

Lehua

### 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

Gunma Univ.

10:20 CCA-1009

*A New Approach for Kalman Filtering on Mobile Robots in the*

*Presence of Uncertainties*

Larsen, Thomas D.,

Andersen, Nils A.,

Ravn, Ole

Tech. Univ. of Denmark

10:40	CCA-1015	3:20	CACSD-346
<i>Robust Tracking and Regulation Control for Mobile Robots</i>		<i>Generalized Sampled and Hold Functions-Based Controllers</i>	
Dixon, W.E.,		<i>Design for Uncertain Systems</i>	
Dawson, D.M.,		Yu, Qi,	
Zergeroglu, E.,		Er, Meng Joo,	
Zhang, F.	Clemson Univ.	Ni, M.L.,	
		Shen, L.	Nanyang Tech. Univ.
11:00	CCA-1021	3:40	CACSD-351
<i>Design of Kalman Filters for Mobile Robots; Evaluation of the Kinematic and Odometric Approach</i>		<i>H<sub>∞</sub> Control of Linear Systems with Delayed Measurements</i>	
Larsen, Thomas D.,		Shaked, Uri	Tel-Aviv Univ.
Hansen, Karsten Lentfer,		de Souza, Carlos E.	Lab. Nac. de Comp. Cient.
Andersen, Nils A.,			
Ravn, Ole	Tech. Univ. of Denmark		
11:20	CCA-1027		
<i>Formation Control of Multiple Autonomous Vehicles</i>			
Kang, W.	Naval Postgraduate School		
Xi, N.	Michigan State Univ.		
11:40	CCA-1033		
<i>Servo Control of Unstable-Wheeled System by Using Disturbance Torque Observer Compensation and Convex Optimization</i>			
Takemori, Fumiaki,			
Iwata, Jun-ichi,			
Okuyama, Yoshifumi	Tottori Univ.		
12:00	CCA-1039		
<i>Interactive On-Line Evaluation of Robot Motion Control</i>			
Valera, A.	Valencia Tech. Univ.		
Robertsson, A.,			
Nilsson, K.,			
Johansson, R.	Lund Inst. of Tech.		
	Koa		
<b>CACSD-TuM1</b>			
<b>Design Methods</b>			
Chair: Safonov, Michael G.	Univ. of Southern California		
Co-chair: Rotea, Mario A.	Purdue Univ.		
2:00	CACSD-328		
<i>Automatic PID Tuning: An Application of Unfalsified Control</i>			
Jun, Myungsoo,			
Safonov, Michael G.	Univ. of Southern California		
2:40	CACSD-334		
<i>A Canonical Representation for Unfalsified Control in Truncated Spaces</i>			
Brugarolas, Paul B.	California Inst. of Tech.		
Safonov, Michael G.	Univ. of Southern California		
3:00	CACSD-340		
<i>Design of Static Cascade Compensators Using Generalized Singular Values</i>			
Rotea, Mario A.	Purdue Univ.		
			Milo
		<b>CACSD-TuM2</b>	
		<b>CACSD Tools in Flight Control</b>	
		Chair: Levine, William S.	Univ. of Maryland
		Co-chair: Finsterwalder, Reinhard	Univ. of Bundeswehr
		Org.: Joos, Hans-Dieter	DLR Oberpfaffenhofen
		2:00 (I)	CACSD-416
		<i>ICAD: An Appropriate CACSD Package for Aerospace Applications</i>	
		Robertson, S.S.,	
		Leithead, W.E.	Univ. of Strathclyde
		O'Reilly, J.	Univ. of Glasgow
		2:20 (I)	CACSD-422
		<i>CONDUIT-Control Designer's Unified Interface</i>	
		Levine, William S.	Univ. of Maryland
		Tischler, Mark B.	Army/NASA ARC
		2:40 (I)	CACSD-428
		<i>HAREM -HANDling Qualities Research and Evaluation Using MATLAB</i>	
		Duda, Holger,	
		Duus, Gunnar	German Aerospace Cen.
		3:00 (I)	CACSD-433
		<i>Multi-Objective Design Assessment and Control Law Synthesis Tuning for Flight Control Development</i>	
		Joos, Hans-Dieter	DLR Oberpfaffenhofen
		Finsterwalder, Reinhard	Univ. of Bundeswehr
		3:20	CACSD-439
		<i>A Graphical User Interface for Flight Control Development</i>	
		Finsterwalder, Reinhard	Univ. of Bundeswehr
		Joos, Hans-Dieter,	
		Varga, Andras	DLR Oberpfaffenhofen
		3:40 (I)	CACSD-445
		<i>Near-Optimal Trajectory Generation for Autonomous Aircraft Landing</i>	
		Yakimenko, Oleg A.,	
		Kaminer, Isaac I.	Naval Postgraduate School

	Mauka		
<b>CCA-TuM3</b>			
<b>Neuro-Fuzzy Control of Chemical Processes</b>			
Chair: Wu, M.	Central South Univ. of Tech.		
Co-chair: Coelho, Antonio A. R.	Fed. Univ. of Santa Catarina		
2:00	CCA-1044		
<i>An Expert Control Strategy Using Neural Networks for the Electrolytic Process in Zinc Hydrometallurgy</i>			
Wu, Min	Central South Univ. of Tech.		
Nakano, Michio	Takushoku Univ.		
She, Jin-Hua	Tokyo Univ. of Engr.		
2:20	CCA-1050		
<i>Neuro-Fuzzy Control of a Steam Boiler-Turbine Unit</i>			
Alturki, Fahd A.,			
Abdenmour, Adel Ben	King Saud Univ.		
2:40	CCA-1056		
<i>Prediction of Flooding in an Absorption Column Using Neural Networks</i>			
Parthasarathy, Sanjay	Honeywell Tech. Cen.		
Gowan, Hitesh	Honeywell Hi-Spec Solutions		
Indhar, Praveen	Sasol Synthetic Fuels		
3:00	*		
<i>Direct Supervisory Adaptive Fuzzy Controller Applied to pH Control</i>			
Nazaruddin, Yul Y.,			
Astrid, P.,			
Samyudia, Y.	Bandung Inst. of Tech.		
3:20	CCA-1062		
<i>Comparative Study of Parametric and Structural Methodologies in Identification of an Experimental Nonlinear Process</i>			
Marchi, Pierre Alibert,			
dos Santos Coelho, Leandro,			
Coelho, Antonio A.R.	Fed. Univ. of Santa Catarina		
3:40	CCA-1068		
<i>Adaptive Neural Model Predictive Control of Chemical Process: An Empirical Study</i>			
Wang, Dianhui	Dalian Maritime Univ.		
	Makai		
<b>CCA-TuM4</b>			
<b>Electric Motors II</b>			
Chair: Ohmori, Hiromitsu	Keio Univ.		
Co-chair: Reay, Donald S.	Heriot-Watt Univ.		
2:20	CCA-1073		
<i>Sensorless Position Detection Using Neural Networks for the Control of Switched Reluctance Motors</i>			
Reay, Donald S.,			
Williams, B.W.	Heriot-Watt Univ.		
2:40			CCA-1078
<i>Robust D-Stability of Generalized State-Space Systems with One Parameter Uncertainties</i>			
Fang, Chun-Hsiung,			
Lu, Chun-Lin,			
Hong, Lin,			
Kau, Shih-Wei	Nat. Kaohsiung Inst. of Tech.		
Lee, Li	Nat. Sun Yat-Sen Univ.		
3:20			CCA-1084
<i>An Improved Indirect Field Oriented Controller for the Induction Motor</i>			
Behal, A.,			
Feemster, Matthew,			
Dawson, D.M.,			
Haste, D.	Clemson Univ.		
3:40			CCA-1090
<i>Friction Compensation Strategy via Smooth Adaptive Dynamic Surface Control</i>			
Maulana, Aria Putra,			
Ohmori, Hiromitsu,			
Sano, Akira	Keio Univ.		
			Hau
<b>CCA-TuM5</b>			
<b>Control Applications in Aerospace Systems</b>			
Chair: Kanai, Mikio	Nat. Def. Acad.		
Co-chair: Lee, Jang Gyu	Seoul Nat. Univ.		
Org.: Ochi, Yoshimasa	Nat. Def. Acad.		
2:00 (I)			CCA-968
<i>Orbit Determination by Means of Kalman Filter Using VLBI Data</i>			
Asai, Yoshihiko	Higashinippon Int. Univ.		
Nishimura, Toshimitsu	Tokyo Engr. Univ.		
2:20 (I)			CCA-973
<i>New Method of Capturing Tumbling Object in Space and its Control Aspects</i>			
Nakasuka, Shinichi,			
Fujiwara, Takeshi	Univ. of Tokyo		
2:40 (I)			CCA-979
<i>Robust Attitude Controller Design of Linear Parameter Varying Spacecraft via Mu Synthesis and Gain Scheduling</i>			
Nagashio, Tomoyoki,			
Kida, Takashi	Univ. of Electro-Communications		
3:00 (I)			CCA-985
<i>An Experimental Investigation of Active and Passive Control of Rotating Stall in Axial Compressors</i>			
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 Seok Kyungwon Univ.  
 Kim, Young Jim Seoul Nat. Univ.

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

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### 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*  
 Paromtchik, I.E.,  
 Asama, Hajime,  
 Fujii, Teruo,  
 Endo, I. Inst. of Phys. and Chem. Res.

2:20 (I) CCA-1129  
*Decentralized Control of Mobile Robots in Coordination*  
 Hirata, Yasuhisa,  
 Kosuge, Kazuhiro Tohoku Univ.  
 Asama, Hajime,  
 Kaetsu, Hayato,  
 Kawabata, Kuniaki Inst. of Phys. and Chem. Res.

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

3:00 (I) CCA-1779  
*Sensor Fusion Technique for Cable Following by Autonomous*  
*Underwater Vehicles*  
 Balasuriya, Arjuna Nanyang Tech. Univ.  
 Ura, Tamaki Univ. of Tokyo

3:20 (I) CCA-1141  
*Mobile Robot Teleoperation Using Local Storages*  
 Kawabata, Kuniaki,  
 Ishikawa, Tatsuya,  
 Asama, Hajime,  
 Endo, Isao Inst. of Phys. and Chem. Res.

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**CACSD-TuP1**  
**Optimization-Based CACSD**  
 Chair: Balakrishnan, Venkataramanan Purdue Univ.  
 Co-chair: Tits, Andre Univ. of Maryland

4:20 CACSD-357  
*DirectSD -A Toolbox for Direct Design of SD Systems*  
 Polyakov, K. Yu,  
 Rosenvasser, Ye.N. State Univ. of Ocean Tech.  
 Lampe, Bernhard P. Univ. of Rostock

4:40 CACSD-363  
*Computation of Time Optimal Controls by Gradient Matching*  
 Szymkat, Maciej,  
 Korytowski, A.,  
 Turnau, A. St. Staszic Tech. Univ.

5:20 CACSD-369  
*Direct Collocation and Nonlinear Programming for Optimal*  
*Control Problem Using an Enhanced Transcribing Scheme*  
 Hu, G.S.,  
 Ong, Chong-Jin,  
 Teo, C.L. Nat. Univ. of Singapore

6:00 CACSD-375  
*Reliability-Directed Computer-Aided Design System*  
 Abramov, Oleg V.,  
 Katueva, Y.V. Inst. for Autom. and Control Processes  
 Lazarev, G.I. Vladivostok State Univ.  
 Suponya, A.A. Inst. for Autom. and Control Processes

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### CACSD-TuP2

#### MaTX/RtMaTX: A Freeware for Integrated CACSD

Chair: Koga, Masanobu,  
 Co-chair: Furuta, Katsuhisa Tokyo Inst. of Tech.  
 Org.: Koga, Masanobu Tokyo Inst. of Tech.

4:20 (I) CACSD-451  
*MaTX/RtMaTX: A Freeware for Integrated CACSD*  
 Koga, Masanobu Tokyo Inst. of Tech.

4:40 (I) CACSD-457  
*Robot Motion Control by MaTX/RtMaTX*  
 Yamakita, Masaki Tokyo Inst. of Tech.

5:00 (I) CACSD-462  
*Modeling and Simulation of Mechanical Systems -*  
*Combination of a Symbolic Computation Tool and MaTX*  
 Hoshino, Tasuku,  
 Furuta, Katsuhisa Tokyo Inst. of Tech.

5:20 (I) CACSD-468  
*VRSC: Visual Robotic Simulation and Control with*  
*MaTX/RtMaTX*  
 Nonaka, Kenichiro Musashi Inst. of Tech.

5:40 (I) CACSD-474  
*MaTX for IO -Extension of MaTX for Economic Input-Output Analysis*  
 Tsukui, Makiko Tokyo Int. Univ.

6:00 (I) CACSD-480  
*MaTX Aided Control Education*  
 Hatakeyama, Shoshiro,  
 Pan, Yaodong Tokyo Denki Univ.

Mauka

**CCA-TuP3**  
**Control Applications in Flows and Turbomachines**

Chair: Copeland, G. Scott,  
 Co-chair: Narayanan, Satish United Tech. Res. Cen.  
 Org.: Copeland, G. Scott,  
 Org.: Narayanan, Satish United Tech. Res. Cen.

4:20 CCA-730  
*Adaptive Detection of Instabilities and Nonlinear Analysis of a Reduced-Order Model for Flutter and Rotating Stall in Turbomachinery*  
 Copeland, G. Scott United Tech. Res. Cen.  
 Kevrekidis, Ioannis G. Princeton Univ.  
 Rico-Martinez, Ramiro Inst. Tec. de Celaya

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

4:40 (I) \*  
*Dynamics, Visualization and Control of Mixing*  
 Mezić, Igor Univ. of California, Santa Barbara

5:00 (I) CCA-1151  
*Low-Dimensional Models for Active Control of Flow Separation*  
 Narayanan, Satish,  
 Khibnik, Alexander I.,  
 Jacobson, Clas United Tech. Res. Cen.  
 Kevrekedis, Y. Princeton Univ.  
 Rico-Martinez, Ramiro Inst. Tecnológico de Celaya  
 Lust, K. Cornell Univ.

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. Virginia Pol. Inst. and State Univ.  
 Rubio, Diana North Carolina State Univ.

Makai  
**CCA-TuP4**  
**Applications of Adaptive Control for Systems with Nonsmooth Nonlinearities**  
 Chair: Lewis, Frank L. Univ. of Texas, Arlington  
 Co-chair: Cheng, J. John Nat. Chung Cheng Univ.  
 Org.: Tao, Gang Univ. of Virginia  
 Org.: Wen, Changyun Nanyang Tech. Univ.

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

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. Clemson Univ.

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

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

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 Nanyang Tech. Univ.

6:00 (I) CCA-1193  
*Adaptive Estimation of Magnetic Bearing Parameters*  
 Baloh, Michael,  
 Tao, Gang,  
 Allaire, Paul Univ. of Virginia

Hau

**CCA-TuP5**  
**Flight Control III**  
 Chair: Mesbahi, Mehran California Inst. of Tech.  
 Co-chair: Ando, Yoshinori Nagoya Univ.

4:20 CCA-1199  
*A Study of Longitudinal Flight Maneuvers for the CTOL Aircraft Model*  
 Al-Hiddabi, Saif A.,  
 McClamroch, N. Harris Univ. of Michigan

4:40	CCA-1205	5:20	CCA-1255
<i>LPV Controller Design for ALFLEX by Using LMI</i>		<i>Swing Up of an Inverted Pendulum by Simulator-Based Foresight Control</i>	
Ando, Yoshinori, Tsuge, Hidetaka, Suzuki, Masayuki	Nagoya Univ.	Uchida, Motomiki, Nakano, K.	Fukuoka Inst. of Tech.
5:00	CCA-1211	5:40	CCA-1260
<i>Formation Flying Control of Multiple Spacecraft via Graphs, Matrix Inequalities, and Switching</i>		<i>Dynamic Model Based Friction Compensation on the Furuta Pendulum</i>	
Mesbahi, Mehran, Hadaegh, F.Y.	California Inst. of Tech.	Gafvert, Magnus	Lund Inst. of Tech
5:20	CCA-1217	6:00	CCA-1266
<i>Motion Control of Highly-Maneuverable Aircraft</i>		<i>Adaptive Robust Stabilization of a Class of Nonlinear Systems with Partially Known Uncertainties</i>	
Lyshevski, Sergey E., Dunipace, Kenneth R. Colgren, Richard D.	Purdue Univ., Indianapolis Lockheed Martin Skunk Works	Wu, Hansheng	Hiroshima Prefectural Univ.
5:40	CCA-1223	<b>1999 IEEE CCA/CACSD Wednesday, August 25, 1999</b>	
<i>The Frequency-Domain Heterogeneous Control Mixer Module Method for Control Reconfiguration</i>		Hapuna Ballroom	
Zhenyu, Yang, Huazhang, Shao, Zongji, Chen	Beijing Univ.	<b>CACSD Plenary Presentation 8:30 - 9:30</b>	
6:00	CCA-1229	<b><i>Convex Matrix Optimization Problems, with Applications in Control, Signal Processing, and Circuit Design</i></b>	
<i>High-Performance Direct-Drive Flight Actuators: Advanced Technology Demonstration</i>		Boyd, Stephen	Stanford Univ.
Lyshevski, Sergey E.	Purdue Univ., Indianapolis	Chair: Varga, Andras	DLR Oberpfaffenhofen
	Lehua		Koa
<b>CCA-TuP6</b>		<b>CACSD-WA1</b>	
<b>Inverted Pendulum Control</b>		Chair: Li, Yun	Univ. of Glasgow
Chair: Tsachouridis, Vassilios A.	Univ. of Leicester	Co-chair: Wu, Henry	Univ. of Liverpool
Co-chair: Gafvert, Magnus	Lund Inst. of Tech	Org.: Li, Yun	Univ. of Glasgow
4:20	CCA-1235	10:00 (I)	CACSD-486
<i>Robust Control of a Triple Inverted Pendulum</i>		<i>Performance Indices in Evolutionary CACSD Automation with Application to Batch PID Generation</i>	
Tsachouridis, Vassilios A.	Univ. of Leicester	Feng, Wenyuan, Li, Yun	Univ. of Glasgow
4:40	CCA-1241	10:20 (I)	CACSD-492
<i>Multivariable Adaptive Model Output Following Control System Based on Backstepping Strategy and its Application to Parallel Inverted Pendulums</i>		<i>Genetic Algorithm Enabled Computer-Automated Design of QFT Control Systems</i>	
Takahashi, Masanori	Ariake Nat. College of Tech.	Chen, Wen-Hua, Ballance, Donald J., Feng, Wenyuan, Li, Yun	Univ. of Glasgow
Mizumoto, Ikuro, Iwai, Zenta, Kohzawa, Ryuichi	Kumamoto Univ.	10:40 (I)	CACSD-498
5:00	CCA-1249	<i>Control System Design Automation with Robust Tracking Thumbprint Performance Using a Multi-Objective Evolutionary Algorithm</i>	
<i>Time Optimal Control for the Pendulum-Cart System in Real-Time</i>		Tan, K.C., Lee, T.H., Khor, E.F.	Nat. Univ. of Singapore
Turnau, A., Korytowski, A., Szymkat, M.	St. Staszic Tech. Univ.		

11:00 (I)	CACSD-504	11:20 (I)	CACSD-581
<i>Population-Diversity Based Genetic Algorithm for Fuzzy Control of Synchronous Generators</i>		<i>Symbolic Verification of Executable Control Specifications</i>	
Wen, J.Y.,		Banphawatthanarak, Chonlawit,	
Wu, Q.H.,		Krogh, Bruce H.	Carnegie Mellon Univ.
Shimmin, D.W.,		Butts, Ken	Ford Res. Lab.
Turner, D.R.	Univ. of Liverpool		
Cheng, S.J.	Huazhong Univ. of Sci. & Tech.	11:40 (I)	CACSD-587
		<i>Automated Test of ECUs in a Hardware-In-The-Loop Simulation Environment</i>	
11:20 (I)	CACSD-510	Boot, Rolf	AUDI AG
<i>Parameter Identification of an Induction Machine Using Genetic Algorithms</i>		Richert, Jobst,	
Huang, K.S.	Guangdong Univ. of Tech.	Schuette, Herbert	dSpace GmbH
Kent, W.,		Ruekgauer, Andreas	dSpace Inc.
Wu, Q.H.,			
Turner, D.R.	Univ. of Liverpool		
11:40 (I)	CACSD-516		
<i>Lotka-Volterra Machine for a General Model of Complex Biological Systems</i>			
Hirafuji, Masayuki,			
Tanaka, Kei,			
Hagan, Scott	Nat. Agric. Res. Cen.		
	Milo		
<b>CACSD-WA2</b>		<b>CCA-WA3</b>	
<b>Systems Engineering Methods for Powertrain Control Development</b>		<b>Chemical and Biological Processes</b>	
Chair: Sivashankar, Shiva	Ford Res. Lab.	Chair: Chen, Shih-Chin	ABB Ind. Sys. Inc.
Co-chair: Moskwa, John J.	Univ. of Wisconsin-Madison	Co-chair: Femat, Ricardo	UASLP
Org.: Sivashankar, Shiva,			
Org.: Butts, Ken	Ford Res. Lab.		
10:00 (I)	CACSD-557	10:00	CCA-1272
<i>Using Modern Design Tools to Integrate the Systems Engineering and Software Engineering Processes</i>		<i>Implementing Supervisory Control for Chemical Batch Process</i>	
Holway, Paul,		Akesson, K.,	
Michaels, Larry,		Fabian, Martin	Chalmers Univ. of Tech.
Quinn, Stan,			
Santos, Craig	MathWorks, Inc.		
10:20 (I)	CACSD-563	10:20	CCA-1278
<i>A Modeling Environment for Production Powertrain Controller Development</i>		<i>Transition Control of Paper-Making Processes: Paper Grade Change</i>	
Sivashankar, N.,		Murphy, Timothy F.,	
Butts, K.	Ford Res. Lab.	Chen, Shih-Chin	ABB Ind. Sys., Inc.
10:40 (I)	CACSD-569	10:40	CCA-1284
<i>Implementation Details and Test Results for a Transient Engine Dynamometer and Hardware-In-The-Loop Vehicle Model</i>		<i>A Simple Method for Oscillation Diagnosis in Process Control Loops</i>	
Babbitt, Guy R.,		Horch, Alexander	Royal Inst. of Tech.
Moskwa, John J.	Univ. of Wisconsin-Madison		
11:00 (I)	CACSD-575	11:00	CCA-1290
<i>Production Intent Rapid Prototyping</i>		<i>Blood Glucose Regulation: An Output Feedback Approach</i>	
Erkkinen, Tom J.	Applied Dynamics Int.	Femat, Ricardo,	
		Ruiz-Velazquez, E.	UASLP
		11:20	CCA-1294
		<i>A Control Relevant Dynamic Model of Grate Sintering</i>	
		Martinsen, Frode,	
		Foss, Bjarne A.,	
		Johansen, Tor Arne	Norwegian Univ. of Sci. & Tech.
		11:40	CCA-1300
		<i>Optimized Modeling of the Intra Myocardial Coronary Circulation.</i>	
		Hirayama, H.	Asahikawa medical college
		Okizaki, A.	Asahikawa Medical College
		Okita, T.	Shizuoka Univ.
		Nishimura, T.	Ohita Univ.



12:00	CCA-1306		12:00	CCA-1342
<i>Adaptive Control of Peristaltic Pumps During Continuous Venovenous Hemofiltration</i>			<i>Analysis of <math>\alpha</math>-<math>\beta</math>-<math>\gamma</math> Filters</i>	
Morales, Efrain O., Polycarpou, Marios, Hemasilpin, Nat, Bissler, John J.	Univ. of Cincinnati		Tenne, Dirk Singh, Tarunraj	State Univ. of New York at Buffalo State Univ. of New York
<hr/>			<hr/>	
<b>CCA-WA4</b>			<b>CCA-WA5</b>	Hau
<b>System Identification and Signal Modeling</b>			<b>Control Problems in Heavy-Duty Vehicles</b>	
Chair: Yaz, Edwin E.	Univ. of Arkansas		Chair: Canudas de Wit, Carlos	Lab. d'Autom. de Grenoble
Co-chair: Adachi, S.	Utsunomiya Univ.		Co-chair: Tomizuka, M.	Univ. of California, Berkeley
			Org.: Canudas de Wit, Carlos	Lab. d'Autom. de Grenoble
10:00	CCA-1312		10:00 (I)	CCA-1348
<i>System Identification of Anti-Vibration Units in Semiconductor Exposure Apparatus</i>			<i>Longitudinal and Lateral Control of Heavy-Duty Trucks for Automated Vehicle Following in Mixed Traffic: Experimental Results from the CHAUFFEUR Project</i>	
Kato, H., Wakui, S. Mayama, T. Toukairin, A., Takanashi, H., Adachi, S.	Canon Inc. Canon, Inc.  Utsunomiya Univ.		Fritz, Hans	DaimlerChrysler AG
10:20	CCA-1318		10:20 (I)	CCA-1353
<i>Scale Transform Approach for Impulse Responses Identification</i>			<i>Speed Control Experiments with an Automated Heavy Vehicle</i>	
Zhang, Jiangang, Zhang, Jie, Mao, Jianqin	Beijing Univ.		Tan, Yaolong, Robotis, Andreas, Kanellakopoulos, Ioannis	UCLA
10:40	CCA-1324		10:40 (I)	CCA-1359
<i>The Application of Parameter Identification Methods with Competing Systems to Model a Human Interface Device</i>			<i>Automated Lane Guidance of Commercial Vehicles</i>	
Repperger, D.W. Phillips, C.A. Krier, M. Long, L., Taylor, S.	Air Force Res. Lab. Wright State Univ. Air Force Res. Lab. Wright State Univ.		Tomizuka, M., Tai, M., Wang, J-Y., Hingwe, P.	Univ. of California, Berkeley
11:00	CCA-1330		11:00 (I)	CCA-1365
<i>Detection of the Fundamental Frequency in Noisy Environment for Speech Enhancement of a Hearing AID</i>			<i>Modeling and Robust Control of Power Steering System of Heavy Vehicles for AHS</i>	
Yanagisawa, Koichi, Tanaka, Kyoko, Yamaura, Itsuo	Shinshu Univ.		Hingwe, P., Tai, M., Tomizuka, M.	Univ. of California, Berkeley
11:20	*		11:20 (I)	CCA-1371
<i>A Parameter Estimation Method for a Special Class of Systems of Ordinary Differential Equations</i>			<i>Stability Analysis via Passivity of the Lateral Actuator Dynamics of a Heavy Vehicle</i>	
Seatzu, Carla	Univ. of Cagliari		Canudas de Wit, Carlos, Claeys, Xavier Bechart, Hubert	Lab. d'Autom. de Grenoble Renault Dir. de la Recherche
11:40	CCA-1336		11:40 (I)	CCA-1377
<i>Selection and Performance of Probabilistic Tables Used in Non-Model Based Signal Prediction</i>			<i>Stability Issues for Vehicle Platooning in Automated Highway Systems</i>	
Zeceña, Juan Carlos Cordova, Yaz, Edwin E.	Univ. of Arkansas		Canudas de Wit, Carlos, Brogliato, Bernard	Lab. d'Autom. de Grenoble

		Lehua			Koa
<b>CCA-WA6</b>			<b>CACSD-WM1</b>		
<b>Mechatronics I</b>			<b>Intelligent CACSD</b>		
Chair: Saeki, Masami		Hiroshima Univ.	Chair: Pang, Grantham		Univ. of Hong Kong
Co-chair: Lee, Fu-Shin		Huafan Univ.	Co-chair: James, John R.		J.R. James Associates
			Org.: Pang, Grantham		Univ. of Hong Kong
			Org.: James, John R.		J.R. James Associates
10:00		CCA-1383	2:00 (I)		CACSD-522
<i>Global Stabilization of Centrifugal Compressors via Stability-Based Switching Controllers</i>			<i>A Formal Approach to Reactive System Design: Unmanned Aerial Vehicle Flight Management System Design Example</i>		
Leonessa, Alexander,			Koo, T. John,		
Haddad, Wassim M.,			Sinopoli, Bruno,		
Li, Hua		Georgia Inst. of Tech.	Sangiovanni-Vincentelli, Alberto,		
			Sastry, Shankar		Univ. of California, Berkeley
10:20		CCA-1389	2:20 (I)		CACSD-528
<i>A Chaos Model via Relay Feedback</i>			<i>Software-Enabled Control for Intelligent UAVs</i>		
Sugiki, Akihiko,			Schrage, Daniel P.,		
Hatakeyama, Shoshiro		Tokyo Denki Univ.	Vachtsevanos, George		Georgia Inst. of Tech.
Furuta, Katsuhisa		Tokyo Inst. of Tech.			
10:40		CCA-1394	2:40 (I)		CACSD-533
<i>Binary Excitation Based System Identification for Precision Ballscrew Table</i>			<i>Fuzzy-Neural Control with Application to a Heating System</i>		
Huang, Pai-Yi,			Mesbah, Samy,		
Chen, Yung-Yaw		Nat. Taiwan Univ.	Pang, Grantham		Univ. of Hong Kong
11:00		CCA-1400	3:00		CACSD-539
<i>Special-Purpose Devices Using Techniques of Discontinuous Control and Setting Adjustment (DC &amp; SA) in Control Applications</i>			<i>The SAL Interpreter for Large-Scale Optimization in Distributed Control Systems</i>		
Mkrtchian, Vardan,			Bailey-Kellogg, Christopher		Dartmouth College
Hovakimyan, Aramais,			Zhao, Feng		Xerox Palo Alto Res. Cen.
Hunanyan, Armen,					
Kchachaturyan, Tigran		State Engr. Univ. of Armenia	3:20 (I)		CACSD-545
			<i>Tools and Techniques for Evaluating Control Architecture</i>		
11:20		CCA-1406	James, John R.		J.R. James Associates
<i>Modeling of Actuator Systems Using Multilayer Electrostrictive Materials</i>			McClain, Richard		Lockhead Martin Adv. Tech. Lab.
Lee, Fu-Shin		Huafan Univ.	3:40 (I)		CACSD-551
11:40		CCA-1412	<i>A Learning Algorithm for Recurrent Neural Networks and its Application to Nonlinear Identification</i>		
<i>Proposal of a Parallel Supporting Damper with Tendon and Robust Control System Design</i>			Yamamoto, Yoshihiro		Tottori Univ.
Kimura, Junso		Hiroshima Univ.	Nikiforuk, Peter N.		Univ. of Saskatchewan
Harada, Shigeru		Mitsubishi Heavy Ind.			
Saeki, Masami		Hiroshima Univ.			
12:00		CCA-1418			Milo
<i>On the States and Parameters Estimation of Non-Linear Discrete-Time Systems. Design and Experimental Results</i>			<b>CACSD-WM2</b>		
Boutayeb, M.,			<b>Applications of CACSD</b>		
Aubry, D.,			Chair: Kamwa, I.		Inst. de Recherche d'Hydro-Quebec
Darouach, M.			Co-chair: Sima, Vasile		Res. Inst. for Inf., Bucharest
E., Richard		Univ. of Henri Poincare INRIA-Lorraine	2:00		CACSD-624
			<i>SCADA in Hydropower Plants</i>		
			Mavrin, Mario,		
			Koroman, V.,		
			Borovic, B.		Brodarski Inst.

2:20	CACSD-595	2:40 (I)	CCA-1755
<i>Experience with a MATLAB Toolbox for Multiple-Control Coordination in Large Power Systems</i>		<i>Fault Diagnosis of the IFAC Benchmark Problem with a Model-Based Recurrent Neural Network</i>	
Kamwa, I.	Inst. de Recherche d'Hydro-Quebec	Gan, Chengyu,	Univ. of Massachusetts
Henniche, A.	Laval Univ.	Danai, Kourosh	
Gerin-Lajoie, L.,			
Lefebvre, D.	TransEnergie, Hydro-Quebec		
2:40	CACSD-602	3:00 (I)	CCA-1436
<i>Computer-Aided Design of Sliding Mode Control of Permanent Magnet Synchronous Motor</i>		<i>Optimal Auxiliary Input for Fault Detection of Systems with Model Uncertainty</i>	
Golea, Amar	Biskra Univ.	Hatanaka, Toshiharu,	Tottori Univ.
Golea, Nouredine	O.E.B. Univ.	Uosaki, Katsuji	
Kadjoudj, Med.	Batna Univ.		
Benounnes, N.	Biskra Univ.	3:20 (I)	CCA-1442
		<i>Detection of Abrupt Changes in Modal Characteristics of a Vibrating Structure -A Case Study</i>	
		Popescu, Theodor	Res. Inst. for Inf., Bucharest
3:00	CACSD-607		
<i>Design of Longitudinal Variable Structure Flight Control System for the F-18 Aircraft Model with Parameter Perturbations</i>			Makai
Jafarov, Elbrous M.,		<b>CCA-WM4</b>	
Tasaltin, Ramazan	Istanbul Tech. Univ.	<b>Network and Discrete Event Systems</b>	
		Chair: Walsh, Gregory C.	Univ. of Maryland
		Co-chair: Hellgren, Anders	Chalmers Univ. of Tech
3:20	CACSD-613	2:00	CCA-1448
<i>Estimation of Temperature Profiles of Slabs in a Reheat Furnace by Using the Kalman Filter</i>		<i>Asymptotic Behavior of Networked Control Systems</i>	
Wick, Hans-Joachim	Consultant-Autom.	Walsh, Gregory C.	Univ. of Maryland
Koester, Friedhelm	Hoesch Spundwand u. Profil GmbH	Beldiman, Octavian,	
		Bushnell, Linda	Duke Univ.
3:40	CACSD-618	2:20	CCA-1454
<i>Conception of Researcher's Environment for CACSD Gamma-1PC</i>		<i>Impact of Flow Control on Quality of Service Driven Packet Scheduling Disciplines</i>	
Mikhailova, L.S.,		Hayes, David A.,	
Alexandrov, A.G.,		Rumsewicz, Michael	Royal Melbourne Inst. of Tech.
Vnukow, A.V.,		Andrew, Lachlan L. H.	Univ. of Melbourne
Isakov, R.V.,			
Ryazantchev, R.P.	Moscow State Inst. of Steel and Alloys		
		2:40	CCA-1460
		<i>Development of State Space Model and Study of Performance Characteristics of Digital Based Excitation Control System ST4B with Single Machine Connected to Infinite Bus</i>	
		Rangnekar, Saroj	M. A. College of Tech.
		3:00	CCA-1466
		<i>Admission Control by MDP Theory: A Single-Sample-Path-Based Approach</i>	
		Wang, Junjie	Univ. of Maryland
		3:20	CCA-1472
		<i>Deadlock Detection and Controller Synthesis for Production Systems Using Partial Order Techniques</i>	
		Hellgren, Anders,	
		Fabian, Martin,	
		Lennartson, Bengt	Chalmers Univ. of Tech.
		3:40	CCA-1478
		<i>Optimization in Markov Decision Problems with Transition-Dependent Cost Functions</i>	
		Wang, Junjie	Univ. of Maryland
		Cao, Xi-Ren	Hong Kong Univ. of Sci. & Tech.

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### CCA-WM3

#### Fault Detection and Isolation in Dynamical Systems

Chair: Popescu, Theodor      Res. Inst. for Inf., Bucharest  
Co-chair: Gertler, Janos      George Mason Univ.  
Org.: Popescu, Theodor      Res. Inst. for Inf., Bucharest

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.

	Hau				
<b>CCA-WM5</b>					
<b>Vehicle Suspensions</b>					
Chair: Yoshida, Kazuo		Keio Univ.			
Co-chair: Halfmann, Christoph		Darmstadt Univ. of Tech.			
2:00		CCA-1484			
<i>Modeling and Identification of the Vehicle Suspension Characteristics Using Local Linear Model Trees</i>					
Halfmann, Christoph, Nelles, O., Holzmann, H.		Darmstadt Univ. of Tech.			
2:20		CCA-1490			
<i>Neuro-Fuzzy Based Modeling of Vehicle Suspension System</i>					
Nazaruddin, Yul Y. Yamakita, Masaki		Bandung Inst. of Tech. Tokyo Inst. of Tech.			
2:40		CCA-1496			
<i>Bilinear Disturbance-Accommodating Optimal Control of Semi-Active Suspension for Automobiles</i>					
Yoshida, Kazuo, Okamoto, Bunta		Keio Univ.			
3:00		CCA-1734			
<i>Adaptive Nonlinear Control of Repulsive Maglev Suspension Systems</i>					
Huang, Chao-Ming, Chen, Min-Shin, Yen, Jia-Yush		Nat. Taiwan Univ.			
3:20		CCA-1502			
<i>Active Suspension Control Using a Novel Strut and Active Filtered Feedback: Design and Implementation</i>					
Ikenaga, S., Lewis, Frank L., Davis, L., Campos, J., Evans, M., Scully, S.		Univ. of Texas, Arlington			
3:40		CCA-1509			
<i>Active Vibration Isolation by Adaptive Control</i>					
Shaw, Jinsiang		Huafan Univ.			
		Lehua			
<b>CCA-WM6</b>					
<b>Control Integrity in Adverse Operating Conditions</b>					
Chair: Belcastro, Celeste		NASA Langley Res. Cen.			
Co-chair: Chang, B.C.		Drexel Univ.			
Org.: Belcastro, Celeste		NASA Langley Res.Cen.			
2:00 (I)		CCA-1515			
<i>A Virtual Closed Loop Remedy for Temporary Sensor Failures</i>					
Suh, Jon, Bajpai, Gaurav, Chang, B.C.		Drexel Univ.			
2:20 (I)		CCA-1519			
<i>Characterization of a Recoverable Flight Control Computer System</i>					
Malekpour, Mahyar, Torres, Wilfredo				NASA Langley Res. Cen.	
2:40 (I)		CCA-1797			
<i>Stochastic Perturbation Analysis of Computer Control Systems Subject to Electromagnetic Disturbances</i>					
Gray, W. Steven, Gonzalez, Oscar, Dogan, Mustafa				Old Dominion Univ.	
3:00 (I)		CCA-1525			
<i>Detecting Controller Malfunctions in Electromagnetic Environments: Part I: Modeling and Estimation of Nominal System Function</i>					
Weinstein, Bernice				NASA Langley Res. Cen.	
3:20 (I)		CCA-1531			
<i>Detecting Controller Malfunctions in Electromagnetic Environments: Part II-Design &amp; Analysis of the Detector</i>					
Belcastro, Celeste				NASA Langley Res. Cen.	
3:40 (I)		CCA-1538			
<i>Adaptive Estimation and Accommodation of Loss of Control Effectiveness Using a Lyapunov Method</i>					
Wu, N. Eva				Binghamton Univ.	
				Koa	
<b>CCA-WP1</b>					
<b>CAD &amp; Monitoring</b>					
Chair: Saito, Osami				Chiba Univ.	
Co-chair: Yen, Gary				Oklahoma State Univ.	
4:20		CCA-1543			
<i>Development of nD Control System Toolbox for Use with MATLAB</i>					
Xu, Li Yamada, Minoru Saito, Osami				Asahi Univ. Gifu Nat. College of Tech. Chiba Univ.	
4:40		CCA-1549			
<i>An Attribute Graph Grammar for Signal Flow Graphs</i>					
Adachi, Yoshihiro, Kobayashi, Suguru, Tsuchida, Kensei Yaku, Takeo				Toyo Univ. Nihon Univ.	
5:00		CCA-1555			
<i>A Tool for Rapid System Identification</i>					
Wallen, Anders				Lund Inst. of Tech	
5:20		CCA-1561			
<i>Identification Tool for Chemical Processes</i>					
Tani, Shigeyuki, Takahashi, Shinsuke, Sekozawa, Teruji				Hitachi Ltd.	

5:40 CCA-1567  
*An Effective Neuro-Fuzzy Paradigm for Machinery Condition Health Monitoring*  
 Yen, Gary,  
 Meesad, Phayung Oklahoma State Univ.

6:00 CCA-1573  
*Wavelet Packet Feature Extraction for Vibration Monitoring*  
 Yen, Gary,  
 Lin, Kuo-Chung Oklahoma State Univ.

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**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

4:20 (I) CCA-1579  
*Development of Air-Conditioning Control Algorithm for Building Energy-Saving*  
 Yamada, Fumio,  
 Yonezawa, Kenzo,  
 Sugawara, Susumu,  
 Nishimura, Nobutaka Toshiba Corp.

4:40 (I) CCA-1585  
*The Open Protocol Standard for Computerized Building System: BACnet*  
 Haakenstad, Larry K. Alerton Tech., Inc.

5:00 (I) \*  
*A Recipe for Success with Open System*  
 Arnold, Rand Echelon Corp.

5:20 (I) CCA-1744  
*Creating Better Business Outcomes through Enterprise Integration with Advanced Building Control Solutions*  
 Miller, Daniel T. Honeywell H&BC Solutions & Services

5:40 (I) \*  
*Recent Developments in Controls for Intelligent Buildings*  
 Chow, Billy,  
 Moul, Rob,  
 Purkayastha, David Johnson Controls(HK) Ltd.

6:00 (I) CCA-1591  
*Dynamic Zoning Based Supervisory Control for Elevators*  
 So, Albert T.P.,  
 Yu, Janson K.L. City Univ. of Hong Kong  
 Chan, W.L. Hong Kong Pol. Univ.

Mauka

**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.

4:20 (I) \*  
*Spot and Derivative Markets in Admission Control: Optimal Seller Strategies*  
 Lazar, Aurel A.,  
 Semret, Nemo Columbia Univ.

4:40 (I) CCA-1597  
*Multi-Attribute Learning Mechanism for Network Control and Management*  
 Inoue, Akiya,  
 Yamamoto, Hisao NTT Service Integration Lab.

5:00 (I) CCA-1603  
*Stability Analysis of Window-Based Flow Control Mechanism in TCP/IP Networks*  
 Ohsaki, Hiroyuki,  
 Murata, Masayuki,  
 Ushio, Toshimitsu,  
 Miyahara, Hideo Osaka Univ.

5:20 (I) CCA-1607  
*Towards Efficient Call Admission Control for State-Dependent Routing in Multirate Networks*  
 Ahlfors, Ulf,  
 Korner, Ulf,  
 Pioro, Michal Lund Inst. of Tech.

5:40 (I) CCA-1614  
*Load Balancing and Control for Distributed World Wide Web Servers*  
 Castro, Maurice,  
 Dwyer, Michael,  
 Rumsewicz, Michael Royal Melbourne Inst. of Tech.

6:00 (I) CCA-1620  
*Distributed Web Caching Using Hash-Based Query Caching Method*  
 Asaka, Takuya Waseda Univ.  
 Miwa, Hiroyoshi NTT Service Integration Lab.  
 Tanaka, Yoshiaki Waseda Univ.

Makai

**CCA-WP4**

**Manufacturing Systems**

Chair: De Keyser, Robin Univ. of Gent  
 Co-chair: Takahashi, Katsuhiko Hiroshima Univ.

4:20 CCA-1626  
*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	CCA-1632		5:20	CCA-1679
<i>Simulation-Based Planning and Control of Production Fractals</i>			<i>Robust Stabilization of the Vehicle Dynamics by Gain-Scheduled <math>H_\infty</math> Control</i>	
Sihn, Wilfried, Lickefett, M., Pirron, Joerg	Fraunhofer Inst. For Manufac.		Ono, Eiichi Hosoe, Shigeyuki Asano, Katsuhiro, Sugai, Masaru, Doi, Shun'ichi	Toyota Central R & D Labs. Nagoya Univ.
5:00	CCA-1636			
<i>Model Based Predictive Control in RTP Semiconductor Manufacturing</i>				Toyota Central R & D Labs.
De Keyser, Robin Donald, III, James	Univ. of Gent ASM America Inc.		5:40	CCA-1686
5:20	CCA-1642		<i>Parallel Parking Car-Like Robot Using Fuzzy Gain Scheduling</i>	
<i>Development of a Robot Holon Using an Open Modular Controller</i>			Lian, Kuang-Yow, Chiu, Chian-Song, Chiang, Tung-Sheng	Chung-Yuan Christian Univ.
Schnell, Jakob, Andersen, Soren, Langer, Gilad, Sorensen, Christian	Tech. Univ. of Denmark		6:00	CCA-1692
5:40	CCA-1648		<i>Stop &amp; Go Controller for Adaptive Cruise Control</i>	
<i>Applying a Neural Network to the Adaptive Control for JIT Production Systems</i>			Persson, Mikael Botling, Fredrik, Hesslow, Erik Johansson, Rolf	Lund Inst. of Tech. Volvo Tech. Dev. Co. Lund Inst. of Tech.
Takahashi, Katsuhiko, Nakamura, Nobuto	Hiroshima Univ.			
6:00	CCA-1654			Lehua
<i>Control of Liquid Slosh in an Industrial Packaging Machine</i>			<b>CCA-WP6</b> <b>Mechatronics II</b>	
Grundelius, Mattias, Bernhardsson, Bo	Lund Inst. of Tech.		Chair: Nishimura, Hidekazu Co-chair: Canuto, Enrico	Chiba Univ. Pol. di Torino
		Hau	4:20	CCA-1698
<b>CCA-WP5</b> <b>Nonlinear and Gain Scheduled Vehicles Control</b>			<i>Gain-Scheduled Control of a System with Input Constraint by Suppression of Input Derivatives</i>	
Chair: Tseng, H.E. Co-chair: Ono, Eiichi	Ford Motor Co. Toyota Central R & D Labs.		Nishimura, Hidekazu, Takagi, Kiyoshi, Yamamoto, Kohei	Chiba Univ.
4:20	CCA-1660		4:40	CCA-1704
<i>Technical Challenges in the Development of Vehicle Stability Control System</i>			<i>Active Distance Stabilization of Large Bodies with Picometer Repeatability</i>	
Tseng, H.E. Madau, D., Ashrafi, B. Brown, T. Recker, D.	Ford Motor Co. Visteon Autom. Systems Ford Motor Co. Visteon Autom. Systems		Canuto, Enrico, Donati, Francesco Bertinetto, Fabrizio, Mana, Giovanni Bisi, Marco, Cesare, Stefano, Pepe, Stefano	Pol. di Torino Ist. Metrolog. Gustavo Colonnetti Alenia Aerospazio
4:40	CCA-1667		5:00	CCA-1710
<i>Tracking Control of Vehicles Using Nonlinear Model</i>			<i>A Supervisory Fuzzy Neural Network Controller for Slider-Crank Mechanism</i>	
Kobayashi, Tomoaki Ohtsuka, Toshiyuki	Univ. of Tsukuba Osaka Univ.		Lin, Faa-Jeng, Fung, Rong-Fong, Lin, Hsin-Hai, Hong, Chih-Ming	Chung Yuan Christian Univ.
5:00	CCA-1673			
<i>Trajectory Control of an Articulated Vehicle with Tripe Trailers</i>				
Tanaka, Kazuo, Taniguchi, Tadanari Wang, Hua O.	Univ. of Electro-Communications Duke Univ.			

5:20 CCA-1716  
*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 Yamaguchi Univ.  
 Uchibori, Akihiko Yamaguchi Univ.  
 Uchikado, Shigeru Tokyo Denki Univ.

5:40 CCA-1722  
*Improved Control of Pneumatic Lumber Handling Systems*  
 Wang, Xiaochun George,  
 Kim, Chris Integrated Manufac. Tech. Inst.

6:00 CCA-1728  
*Robust Compensators Design for Existing Control Systems*  
 Yari, A. R.,  
 Eisaka, T. Kitami Inst. of Tech.

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**1999 IEEE CCA/CACSD  
 Thursday, August 26, 1999**

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Hapuna Ballroom  
**CCA Plenary Presentation  
 8:30 - 9:30**

***Control in the Automotive Industry:  
 Accomplishments in the Twentieth Century,  
 Challenges in the Twenty-First Century***

Winkelman, James Ford Motor Co.  
 Chair: Kanellakopoulos, Ioannis UCLA  
 Koa

**CCA-ThA1**

**Flexible Structures**

Chair: Looze, Douglas P. Univ. of Massachusetts  
 Co-chair: Kobayashi, Nobuyuki Aoyama Gakuin Univ.

10:00 CCA-291  
*Compensator Design for the ALFA Adaptive Optics System*  
 Looze, Douglas P.,  
 Beker, Orhan Univ. of Massachusetts  
 Kaspar, Markus,  
 Hippler, Stephan Max Planck Inst. fur Astronom.e

10:20 CCA-297  
*Vibration Suppression Control of Flexible Robot Arm with CMS Modeling and Output Feedback Sliding Mode Controller*  
 Kobayashi, Nobuyuki,  
 Inoue, Kengo Aoyama Gakuin Univ.

10:40 CCA-303  
*Fault-Tolerant Decentralized Control for Large Space Structures*  
 Kobayashi, Yohji Kobe City College of Tech.  
 Ikeda, Masao Osaka Univ.  
 Fujisaki, Yasumasa Kobe Univ.

11:00 CCA-309  
*Vibration Suppression Control of Flexible Arms by Using Sliding Mode Method*  
 Chen, Xinkai Tokyo Denki Univ.  
 Guo, Shuxiang Kagawa Univ.  
 Fukuda, Toshio Nagoya Univ.

11:20 CCA-315  
*Fuzzy Logic Control of a Moving Flexible Manipulator*  
 Chen, Chong,  
 Yin, Yican Middle Tennessee State Univ.

11:40 CCA-321  
*Structural Design for Reduced-Order  $H_\infty$  Controller*  
 Hiramoto, Kazuhiko,  
 Doki, Hitoshi,  
 Obinata, Goro Akita Univ.

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**CCA-ThA2a**

**Scaled Control Experiments**

Chair: Alleyne, Andrew Univ. of Illinois, Urbana-Champaign  
 Co-chair: Murray, Richard M. California Inst. of Tech.  
 Org.: Alleyne, Andrew Univ. of Illinois, Urbana-Champaign

10:00 (I) CCA-327  
*A Scaled Testbed for Vehicle Control: The IRS*  
 Brennan, S.,  
 Alleyne, A. Univ. of Illinois, Urbana-Champaign

10:20 (I) CCA-333  
*The University of Toronto RC Helicopter: A Test Bed for Nonlinear Control*  
 Bortoff, Scott A. Univ. of Toronto

10:40 (I) CCA-339  
*Implications of Control-Structure Interaction in the Scaled Structural Control System Testing*  
 Dyke, Shirley J.,  
 Jansen, Laura M. Washington Univ.

11:00 (I) CCA-345  
*A Testbed for Nonlinear Flight Control Techniques: The Caltech Ducted Fan*  
 Milam, Mark,  
 Murray, Richard M. California Inst. of Tech.

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**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								
<i>Automatic Detection of Excessively Oscillatory Feedback Control Loops</i>									
Miao, Tina,									
Seborg, Dale E.			Univ. of California, Santa Barbara						
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				Mauka					
<b>CCA-ThA3</b>									
<b>Control of Chemical Processes II</b>									
Chair: Erickson, Mark				Voyan Tech.					
Co-chair: Leonessa, Alexander				Georgia Inst. of Tech.					
10:00	CCA-365								
<i>Design of a Decentralized Output Feedback Control Law by Solving a Linear Least Squares Problem</i>									
Seatzu, Carla				Univ. of Cagliari					
10:20	CCA-371								
<i>Pressure Feedback Reduced-Order Dynamic Compensation for Axial Flow Compression Systems</i>									
Haddad, Wassim M.,									
Corrado, Joseph R,									
Leonessa, Alexander			Georgia Inst. of Tech.						
10:40	CCA-377								
<i>Bifurcation Control of Rayleigh-Benard Convection</i>									
Chen, Dong,									
Wang, Hua O.,									
Howle, Laurens E.				Duke Univ.					
11:00	CCA-383								
<i>Rapid Process Recipe Optimization for Batch Thermal Reactors</i>									
Erickson, Mark A.,									
Shah, S.,									
Gudmundsson, T.,									
Pandey, P.				Voyan Tech.					
11:20	CCA-391								
<i>Towards Delta Domain in Predictive Control-An Application to the Space Crystal Furnace TITUS</i>									
Ebert, Wolfram				Humboldt-Univ. of Berlin					
11:40	CCA-397								
<i>Operation and Control of a Semibatch Reactive Distillation Column</i>									
Fernholz, Gregor,									
Wang, Wei,									
Engell, Sebastian,									
Fougner, Kajsa,									
Bredenhof, Jan-Peter				Univ. of Dortmund					
12:00	CCA-403								
<i>Robust LQ Optimal Controller Designing for Refining Process</i>									
Xue, Anke,									
Lu, Yingquan,									
Sun, Youxian				Zhejiang Univ.					
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									Makai
<b>CCA-ThA4</b>									
<b>Fuzzy &amp; Neural Network</b>									
Chair: Danai, Kourosh								Univ. of Massachusetts	
Co-chair: Kiji, Junichi								Toshiba Co.	
10:00	CCA-409								
<i>Adjustment Rule Generation for Static Systems</i>									
Kiji, Junichi								Toshiba Corp.	
10:20	CCA-415								
<i>New Robust and Optimal Designs for Takagi-Sugeno Fuzzy Control Systems</i>									
Tanaka, Kazuo,									
Hori, Tsuyoshi								Univ. of Electro-Communications	
Wang, Hua O.								Duke Univ.	
10:40	CCA-421								
<i>Fuzzy-Logic-Based Guidance Law Design for Missile Systems</i>									
Lin, Chih-Min,									
Mon, Yi-Jen								Yuan-Ze Univ.	
11:00	CCA-427								
<i>Neural Network Assisted Control Loop Tuner</i>									
Wojsznis, Willy K.,									
Blevins, Terry L.,									
Thiele, Dirk								Fisher-Rosemount Systems	
11:20	CCA-432								
<i>FEP Learning Algorithm: Application to Direct Self-Learning Control</i>									
Mendil, Boubekur								Univ. of Bejaia	
Benmahammed, Khier								Univ. of Setif	
11:40	CCA-1749								
<i>Model-Based Recurrent Neural Network for Modeling Nonlinear Dynamic Systems</i>									
Gan, Chengyu,									
Danai, Kourosh								Univ. of Massachusetts	
12:00	CCA-436								
<i>Feedforward IIR Active Noise Control Using Genetic Algorithm</i>									
Kim, Jong Boo								Induk Inst. of Tech.	
Lee, Tae Pyo								Hyundai Motors Co.	
Yim, Kook Hyun								Taesang Precision co.	
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<b>CCA-ThA5</b>									
<b>Control of Automotive Systems</b>									
Chair: Sun, Jing,									
Co-chair: Cook, Jeffrey A.								Ford Res. Lab.	
Org.: Sun, Jing,									
Org.: Cook, Jeffrey A.								Ford Res. Lab.	
10:00 (I)	CCA-442								
<i>Force Tracking Control for Active Suspensions-Theory and Experiments</i>									
Chantranuwathana, Supavut,									
Peng, Huei								Univ. of Michigan	



10:20 (I)	CCA-448	10:40	CCA-490
<i>Modeling, Performance Analysis and Control Design of a Hybrid Sport-Utility Vehicle</i>		<i>Biologically Inspired Adaptive Dynamic Walking of the Quadruped on Irregular Terrain</i>	
Brahma, Avra, Glenn, Bradley, Guezennec, Yann, Miller, Troy, Rizzoni, Giorgio, Washington, Gregory	Ohio State Univ.	Fukuoka, Yasuhiro, Nakamura, Hiroyuki, Kimura, Hiroshi	Univ. of Electro-Communications
10:40 (I)	CCA-454	11:00	CCA-496
<i>Improving Turbocharged Diesel Engine Operation with Turbo Power Assist System</i>		<i>Analysis and Design of Running Robots in Touchdown Phase</i>	
Kolmanovsky, Ilya Stefanopoulou, A.G. Powell, B.K.	Ford Res. Lab. Univ. of California, Santa Barbara Ford Res. Lab.	Ikeda, Takayuki, Iwatani, Yasushi, Suse, Koichi, Mita, Tsutomu	Tokyo Inst. of Tech.
11:00 (I)	CCA-460	11:20	CCA-502
<i>In-Cylinder Measurement for Engine Cold Start Control</i>		<i>Control and Analysis of the Gait of Snake Robots</i>	
Tunestal, Per, Wilcutts, Mark, Lee, Albert T., Hedrick, J. Karl	Univ. of California, Berkeley	Prautsch, P., Mita, T.	Tokyo Inst. of Tech.
11:20 (I)	CCA-465	11:40	CCA-508
<i>Multivariable Controller Structure in a Variable Cam Timing Engine with Electronic Throttle and Torque Feedback</i>		<i>Dynamic Modeling of Flexure Jointed Hexapods for Control Purposes</i>	
Hsieh, Stephen C., Freudenberg, James S. Stefanopoulou, Anna G.	Univ. of Michigan Univ. of California, Santa Barbara	McInroy, John E.	Univ. of Wyoming
11:40 (I)	CCA-471		Koa
<i>Modeling and Control of Gasoline Direct Injection Stratified Charge (DISC) Engines</i>		<b>CCA-ThM1</b> <b>Vibration Control and Input Shaping</b> Chair: Wang, Xiaochun G. Integrated Manufac. Tech. Inst. Co-chair: Tagawa, Yasutaka Tokyo Univ. of Agric. & Tech.	
Sun, Jing, Kolmanovsky, Ilya, Brehob, Diana, Cook, Jeffrey A., Buckland, Julie, Haghgooeie, Mo	Ford Res. Lab.	2:00	CCA-514
	Lehua	<i>Estimation and Control of Vibrations of Circular Saws</i>	
<b>CCA-ThA6</b> <b>Robotics</b> Chair: Osuka, K. Co-chair: Keon, Young Yi	Kyoto Univ. Kwang Woon Univ.	Wang, Xiaochun G., Xi, Fengfeng Jeff, Li, Daming, Qin, Zhong	Integrated Manufac. Tech. Inst.
10:00	CCA-478	2:20	CCA-521
<i>Passive Walking Robot QUARTET</i>		<i>New Simple Adaptive Control Subject to Disturbances and Application to Torsional Vibrational Suppression</i>	
Osuka, Koichi Fujitani, Tatsuya, Ono, Toshiro	Kyoto Univ. Osaka Pref. Univ.	Mine, M., Date, K., Ohmori, Hiromitsu, Sano, A. Todaka, Yujui, Nishida, Hideyuki	Keio Univ. Fuji Electric. Co.
10:20	CCA-484	2:40	CCA-527
<i>Walking of a Biped Robot with Passive Ankle Joints</i>		<i>Control of Elevator Having Parametric Vibration Using LPV Control Method</i>	
Yi, Keon Young	Kwangwoon Univ.	Rijanto, Estiko, Muramatsu, Takashi, Tagawa, Yasutaka	Tokyo Univ. of Agric. and Tech.
		3:00	CCA-533
		<i>Vibration Reduction with Specified-Swing Input Shapers</i>	
		Singhose, William Mills, Bart, Seering, Warren	Georgia Inst. of Tech. Massachusetts Inst. of Tech.

3:20 CCA-539  
*Input Shaper Design for Double-Pendulum Planar Gantry Cranes*  
 Kenison, Michael,  
 Singhose, William Georgia Inst. of Tech.

3:40 CCA-545  
*Limiting Excitation of Unmodeled High Modes with Negative Input Shapers*  
 Singhose, William,  
 Grosser, Karen Georgia Inst. of Tech.

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**CCA-ThM2**

**Robust and Nonlinear Control of Magnetic Bearings**

Chair: Fujita, Masayuki Kanazawa Univ.  
 Co-chair: Knospe, Carl R. Univ. of Virginia  
 Org.: Fujita, Masayuki Kanazawa Univ.

2:00 (I) CCA-551  
*Magnetic Suspension and Vibration Control of Beams for Non-Contact Processing*  
 Trumper, David L.,  
 Weng, Ming-chih,  
 Ritter, Robert J. Massachusetts Inst. of Tech.

2:20 CCA-743  
*Sliding Mode Nonlinear Control of Magnetic Bearings*  
 Torres, Mauricio C.N.R.S.  
 Sira-Ramirez, Hebert C. INVESTAV-IPN  
 Escobar, Gerardo C.N.R.S.

2:40 (I) CCA-558  
*Uncertain Model and Mu-Synthesis of a Magnetic Bearing*  
 Namerikawa, Toru,  
 Fujita, Masayuki Kanazawa Univ.

3:00 (I) CCA-564  
*Low-Order Mu-Synthesis Controller Design for a Large Boiler Feed Pump Equipped with Active Magnetic Bearings*  
 Losch, Florian,  
 Gähler, Conrad Int. Cen. for Magnetic Bearings  
 Herzog, Raoul MECOS Traxler

3:20 (I) CCA-570  
*Mu-Control of a High Speed Spindle Thrust Magnetic Bearing*  
 Fittro, Roger L. Aston Univ.  
 Knospe, Carl R. Univ. of Virginia

3:40 (I) CCA-576  
*Adaptive Unbalance Vibration Control of Magnetic Bearing System Using Frequency Estimation for Multiple Periodic Disturbances with Noise*  
 Nonami, Kenzo,  
 Liu, Zi-he Chiba Univ.

Mauka

**CCA-ThM3**

**Process Control**

Chair: Takatsu, Haruo Yokogawa Electric Corp.  
 Co-chair: Samad, Tariq Honeywell Tech.  
 Org.: Shigemasa, Takashi Toshiba Co.

2:00 (I) CCA-582  
*Adaptive Fuzzy Temperature Control for Hydronic Heating Systems*  
 Haissig, Christine M. Honeywell Tech. Cen.

2:20 (I) CCA-589  
*Auto-Tuning PID Using Loop Shaping Ideas*  
 Gaikwad, Sujit,  
 Dash, Sachi,  
 Stein, Gunter Honeywell Tech. Cen.

2:40 (I) CCA-1740  
*Exapilot, Operational Efficiency Increase Support Package*  
 Kobayashi, Yasunori,  
 Takatsu, Haruo Yokogawa Electric Corp.

3:00 (I) CCA-594  
*A Comparison of Identification-Based Performance Bounds for Robust Process Control*  
 Adusumilli, S. Arizona State Univ.  
 Dash, Sachi Honeywell Tech. Cen.  
 Rivera, D.E.,  
 Tsakalis, K. Arizona State Univ.

3:20 (I) CCA-600  
*An Optimizing Control for District Heating and Cooling Plant*  
 Murai, Masahiko,  
 Sakamoto, Yoshiyuki,  
 Shinozaki, Tsutomu Toshiba Corp.

3:40 (I) CCA-605  
*Impacts of Enterprise Wide Supply-Chain Management Techniques on Process Control*  
 Tjoa, I. Bhieng,  
 Raman, Ramesh MC Res. & Innovation Cen.  
 Itou, Toshiaki,  
 Fujita, Kaoru,  
 Natori, Yukikazu Mitsubishi Chem. Corp.

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**CCA-ThM4**

**Power Systems Control I**

Chair: Bevrani, Hassan West Reg. Elec. Cc  
 Co-chair: Owens, David H. Univ. of Exeter

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	3:00	CCA-658
<i>Robust Load Frequency Controller in a Deregulated Environment: A Mu-Synthesis Approach</i>	West Regional Electric Co.	<i>Design of a State Control for a Solid-Coupled Magnetic Levitation Transport System</i>	Aachen Inst. of Tech.
Bevrani, Hassan		Groning, Ingolf, Zickermann, Richard, Henneberger, Gerhard	
2:40	CCA-622	3:20	CCA-662
<i>Fuzzy Logic in Voltage and Reactive Power Control in Power Systems</i>	Catholic Univ. of Minas Gerais	<i>Road Friction Estimation Using Adaptive Observer with Periodical Sigma-Modification</i>	Univ. of Tokyo
Ekel, P.Ya., Terra, L.D.B., Junges, M.F.D. de Oliveira, F.J.A., Kowaltschuck, R., Taguti, T.Y.	Parana State Energy Co.	Nishira, Hikaru Kawabe, Taketoshi Shin, Seiichi	Nissan Motor Co. Univ. of Tokyo
3:00	CCA-628		Lehua
<i>Stability Analysis of the International Space Station Electrical Power System</i>	Aerospace Corp.	<b>CCA-ThM6</b> <b>Robot Control</b>	
Ly, J.H., Truong, C.		Chair: Safonov, Michael G. Co-chair: Shimizu, K.	Univ. of Southern California Keio Univ.
3:20	CCA-634	2:00	CCA-668
<i>Robust Control of Gas Generator in a 1.5 MW Gas Turbine Engine</i>	Univ. of Exeter	<i>An Experimental Facility for Nonlinear Robot Control</i>	Oce-Tech. B.V. Eindhoven Univ. of Tech.
Gomma, H. W., Owens, David H.		van Beek, Bert de Jager, Bram	
3:40	CCA-640	2:20	CCA-674
<i>Unsupervised Neural Network for Fault Detection and Classification in Dynamic Systems</i>	Univ. of Southwestern Louisiana	<i>IMC Design with Limiting Properties of LQR and its Application to Trajectory Tracking Control</i>	Kanazawa Inst. of Tech.
Pei, Xiaoqin, Chowdhury, Fahmida N.		Suzuki, R., Doi, M., Kobayashi, N., Furuya, S.	
	Hau	2:40	CCA-680
<b>CCA-ThM5</b> <b>ABS and Adaptive Control</b>	SUNY at Buffalo	<i>Unfalsified Direct Adaptive Control of a Two-Link Robot Arm</i>	Spectrum Astro, Inc Univ. of Southern California
Chair: Singh, Tarunraj Co-chair: Groning, Ingolf	RWTH	Tsao, Tung-Ching Safonov, Michael G.	
2:00	*	3:00	CCA-687
<i>A Sliding Mode Nonlinear Control Strategy for Anti-Lock Braking Systems</i>	Amirkabir Univ. of Tech.	<i>Design of Nonlinear Tracking Controllers for Robots</i>	Purdue Univ., Indianapolis
Taheri, Saied		Lyshevski, Sergey E., Sinha, A.S.C., Rizkalla, Maher	
2:20	CCA-646	3:20	CCA-693
<i>Adaptive Fuzzy Logic Control of an Anti-Locking Braking System</i>	SUNY at Buffalo	<i>RD500 Manipulator Force Controller Design: A Multiobjective Approach</i>	École Nat. Supérieure de Tech. Avan. Commisariat à l'Énergie Atomique
Kokes, Guy, Singh, Tarunraj		Folcher, Jean-Pierre Andriot, Claude	
2:40	CCA-652	3:40	CCA-699
<i>Hardware-In-The Loop Simulator for ABS/TCS</i>	Keimyung Univ. Sung-Kyun-Kwan Univ.	<i>Performance Improvement of Direct Gradient Descent Control for General Nonlinear Systems</i>	Keio Univ.
Lee, Jae-Cheon Suh, Myung-Won		Shimizu, K., Otsuka, K.	

	Koa				CCA-749
<b>CCA-ThP1</b>				5:20 <i>Direct Closed-Loop Identification of Magnetic Suspension System</i>	
<b>Motion and Vibration Control via Command Shaping</b>				Sun, Lianming,	
Chair: Meckl, Peter H.		Purdue Univ.		Ohmori, Hiromitsu,	
Co-chair: Singhose, William		Georgia Tech.		Sano, Akira	Keio Univ.
Org.: Meckl, Peter H.		Purdue Univ.			
4:20 (I)		CCA-707		5:40	CCA-755
<i>Benchmarking Optimal Control Strategies for Flexible Systems</i>				<i>Nonlinear Output Feedback Control for Stepper Motors: A Robust Adaptive Approach</i>	
Reynolds, Michael C.,				Melkote, Hemant,	
Meckl, Peter H.		Purdue Univ.		Khorrani, Farshad	Pol. Univ.
4:40 (I)		CCA-713			
<i>An Expert System for the Design of Input Shapers</i>					Mauka
French, Lila		Massachusetts Inst. of Tech.		<b>CCA-ThP3</b>	
Singhose, William		Georgia Inst. of Tech.		<b>Control of Semiconductor Manufacturing Processes</b>	
Seering, Warren		Massachusetts Inst. of Tech.		Chair: Smith, Roy	Univ. of California, Santa Barbara
5:00 (I)		CCA-719		Co-chair: Poola, Kameshwar	Univ. of California, Berkeley
<i>Comparison of Command Shaping Controllers for Suppressing Payload Sway in a Rotary Boom Crane</i>				Org.: Smith, Roy	Univ. of California, Santa Barbara
Lewis, Derek		Seagate Tech.		4:20 (I)	CCA-761
Parker, Gordon G.		Michigan Tech. Univ.		<i>Control of a III-V Epitaxial MOCVD Process Using Ultraviolet Absorption Concentration Monitoring</i>	
Driessen, Brian,				Gaffney Flynn, Monique S.	Litton Guid. & Cont. Sys.
Robinett, Rush D.		Sandia Nat. Lab.		Smith, Roy,	
5:20 (I)		CCA-1774		Abraham, Patrick,	
<i>Command Shaping Boom Crane Control System with Nonlinear Inputs</i>				DenBaars, Steven P.	Univ. of California, Santa Barbara
Parker, Gordon G.		Michigan Tech. Univ.		4:40 (I)	CCA-767
Groom, Kenneth,				<i>Piloting Epitaxy through Ellipsometric Feedback</i>	
Hurtado, Johnny,				Warnick, Sean C.,	
Robinett, Rush D.		Sandia Nat. Lab.		Dahleh, Munther A.	Massachusetts Inst. of Tech.
Leban, Frank		Naval Surface Warfare Cen.		5:00 (I)	CCA-773
5:40 (I)		CCA-725		<i>Real-Time Estimation of Patterned Wafer Parameters Using In-Situ Spectroscopic Ellipsometry</i>	
<i>Achieving Fast Motions in Semiconductor Manufacturing Machinery</i>				Galarza, Cecilia G.,	
Meckl, Peter H.		Purdue Univ.		Khargonekar, Pramod P.,	
Umemoto, Kazunobu		NEC Corp.		Terry, Jr, Fred L.	Univ. of Michigan
				5:20 (I)	CCA-779
				<i>Real-Time Plasma Etch Control Using In-Situ Sensors and Neural Networks</i>	
				Stokes, David,	
				May, Gary S.	Georgia Inst. of Tech.
				5:40 (I)	CCA-784
<b>CCA-ThP2</b>				<i>Micro-Sensor Arrays for Calibration, Control, and Monitoring of Semiconductor Manufacturing Processes</i>	
<b>Control of Magnetic Bearings and Steppers</b>				Fisher, Darin,	
Chair: Wang, Y.		California Inst. of Tech.		Freed, Mason,	
Co-chair: Torres, Mauricio		CNRS		Spanos, Costas,	
4:40		CCA-737		Poola, Kameshwar	Univ. of California, Berkeley
<i>Elimination of Imbalance Vibrations in Magnetic Bearing Systems Using Discrete-Time Gain-Scheduled Q-Parameterization Controllers</i>					
Mohamed, Abdelfatah,					
Hassan, Ikbal M.M.,					
Hashem, Adel M.K.		Assiut Univ.			

6:00 (I) CCA-789  
*Interprocess Run-To-Run Feedforward Control for Wafer Patterning*  
 Wagner, Aaron B. Univ. of Michigan  
 Ruegsegger, Steven M. IBM  
 Freudenberg, James S.,  
 Grimard, Dennis S. Univ. of Michigan

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**CCA-ThP4**

**Power Systems Control II**

Chair: McInroy, John E. Univ. of Wyoming  
 Co-chair: Kamwa, I. Inst. de Recherche d'Hydro-Quebec

4:20 CCA-796  
*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

4:40 CCA-802  
*Robust Controller Design for Simultaneous Control of Throttle Pressure and Megawatt Output in a Power Plant Unit*  
 Zhao, Haipeng Univ. of Illinois at Urbana-Champaign  
 Li, Wei Univ. of Illinois, Urbana-Champaign  
 Taft, Cyrus EPRI I&C Cen.  
 Bentsman, Joseph Univ. of Illinois, Urbana-Champaign

5:00 CCA-808  
*Nonlinear and Linear Robust Control of Switching Power Converters*  
 Bevrani, Hassan West Regional Electric Co.  
 Abrishamchian, M.,  
 Sarari-shad, N. K.N. Toosi Univ. of Tech.

5:20 CCA-814  
*Nonlinear Variable Speed Control of Wind Turbines*  
 Song, Y.D.,  
 Dhinakaran, B. North Carolina A&T State Univ.

5:40 CCA-820  
*Reduced-Order Estimation of Power System Harmonics Using Set Theory*  
 Andreou, Spyros,  
 Yaz, Edwin E.,  
 Olejniczak, Kraig J. Univ. of Arkansas  
 Yaz, Yvonne like Centenary College

6:00 CCA-826  
*Optimization-Based Tuning and Coordination of Flexible Damping Controllers for Bulk Power Systems*  
 Kamwa, I. Inst. de Recherche d'Hydro-Quebec  
 Trudel, G.,  
 Lefebvre, D. TransEnergie, Hydro-Quebec

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**CCA-ThP5** Hau  
**Automotive Control**  
 Chair: Lyshevski, Sergey E. Purdue Univ., Indianapolis  
 Co-chair: Kolmanovsky, Ilya Ford Res. Lab.

4:20 CCA-833  
*Optimization of Complex Powertrain Systems for Fuel Economy and Emissions*  
 Kolmanovsky, Ilya,  
 van Nieuwstadt, Michiel,  
 Sun, Jing Ford Res. Lab.

4:40 CCA-840  
*Diesel-Electric Drivetrains for Hybrid-Electric Vehicles: New Challenging Problems in Multivariable Analysis and Control*  
 Lyshevski, Sergey E. Purdue Univ., Indianapolis

5:00 CCA-846  
*Automation Concept for a New Dynamical Engine Test Stand*  
 Schmidt, Martin,  
 Kessel, Jens-Achim Darmstadt Univ. of Tech.

5:20 CCA-852  
*Intake Oxygen Concentration Estimation for DI Diesel Engines*  
 Diop, Sette Lab. des Signaux & Systemes  
 Moraal, Paul E. Ford Motor Co.  
 Kolmanovsky, Ilya,  
 van Nieuwstadt, Michiel Ford Res. Lab.

5:40 CCA-858  
*Nonlinear Analysis and Control of Turbocharged Diesels*  
 Lyshevski, Sergey E.,  
 Sinha, A.S.C. Purdue Univ., Indianapolis  
 Seger, J.P. Cummins Eng. Co., Inc.

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**CCA-ThP6**

**Robot Manipulators**

Chair: Murakami, Toshiyuki Keio Univ.  
 Co-chair: Tomei, Patrizio Univ. of Roma

4:20 CCA-863  
*Lyapunov Recursive Design of Robust Tracking Control with  $L_2$ -Gain Performance for Electrically-Driven Robot Manipulators*  
 Ishii, Chiharu Ashikaga Inst. of Tech.  
 Shen, Tielong Sophia Univ.  
 Qu, Zhihua 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.