



Friday

July 8, 2005

Program Brochure

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František Zezulka (CZ)

Pavel Zítek (CZ)

International Program sub-Committees

- 1.1 Modelling, Identification & Signal Processing
T. McKelvey (SE)
- 1.2. Adaptive and Learning Systems
A. Sano (JP)
- 1.3. Discrete Event Dynamic Systems
C. Cassandras (US)
- 1.4. Stochastic Systems
M. Campi (IT)

- 2.1. Control Design
P. Colaneri (IT)
- 2.2. Linear Control Systems
C.E. de Souza (BR)
- 2.3. Non-Linear Control Systems
F. Allgöwer (DE)
- 2.4. Optimal Control
A. Kleimenov (RU)
- 2.5. Robust Control
C. Scherer (DE)

- 3.1. Computers for Control
R. Sanz (ES)
- 3.2. Cognition and Control
R. Babuska (NL)
- 3.3. Computers and Telematics
H. Roth (DE)

- 4.1. Components and Instruments
S. Boverie (FR)
- 4.2. Mechatronic Systems
R. Goodall (UK)
- 4.3. Robotics
J. Sasiadek (CA)
- 4.4. Cost Oriented Automation
H. Erbe (DE)
- 4.5. Human Machine Systems
D. Zuehlke (DE)

- 5.1. Manufacturing Plant Control
G. Morel (FR)
- 5.2. Manufacturing Modelling for Management and Control
L. Monostori (HU)
- 5.3. Enterprise Integration and Networking
A. Molina (MX)
- 5.4. Large Scale Complex Systems
F.G. Filip (RO)

- 6.1. Chemical Process Control
W. Marquardt (DE)
- 6.2. Mining, Mineral & Metal Processing
S.C. Won (KR)
- 6.3. Power Plants and Power Systems
O.P. Malik (CA)
- 6.4. Safeprocess
M. Kinnaert (BE)

- 7.1. Automotive Control
L. Nielsen (SE)
- 7.2. Marine Systems
R. Sutton (UK)
- 7.3. Aerospace
K. Schilling (DE)
- 7.4. Transportation Systems
M. Papageorgiou (GR)
- 7.5. Intelligent Autonomous Vehicles
H. Asama (JP)

- 8.1. Control in Agriculture
G. van Straten (NL)
- 8.2. Modelling & Control of Biomedical Systems
D. Feng (AU)
- 8.3. Modelling & Control of Environmental Systems
R. Soncini-Sessa (IT)
- 8.4. Control of Biotechnological Processes
M. Pons (FR)

- 9.1. Economic & Business Systems
R. Neck (AT)
- 9.2. Social Impact of Automation
J. Stahre (SE)
- 9.3. Developing Countries
G. Dimirovski (MK)
- 9.4. Control Education
L. Vlacic (AU)
- 9.5. SWIIS
F. Kile (US)

National Organizing Committee

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Congress Secretariat

IFAC Congress Secretariat
Czech Technical University in Prague
Faculty of Electrical Engineering
Technická 2, 166 27 Prague 6, Czech Republic
+420 224 357 611 noc@ifac.cz, www.ifac.cz

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IFAC Congress Prizes

The following prizes will be awarded to the authors for Congress contributions at the Closing Ceremony.

- IFAC Congress Young Author Prize
- IFAC Congress Application Paper Prize
- IFAC Congress Poster Paper Prize

Selection committees nominated the following finalists:

Best Application Paper Finalists

Nonlinear Model Predictive Control of Batch Processes: An Industrial Case Study

Zoltan Nagy (University of Stuttgart)

Bernd Mahn (BASF Aktiengesellschaft, Ludwigshafen)

Rudiger Franke (ABB Corporate Research, Ladenburg)

Frank Allgöwer (University of Stuttgart)

Technical area: 6.1. Chemical Process Control

Session: Knowledge Driven Batch Processes (Mo-A06-TO)

Presentation 04-Jul-2005, 13:00-13:20, Small Theatre

Actual Engaged Gear Identification: A Hybrid Observer Approach

Balluchi Andrea (PARADES, Italy)

Luca Benvenuti (Università di Roma, Italy)

Claudio Lemma (PARADES, Italy)

Alberto Sangiovanni-Vincentelli (PARADES, Italy and University of California at Berkeley, USA)

Gabriele Serra (Magnetis Marelli Powertrain, Italy)

Technical area: 7.1. Automotive Control

Session: Powertrain Control (Mo-E20-TO)

Presentation: 04-Jul-2005, 16:10-16:30, Meeting Room 2.1

Evaluation of Sliding Mode Observer for Vehicle Sideslip Angle

Joanny Stéphant (Laboratoire HEUDIASYC, UMR CNRS-UTC, Compiègne, France)

Ali Charara (Laboratoire HEUDIASYC, UMR CNRS-UTC, Compiègne, France)

Dominique Meisel (GERME, ENSIL, Limoges, France)

Technical area: 7.5. Intelligent Autonomous Vehicles

Session: Intelligent Autonomous Vehicles (We-E04-TP)

Presentation: 06-Jul-2005, 15:30-17:30, North Hall

Process Control of an Open Plate Reactor

Staffan Haugwitz (Lund Institute of Technology, Sweden)

Per Hagander (Lund Institute of Technology, Sweden)

Technical area: 6.1. Chemical Process Control

Session: Control of Complex Processes (Th-A06-TO)

Presentation: 07-Jul-2005, 13:20-13:40, Small Theatre

Best Young Author Paper Finalists

Robust Decentralized Pole Assignment

Alireza Esna Ashari (University of Tehran, Iran)

Batool Labibi (K. N. Toosi University of Technology, Iran)

Technical area: 5.4. Large Scale Complex Systems

Session: Large Scale Complex Systems I- Theory (Mo-M21-TO)

Presentation: 04-Jul-2005, 11:20-11:40, Meeting Room 3.4

On the Stability in Almost Periodic Discrete Systems

Oleksiy Ignatyev (Department of Mathematical Sciences, Kent State University, OH, USA)

Technical area: 2.3. Non-Linear Control Systems

Session: Nonlinear Stability II (Mo-A11-TO)

Presentation: 04-Jul-2005, 14:40-15:00, Meeting Room 2.2

Dynamic Output Feedback Stabilization of a Class of a Nonholonomic Hamiltonian Systems

Satoru Sakai (Kyoto University)

Kenji Fujimoto (Nagoya University)

Technical area: 2.3. Non-Linear Control Systems

Session: Nonlinear Control Systems I (Tu-M03-TO)

Presentation: 05-Jul-2005, 11:20-11:40, Terrace 2

Stabilization of Networked Control Systems: Designing Effective Communication Sequences

Lei Zhang (University of Maryland, USA)

Dimitrios Hristu-Varsakelis (University of Macedonia, Greece)

Technical area: 2.2. Linear Control Systems

Session: Analysis and Synthesis of Linear Control Systems I (Th-A02-TP)

Presentation: 07-Jul-2005, 13:00-15:00, North Hall

Awiator's Design of Multi-Objectives Control Laws

Matthieu Jeanneau (AIRBUS, Toulouse, France)

Jérôme Lamolie (AIRBUS & Ecole Centrale de Lille, France)

Guilhem Puyou (AIRBUS, Toulouse, France)

Nicky Aversa (AIRBUS, Toulouse, France)

Technical area: 7.3. Aerospace

Session: Aircraft Control Design (Th-E18-TO)

Presentation: 07-Jul-2005, 15:30-15:50, Meeting Room 3.3

LEGEND TO PROGRAM PAGES

Session (Page) Header

Session Code	Session Type	Technical Area
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Session Code format: Day - Time slot & Room number – Session type

Day: Mo/Tu/We/Th/Fr

Monday/Tuesday/Wednesday/Thursday/Friday

Time slot:

M Morning (10:00-12:00) except for Tuesday

A Afternoon (13:00-15:00) except for Tuesday

E Evening (15:30-17:30) except for Tuesday

Room number:

one of 22 rooms available for parallel sessions

Session type:

PL Plenary

SP Semi-Plenary

TO Technical Oral (regular/invited)

TP Technical Poster

PD Panel Discussion

MS Milestone Session

Example: Mo-A03-TP

Regular Poster Session, Monday afternoon

Paper Code format: Session Code / Paper Order in Session

Example: Mo-M03-TO/1

First presentation in the session {Mo-M03-TO}

Paper order in a poster session is insignificant

Regular, contributed sessions have been designed in IFAC Technical Committees linked to Technical Areas listed in the next page.

Session pages are organized according to the time schedule.

Technical Program pages were generated from the Congress database automatically by the conference software package developed by Certicon, a.s.

CONGRESS TECHNICAL AREAS

1. Systems and Signals
 - 1.1 Modelling, Identification and Signal Processing
 - 1.2 Adaptive and Learning Systems
 - 1.3 Discrete Event and Hybrid Systems
 - 1.4 Stochastic Systems
2. Design Methods
 - 2.1 Control Design
 - 2.2 Linear Control Systems
 - 2.3 Non-Linear Control Systems
 - 2.4 Optimal Control
 - 2.5 Robust Control
3. Computers, Cognition and Communication
 - 3.1 Computers for Control
 - 3.2 Cognition and Control
 - 3.3 Computers and Telematics
4. Mechatronics, Robotics and Components
 - 4.1 Components and Instruments
 - 4.2 Mechatronic Systems
 - 4.3 Robotics
 - 4.4 Cost Oriented Automation
 - 4.5 Human Machine Systems
5. Manufacturing Systems
 - 5.1 Manufacturing Plant Control
 - 5.2 Manufacturing Modelling for Management & Control
 - 5.3 Enterprise Integration and Networking
 - 5.4 Large Scale Complex Systems
6. Industrial Systems
 - 6.1 Chemical Process Control
 - 6.2 Mining, Mineral and Metal Processing
 - 6.3 Power Plants and Power Systems
 - 6.4 Fault Detection, Supervision and Safety of Technical Processes
7. Transportation Systems and Vehicles
 - 7.1 Automotive Control
 - 7.2 Marine Systems
 - 7.3 Aerospace
 - 7.4 Transportation Systems
 - 7.5 Intelligent Autonomous Vehicles
8. Bio and Ecological Systems
 - 8.1 Control in Agriculture
 - 8.2 Modelling and Control of Biomedical Systems
 - 8.3 Modelling and Control of Environmental Systems
 - 8.4 Control of Biotechnological Systems

CONGRESS TECHNICAL AREAS

9. Social Systems

9.1 Economic and Business Systems

9.2 Social Impact of Automation

9.3 Developing Countries

9.4 Control Education

9.5 Supplemental Ways of Improving International Stability

CONGRESS TECHNICAL AREAS

		industry days					
		3-July-2005	4-July-2005	5-July-2005	6-July-2005	7-July-2005	8-July-2005
Time	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	
08:30							
09:00		R. Kalman ETH Zurich	S. Chand Rockwell Automation	M. Bruns Siemens	N. Cox NASA JPL	M. Athans TU Lisboa	
09:10							
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TECHNICAL PROGRAM AT A GLANCE – FRIDAY, JULY 8, 2005

Friday July 8, 2005 Session	Area	Poster	Invited	08:30 - 09:30	10:00 - 12:00	13:00 - 15:00	Page
				Room Code			
Plenary – M. Athans				♣			1
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Advances in Systems Theory and Nonlinear Filtering	1.1.				13		30
Set-membership Techniques for Identification	1.1.					13	62
Discrete Event and Hybrid Systems	1.3.	P			●		7
Modeling and Estimation of Stochastic Systems	1.4.				07		23
Linear and Nonlinear Filtering in Stochastic Systems	1.4.					07	56
Polynomial Design Methods: Theoretical Achievements	2.1.		X		22		42
Polynomial Design Methods: Applications	2.1.		X			22	74
Advances in Hinf control theory and applications	2.1.				17		35
Sampled-data Control	2.1.					17	67
Control of Systems with Constraints	2.1.				08		25
LMI Methods in Stabilization and Control	2.1.					08	58
Control and Chaos	2.3.				14		31
Chaos Control and Synchronization	2.3.		X			14	64
Inverted Pendulum Control	2.3.					20	71
Adaptive Nonlinear Control	2.3.				03		12
Nonlinear Output Feedback	2.3.					03	48
Set-Invariance Techniques	2.5.				10		27
Parametric Robustness	2.5.					10	60
Control and Embedded Systems	3.1.		X			09	59
Unmanned Aerial, Ground and Marine Vehicles	4.3.				18		36
Positioning and Estimation	4.3.				04		15
Robot and Position Control	4.3.					04	54
Playing with Automation:	4.3.		X			21	72

TECHNICAL PROGRAM AT A GLANCE – FRIDAY, JULY 8, 2005

Friday July 8, 2005 Session	Area	Poster	Invited	08:30 - 09:30	10:00 - 12:00	13:00 - 15:00	Page
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Energy Saving through Plant and Building Automation	4.4.		X		11		28
Development and Applications for Cost Oriented Automation	4.4.					11	61
Human-Machine Interface Development and Collaboration	4.5.				16		34
Emotions and Human behaviour	4.5.					16	66
Optimization and Predictive Control	6.1.				06		19
Advanced Solutions in Diagnosis and Fault Tolerant Control (IFATIS/MAGIC)	6.4.		X		05		17
Aerospace Control	7.3.	P			●		13
Unmanned Aerial Vehicles	7.3.	P			●		21
Space Control	7.3.	P			●		24
Special Problems of Aircraft Control	7.3.		X		15		32
Launcher and Missile Systems	7.3.					18	68
Biomedical Engineering / Biomedical Signal Processing I	8.2.				19		37
Identification of Dynamic Systems	8.2.					19	69
Parameter Estimation and Kinetic Modelling II	8.2.	P				●	43
Control Application to Life Medicine II	8.2.	P				●	45
Biomedical Engineering / Biomedical Signal Processing II	8.2.	P				●	50
Combined Knowledge and Technology Transfer I	9.3.		X		20		39
Combined Knowledge and Technology Transfer II	9.3.	P			●		11
We Have Many Things To Tell You About Control Education	9.4.	P			●		3
'Not in my backyard' – Inappropriate Uses of Technology	9.5.		X		21		41

See next page for the *Session Room Code* mentioned in the *Program at a Glance* table.

Congress Center Rooms

Room Name	Floor	Code	Used for
Congress Hall	1&2		Opening Ceremony
Forum Hall Foyer	2		Welcome Party
Conference Hall Foyer			Welcome Party
Forum Hall	2		Closing Ceremony
Conference Hall	4		IFAC General Assembly

Forum Hall	2	♣	Plenaries
Meeting Hall I	1	♦	Semi-Plenaries
Panorama Hall	1	♠	Semi-Plenaries
North Hall	2	●	Poster Sessions
Chamber Hall	3	1	Milestones Panels
Club H	1	2	Panels Regular Sessions
Terrace 2	2	3	Regular Sessions
Club A	1	4	Regular Sessions
Club E	1	5	Regular Sessions
Small Theatre	0	6	Regular Sessions
Terrace 1	2	7	Regular Sessions
Club B	1	8	Regular Sessions
Club D	1	9	Regular Sessions
Club C	1	10	Regular Sessions
Meeting Room 2.2	2	11	Regular Sessions
Meeting Room 4.1	4	12	Regular Sessions
Meeting Room 4.2	4	13	Regular Sessions
Meeting Room 1.1	1	14	Regular Sessions
Meeting Room 2.3	2	15	Regular Sessions
Meeting Room 3.1	3	16	Regular Sessions
Meeting Room 3.2	3	17	Regular Sessions
Meeting Room 3.3	3	18	Regular Sessions
Meeting Room 4.3	4	19	Regular Sessions
Meeting Room 2.1	2	20	Regular Sessions
Meeting Room 3.4	3	21	Regular Sessions
Meeting Room 3.5	3	22	Regular Sessions

MICHAEL ATHANS

ISSUES ON ROBUST ADAPTIVE CONTROL

Friday 08-Jul-2005 08:30-09:30, Forum Hall

Chair: *Michael Šebek, Czech Technical University in Prague, Czech Republic*

Abstract

We discuss recent progress in the field of robust adaptive control with special emphasis on methodologies that use multiple-model architectures. We emphasize that the selection of the number of models, estimators and compensators in such architectures must be based on precise definition of the robust performance requirements. We illustrate some of the concepts and outstanding issues for a new methodology that blends robust nonadaptive mixed μ -synthesis and stochastic hypothesis-testing concepts leading to the so-called RMMAC architecture. A numerical example is used to illustrate the RMMAC design methodology.

Prof. Michael Athans
Professor of Electrical Engineering (emeritus)
Massachusetts Institute of Technology
Cambridge, MA, USA

and

Visiting Research Professor
Instituto de Sistemas e Robotica
Instituto Superior Tecnico
Lisbon, Portugal

**A. TALHA DINIBÜTÜN, REINHARD NECK, JOHAN STAHERE,
GEORGI M. DIMIROVSKI, LJUBISA B. VLACIC, FREDERICK
KILE**

**CONTROL SYSTEM APPROACHES FOR SUSTAINABLE
DEVELOPMENT AND INSTABILITY MANAGEMENT IN THE
GLOBALIZATION AGE**

Friday 08-Jul-2005 13:00-15:00, Chamber Hall

Chair: A. Talha Dinibütün, Dogus University, Turkey

**Organizer: IFAC Coordinating Committee on Social
Systems**

Abstract

Mankind civilization in the globalization age depends heavily on advanced information technologies resulting from automation of control and decision expertise and their respective scientific disciplines. These have a multitude of impacts on development of national economies within the global economy. The broad area of social systems, being essentially human centred systems, is a cross-, inter- and multi-disciplinary challenge to control community. Social systems in modern civilization, currently undergoing globalization, are reviewed from the systems science viewpoint and on the grounds of recent developments in control science and technology. Recent developments put new emphasis on the social responsibility of the control and automation field during the on-going changes from the cold-war bipolar world to a unipolar one on the way to mankind's multi-polar world of the future. The focus should be on innovative systems approaches, employing new paradigms, to combined knowledge and technology transfer world-wide, that may remedy some of the negative aspects of globalization.

A. Talha Dinibütün, Dogus University, Turkey

Reinhard Neck, University of Klagenfurt, Austria

Johan Stahre, Chalmers Univ of Technology, Sweden

Georgi M. Dimirovski, Dogus University, Turkey

Ljubisa B. Vlacic, Griffith University, Australia

Frederick Kile, United States

WE HAVE MANY THINGS TO TELL YOU ABOUT CONTROL EDUCATION

Friday 08-Jul-2005 10:00-12:00, North Hall

Chair: *Shigeyasu Kawaji, Kumamoto University, Japan*Co-Chair: *Vardan Mkrttchian, All Armenian Internet University, Armenia***1. (10:00) A Conversational Man-Robot Interface to Assist Robotics Education***Catalin Buiu, POLITEHNICA University of Bucharest, Romania**Ioan Dumitrache, POLITEHNICA University of Bucharest, Romania**Alexandru Dimitrascu, POLITEHNICA University of Bucharest, Romania***2. (10:00) A model based project for 3D animation***Anna Lombardi, Linköping University, Sweden***3. (10:00) Advanced Control Algorithms + Simulink compatibility + Real-time OS = REX***Pavel Balda, University of West Bohemia, Czech Republic**Miloš Schlegel, University of West Bohemia, Czech Republic**Milan Štětina, University of West Bohemia, Czech Republic***4. (10:00) Couseware for Control Engineering Education***Jan John, Czech Technical University, Faculty of Electrical Engineering, Czech Republic***5. (10:00) From Tele-laboratory to E-learning in Automation Curricula at the University of Pisa***Andrea Caiti, University of Pisa, Italy**A. Balestrino, University of Pisa, Italy**A. Bicchi, University of Pisa, Italy**V. Calabrò, University of Pisa, Italy**T. Cecchini, University of Pisa, Italy**A. Coppelli, University of Pisa, Italy**L. Pallottino, University of Pisa, Italy*

WE HAVE MANY THINGS TO TELL YOU ABOUT CONTROL EDUCATION

Friday 08-Jul-2005 10:00-12:00, North Hall

Chair: *Shigeyasu Kawaji, Kumamoto University, Japan*Co-Chair: *Vardan Mkrttchian, All Armenian Internet University, Armenia***6. (10:00) Process Models for a New Control Education Laboratory***Petr Klan, Institute of Computer Science, Czech Republic**Milan Hofreiter, Czech Technical University in Prague, Faculty of Mechanical Engineering, Czech Republic**Jiri Machacek, University of Pardubice, Czech Republic**Osvald Modrlak, Technical University of Liberec, Fac. of Mechatronics, Czech Republic**Lubomir Smutny, Technical University of Ostrava, Fac. of Mechanical Engineering, Czech Republic**Vladimir Vasek, University of T. Bata, Fac. of Technology, Czech Republic***7. (10:00) Simulation Package for Digital Control Education***Jenő Kovács, University of Oulu, Finland**Imre Benyó, University of Oulu, Finland**György Lipovszki, Budapest University of Technology and Economics, Hungary***8. (10:00) Virtual Plant Laboratory System of Process Industries for Education***Yi-Ping Feng, Zhejiang University, China**Gang Rong, Zhejiang University, China***9. (10:00) A Study on Control Problems in Online Distance Education***Petrosyan Elena, Yerevan State University, Armenia**Mkrttchian Vardan, All Armenian Internet University, Armenia***10. (10:00) An Online Course in Power Object Working Modes Modeling and Optimisation***Mirosljub Kljajic, University of Maribor, Slovenia**Vardan Mkrttchian, All Armenian Internet University, Australia*

WE HAVE MANY THINGS TO TELL YOU ABOUT CONTROL EDUCATION

Friday 08-Jul-2005 10:00-12:00, North Hall

Chair: *Shigeyasu Kawaji, Kumamoto University, Japan*Co-Chair: *Vardan Mkrttchian, All Armenian Internet University, Armenia***11. (10:00) Curriculum for System Control Education using Progress Line Tracer***Tsutomu Matsumoto, Kumamoto National College of Technology, Japan**Hirofumi Ohtsuka, Kumamoto National College of Technology, Japan**Koki Shibasato, Kumamoto National College of Technology, Japan**Yasuyuki Shimada, Kumamoto National College of Technology, Japan**Shigeyasu Kawaji, Kumamoto University, Japan**Jun'ichi Iijima, Meisei University, Japan***12. (10:00) An elementary proof of the general Q-parametrization of all stabilizing controllers***Alban Quadrat, INRIA Sophia Antipolis cedex, France***13. (10:00) Open Distance Education: A Technological Approach within Social Perspective***Dietrich Brandt, University of Technology (RWTH), Germany**Mkrttchian Vardan, All Armenian Internet University, Australia***14. (10:00) Shaping the Mechatronics Courses for the Control Curriculum***George Chamilothoris, TEI Piraeus, Greece**Michail Papoutsidakis, Univ. of the West of England Bristol, United Kingdom***15. (10:00) Case studies of the resources students use***John Rossiter, University of Sheffield, United Kingdom**L Gray, University of Sheffield, United Kingdom**D Rossiter, University of Sheffield, United Kingdom*

WE HAVE MANY THINGS TO TELL YOU ABOUT CONTROL EDUCATION

Friday 08-Jul-2005 10:00-12:00, North Hall

Chair: *Shigeyasu Kawaji, Kumamoto University, Japan*Co-Chair: *Vardan Mkrttchian, All Armenian Internet University, Armenia***16. (10:00) Computer-generated Exams***Luis Alejandro Marquez-Martinez, CICESE Research Center, Mexico**Ricardo Cuesta, CICESE Research Center, Mexico***17. (10:00) WEB-QUEST "CONTROL THEORY IN PERSONS": NOWADAYS AND FUTURE***Natalia Pakshina, Nizhny Novgorod State Technical University, Arzamas, Russian Federation***18. (10:00) Polmat: MuPAD library for polynomial matrices.***Petr Augusta, Czech Technical University, Czech Republic**Zdenek Hurak, Czech Technical University, Czech Republic*

DISCRETE EVENT AND HYBRID SYSTEMS

Friday 08-Jul-2005 10:00-12:00, North Hall

Chair: *Jaroslav Hlava, Technical University of Liberec, Czech Republic*

1. (10:00) **A Monitoring Approach for Discrete Event Systems based on a Time Petri Net Model**
Mohamed Ghazel, Ecole Centrale de Lille, France
Armand Toguyéni, Ecole Centrale de Lille, France
Michel Bigand, Ecole Centrale de Lille, France
2. (10:00) **A Petri net-based Deadlock Control Policy for Flexible Assembly Systems**
MengChu Zhou, New Jersey Inst. of Tech., United States
Naiqi Wu, Guangdong Univ. of Tech., China
Elzbieta Roszkowska, Wroclaw Univ. of Tech., Poland
3. (10:00) **Batch Deterministic and Stochastic Petri Nets: „Modelling, Analysis and Application to Inventory Systems”**
Karim Labadi, Institute of Computer and Engineering of Troyes, France, Metropolitan
Haoxun Chen, Institute of Computer and Engineering of Troyes, France, Metropolitan
Lionel Amodeo, Institute of Computer and Engineering of Troyes, France, Metropolitan
Chengbin Chu, Institute of Computer and Engineering of Troyes, France, Metropolitan
4. (10:00) **Continuous Optimization Approaches to the Identification of Piecewise Affine Systems**
Eberhard Münz, Universität Karlsruhe, Germany
Volker Krebs, Universität Karlsruhe, Germany
5. (10:00) **Control of Discrete-Time Piecewise Affine Systems**
Thomas Erhard Hodrus, Universität Karlsruhe, Germany
Michael Buchholz, Universität Karlsruhe, Germany
Volker Krebs, Universität Karlsruhe, Germany

DISCRETE EVENT AND HYBRID SYSTEMS

Friday 08-Jul-2005 10:00-12:00, North Hall

Chair: *Jaroslav Hlava, Technical University of Liberec, Czech Republic***6. (10:00) Design of Robust Parametric MPC for Hybrid Systems***Amit M. Manthanwar, Imperial College London, United Kingdom**Vassilis Sakizlis, Imperial College London, United Kingdom**Efstratios N. Pistikopoulos, Imperial College London, United Kingdom***7. (10:00) Hierarchical Interface-based Supervisory Control of a Bottling Plant***Florian Wenck, Hamburg University of Technology, Germany**Jan H. Richter, Ruhr-Universitaet Bochum, Germany***8. (10:00) Modular Finite State Machines Implemented As Event-Condition-Action Systems***Emanuel Almeida, University of Michigan, United States**Jonathan Luntz, University of Michigan, United States**Dawn Tilbury, University of Michigan, United States***9. (10:00) On the Design of Lyapunov Functions for State-Dependent Impulsive***Laurent Burlion, L2S-CNRS, France**Tarek Ahmed-Ali, ENSIETA, France**Françoise Lamnabhi-Lagarrigue, L2S-CNRS, France***10. (10:00) On the existence of Petri net Controller for Discrete Event Systems under Partial Observation***Zied Achour, Metz University, France**Nidhal Rezg, Metz University, France**Xiaolan Xie, Metz University, France***11. (10:00) Passivity Analysis and Passification of Discrete-Time Hybrid Systems***Gianni Bianchini, Universita' di Siena, Italy**Alberto Bemporad, Universita' di Siena, Italy**Federico Barbagli, Stanford University, United States**Filippo Brogi, Universita' di Siena, Italy*

DISCRETE EVENT AND HYBRID SYSTEMS

Friday 08-Jul-2005 10:00-12:00, North Hall

Chair: *Jaroslav Hlava, Technical University of Liberec, Czech Republic*

12. (10:00) Rapid Prototyping of Sequential Controllers with Petri-Nets

Philipp Orth, RWTH Aachen, Germany

Alexander Bollig, RWTH Aachen, Germany

Dirk Abel, RWTH Aachen, Germany

13. (10:00) Synthesis of Operating Procedures for Cleaning Pipeline Networks Using Petri Nets

Chuei-Tin Chang, National Cheng Kung University, Taiwan

Hong-Hsiang Chou, National Cheng Kung University, Taiwan

Li-Ping Chung, National Cheng Kung University, Taiwan

OBSERVER AND FILTER DESIGN

Friday 08-Jul-2005 10:00-12:00, Club H

Chair: *Paul Van den Hof, Delft University of Technology, Netherlands*

Co-Chair: *Magnus Egerstedt, Georgia Tech, United States*

1. (10:00) PMID Observer Design for Unknown Input Generalized Dynamical Systems

Zhiwei Gao, University of Duisburg-Essen, Tianjin University,, China

Steven X Ding, University of Duisburg-Essen, Germany

2. (10:20) Reduced-order unknown-input perfect observer for standard system

Stefan Krzemiński, Warsaw University of Technology, Poland

Tadeusz Kaczorek, Warsaw University of Technology, Poland

3. (10:40) Robust State Observer Design Based on Regional Pole Assignment

Man Liu, Dalian nationalities Univercity, China

Yuan-wei Jing, Northeastern Univercity, China

Si-ying Zhang, Northeastern Univercity, China

4. (11:00) Asymptotic Observers for Discrete-Time Switched Linear Systems

Mohamed Babaali, University of Pennsylvania, United States

Magnus Egerstedt, Georgia Institute of Technology, United States

5. (11:20) Designing a Kalman filter when no noise covariance information is available

Robert Bos, Delft University of Technology, Netherlands

Xavier Bombois, Delft University of Technology, Netherlands

Paul Van den Hof, Delft University of Technology, Netherlands

6. (11:40) Estimating inputs of nonlinear dynamical systems using differential algebra techniques

Gianluigi Pillonetto, University of Padova, Italy

Maria Pia Saccomani, University of Padova, Italy

COMBINED KNOWLEDGE AND TECHNOLOGY TRANSFER II

Friday 08-Jul-2005 10:00-12:00, North Hall

Chair: *Yuanwei Jing, Northeastern University, Shenyang, China*Co-Chair: *Mile J. Stankovski, SS Cyril and Methodius University, Macedonia, The Former Yugoslav Republic of***1. (10:00) Intelligent Missile Guidance System Developed for Training at Macedonian Military Academy***Zoran Gacovski, Faculty for social sciences, Macedonia, The Former Yugoslav Republic of**Stojce Deskovski, Technical Faculty - Bitola, Macedonia, The Former Yugoslav Republic of***2. (10:00) Reduced-order H^∞ Controllers based on Improved Genetic Algorithm***Yuanwei Jing, Northeastern University, China**Wei Pan, Northeastern University, China**Georgi M. Dimirovski, Dogus University, Turkey***3. (10:00) Kalman Filter Implementation for Unmanned Aerial Vehicles Navigation Developed within a Graduate Course***Vasko Sazdovski, Faculty of Electrical Engineering, Macedonia, The Former Yugoslav Republic of**Tatjana Kolemishavska-Gugulovska, Faculty of Electrical Engineering, Macedonia, The Former Yugoslav Republic of**Mile Stankovski, Faculty of Electrical Engineering, Macedonia, The Former Yugoslav Republic of***4. (10:00) Channel Borrowing Project based on Surplus Value***Hui Zeng, Northeastern University, China**Yuanwei Jing, Northeastern University, China**Georgi M. Dimirovski, Dogus University of Istanbul, Turkey*

ADAPTIVE NONLINEAR CONTROL

Friday 08-Jul-2005 10:00-12:00, Terrace 2

Chair: **Georg Bastin, Universite Catolique de Louvain, Belgium**Co-Chair: **Shuzhi Ge, National University of Singapore, Singapore**

1. (10:00) **Adaptive control design for nonsmooth systems with uncertainty**
Takashi Nakakuki, Sophia University, Japan
Tielong Shen, Sophia University, Japan
Katsutoshi Tamura, Sophia University, Japan
2. (10:20) **Dynamic Surface Control Approach to Adaptive Robust Control of Nonlinear Systems in Semi-Strict Feedback Form**
Yang Zi-Jiang, Kyushu University, Japan
Toshimasa Nagai, Kyushu University, Japan
Shunshoku Kanae, Kyushu University, Japan
Kiyoshi Wada, Kyushu University, Japan
3. (10:40) **Optimizing Nonlinear Adaptive Control Allocation**
Johannes Tjønnås, Norwegian University of Science and Technology, Norway
Tor Arne Johansen, Norwegian University of Science and Technology, Norway
4. (11:00) **Adaptive Predictive Functional Control of a Class of Nonlinear Systems based on Dynamical Linearization**
Bin Zhang, Shanghai Jiaotong University, China
Wei-dong Zhang, Shanghai Jiaotong University, China
5. (11:20) **A Compensator for Attenuation of Wave Reflections in Long Cable Actuator-Plant Interconnections with Guaranteed Transient Performance Improvement**
Alessandro de Rinaldis, LSS - CNRS - SUPELEC, France
Romeo Ortega, LSS - CNRS - SUPELEC, France
Mark Spong, University of Illinois, United States
6. (11:40) **Robust Adaptive Neural Network Control for Nonlinear MIMO Time-delay Systems**
Keng-Peng Tee, National University of Singapore, Singapore
Shuzhi Sam Ge, National University of Singapore, Singapore

AEROSPACE CONTROL

Friday 08-Jul-2005 10:00-12:00, North Hall

Chair: **Klaus Schilling, Universität Würzburg, Germany**

Co-Chair: **Gianni Bertoni, Università di Bologna, Italy**

1. (10:00) A new position-based method for GPS signal FDI

Paolo Castaldi, University of Bologna, Italy

*Massimo Crisci, European Space Agency - ESA,
Netherlands*

Matteo Zanzi, University of Bologna, Italy

2. (10:00) Antenna LQG Controllers: Properties, Limits of Performance and Tuning Procedure

Wodek Gawronski, Jet Propulsion Laboratory, United States

3. (10:00) Development of MEMS angular rate sensor for high-dynamics applications

Woon-Tahk Sung, Seoul National University, Korea

Jang Gyu Lee, Seoul National University, Korea

Taesam Kang, Konkuk University, Korea

Hyun-Gee Jang, Intellimicrons, Korea

4. (10:00) Multivariable closed-loop control of the reattachment length downstream of a backward-facing step

Lars Henning, Berlin University of Technology, Germany

Rudibert King, Berlin University of Technology, Germany

5. (10:00) Nonlinear Robust Performance Analysis Of An Aeroelastic System

Jongrae Kim, University of Leicester, United Kingdom

Declan G. Bates, University of Leicester, United Kingdom

Ian Postlethwaite, University of Leicester, United Kingdom

6. (10:00) Oscillation Problem in Pitch Angle Control of Winged Body

Igor Skrjanc, University of Ljubljana, Faculty of electrical engineering, Slovenia

Marko Lepetič, University of Ljubljana, Faculty of electrical engineering, Slovenia

Sašo Blažič, University of Ljubljana, Faculty of electrical engineering, Slovenia

*Yasuhiro Morita, Japan Aerospace Exploration Agency,
Institute of Space and Astronautical Science, Japan*

AEROSPACE CONTROL

Friday 08-Jul-2005 10:00-12:00, North Hall

Chair: *Klaus Schilling, Universität Würzburg, Germany*

Co-Chair: *Gianni Bertoni, Università di Bologna, Italy*

7. (10:00) Sensorimotor Convergence in Visual Navigation and Flight Control Systems

J. Sean Humbert, Caltech, United States

Richard M. Murray, Caltech, United States

Michael H. Dickinson, Caltech, United States

8. (10:00) Using Delta Range on GPS Positioning, Fault Detection and Fault Exclusion

Fan-Ren Chang, National Taiwan University, Taiwan

Yi-Hsueh Tsai, National Taiwan University, Taiwan

Wen-Chieh Yang, Intelligent Business Technology Inc., Taiwan

POSITIONING AND ESTIMATION

Friday 08-Jul-2005 10:00-12:00, Club A

Chair: *Anibal Ollero, University of Sevilla, Spain*

Co-Chair: *Marek Zaremba, Universite de Quebec a l'Outaouais, Canada*

1. (10:00) Nonlinear State Estimation in Mobile Robots using a Fuzzy Observer

Rodrigo Carrasco Schmidt, Pontificia Universidad Católica de Chile, Chile

Aldo Cipriano, Pontificia Universidad Católica de Chile, Chile

Ricardo Carelli, Universidad Nacional de San Juan, Argentina

2. (10:20) The Possibilistic Filter: An Alternative Approach for State Estimation

Fernando Matia, Universidad Politecnica de Madrid, Spain

Agustin Jimenez, Universidad Politecnica de Madrid, Spain

Diego Rodriguez-Losada, Universidad Politecnica de Madrid, Spain

Ramon Galan, Universidad Politecnica de Madrid, Spain

Basil M. Al-Hadithi, Universidad Alfonso X El Sabio, Spain

3. (10:40) Control of Oscillations and State Estimation of KAPITZA Pendulum

Nikolay Odinets, State University of Information Technologies, Mechanics and Optics, Russian Federation

Iliya Miroshnik, State University of Information Technologies, Mechanics and Optics, Russian Federation

4. (11:00) Decentralized Control of Cooperative Robots without Velocity-Force Measurements

Marco Antonio Arteaga, Universidad Nacional Autonoma de Mexico, Mexico

Juan C. Martinez-Rosas, Universidad Nacional Autonoma de Mexico, Mexico

Adrian M. Castillo-Sanchez, Universidad Nacional Autonoma de Mexico, Mexico

POSITIONING AND ESTIMATION

Friday 08-Jul-2005 10:00-12:00, Club A

Chair: *Anibal Ollero, University of Sevilla, Spain*Co-Chair: *Marek Zaremba, Universite de Quebec a l'Outaouais, Canada***5. (11:20) A Lyapunov-based approach for the control of biomimetic robotic systems with periodic forcing inputs***Domenico Campolo, ARTS LABS, Scuola Sant'anna, Pisa, Italy**Luca Schenato, Univ. of Padova, Italy**Eugenio Guglielmelli, ARTS LABS, Scuola Sant'anna, Pisa, Italy**Shankar S. Sastry, U.C. Berkeley, United States***6. (11:40) Novel Joint Space Force Guidance Algorithm with Laboratory Robot System***Alexander Winkler, Chemnitz University of Technology, Germany**Jozef Suchy, Chemnitz University of Technology, Germany*

**ADVANCED SOLUTIONS IN DIAGNOSIS AND FAULT TOLERANT
CONTROL (IFATIS/MAGIC)**

Friday 08-Jul-2005 10:00-12:00, Club E

- Organizer:** *Steven Ding, University of Duisburg-Essen, Germany*
- Co-Organizer** *Birgit Köppen-Seliger, Universität Duisburg-Essen, Germany*
- Co-Organizer** *Dominique Sauter, Universite Henri Poincare - CRAN, France*
- Chair:** *Steven X. Ding, University of Duisburg-Essen, Germany*
- Co-Chair:** *Birgit Köppen-Seliger, Universität Duisburg-Essen, Germany*

1. (10:00) Automatic design of detection tests in complex dynamic systems

Stephane Ploix, LAG / INPG, France

Matthieu Desinde, LAG / INPG, France

Samir Touaf, LAG / INPG, France

2. (10:20) An integrated design approach to multilevel Fault Tolerant Control of distributed systems

Andrea Paoli, CASY-DEIS-University of Bologna, Italy

Claudio Bonivento, CASY-DEIS-University of Bologna, Italy

Marta Capiluppi, CASY-DEIS-University of Bologna, Italy

Lorenzo Marconi, CASY-DEIS-University of Bologna, Italy

3. (10:40) Fault Tolerant Control Method Based on Cost and Reliability Analysis

Fateh Guenab, Centre de Recherche en Automatique de Nancy (CRAN), France

Didier Theilliol, Centre de Recherche en Automatique de Nancy (CRAN), France

Philippe Weber, Centre de Recherche en Automatique de Nancy (CRAN), France

Jean-Christophe Ponsart, Centre de Recherche en Automatique de Nancy (CRAN), France

Dominique Sauter, Centre de Recherche en Automatique de Nancy (CRAN), France

**ADVANCED SOLUTIONS IN DIAGNOSIS AND FAULT TOLERANT
CONTROL (IFATIS/MAGIC)**

Friday 08-Jul-2005 10:00-12:00, Club E

- Organizer:** *Steven Ding, University of Duisburg-Essen, Germany*
- Co-Organizer** *Birgit Köppen-Seliger, Universität Duisburg-Essen, Germany*
- Co-Organizer** *Dominique Sauter, Universite Henri Poincare - CRAN, France*
- Chair:** *Steven X. Ding, University of Duisburg-Essen, Germany*
- Co-Chair:** *Birgit Köppen-Seliger, Universität Duisburg-Essen, Germany*

4. (11:00) Supervisory Fault-Tolerant Control With Application to the IFATIS Two-Tanks Benchmark

Joseph Yame, Université Libre de Bruxelles, Belgium

Michel Kinnaert, Université Libre de Bruxelles, Belgium

5. (11:20) A Unified Approach towards Fault Detection of Vehicle Lateral Dynamics Sensors

Ansgar Rehm, Robert Bosch GmbH, Germany

Stefan Otterbein, Robert Bosch GmbH, Germany

6. (11:40) Advanced model-based diagnosis of sensor faults in vehicle dynamics control systems

Steven Ding, University of Duisburg-Essen, Germany

Stefan Schneider, University of Duisburg-Essen, Germany

Eve Ding, University of Applied Science Gelsenkirchen, Germany

A. Rehm, Robert Bosch GmbH, Germany

PROCESS OPTIMIZATION AND PREDICTIVE CONTROL

Friday 08-Jul-2005 10:00-12:00, Small Theatre

Chair: *Dominique Bonvin, EPFL, Switzerland*

Co-Chair: *Sebastian Engell, University of Dortmund, Germany*

1. (10:00) Dynamic Real-time Optimization: From Off-line Numerical Solution to Measurement-based Implementation

Jitendra Kadam, Lehrstuhl fuer Prozesstechnik, RWTH Aachen University, Germany

Martin Schlegel, Lehrstuhl fuer Prozesstechnik, RWTH Aachen University, Germany

Bala Srinivasan, Laboratoire d'Automatique, EPFL, Lausanne, Switzerland

Dominique Bonvin, Laboratoire d'Automatique, EPFL, Lausanne, Switzerland

Wolfgang Marquardt, Lehrstuhl fuer Prozesstechnik, RWTH Aachen University, Germany

2. (10:20) Finite Horizon Optimizing Control of Advanced SMB Chromatographic Processes

A. Toumi, University of Dortmund, Germany

M. Diehl, University of Heidelberg, Germany

S. Engell, University of Dortmund, Germany

H.G. Bock, University of Heidelberg, Germany

J.P. Schloeder, University of Heidelberg, Germany

3. (10:40) Optimal Closed-loop Operation of Binary Batch Distillation Columns

Jesus Alvarez, Universidad Autonoma Metropolitana - Iztapalapa, Mexico

Eduardo Castellanos-Sahagun, Universidad Autonoma Metropolitana - Iztapalapa, Mexico

Carlos Fernandez, Universidad Autonoma Metropolitana - Iztapalapa, Mexico

Salvador Aguirre, Universidad Autonoma Metropolitana - Iztapalapa, Mexico

PROCESS OPTIMIZATION AND PREDICTIVE CONTROL

Friday 08-Jul-2005 10:00-12:00, Small Theatre

Chair: *Dominique Bonvin, EPFL, Switzerland*

Co-Chair: *Sebastian Engell, University of Dortmund, Germany*

4. (11:00) Optimal control of dispersive tubular chemical reactors: Part I.

Filip Logist, Katholieke Universiteit Leuven, Belgium

Ilse Smets, Katholieke Universiteit Leuven, Belgium

Jan F.M. Van Impe, Katholieke Universiteit Leuven, Belgium

5. (11:20) Sliding mode predictive control for chemical process with time delay

Winston Garcia-Gabin, Universidad de Los Andes, Venezuela

Darine Zambrano, Universidad de Los Andes, Venezuela

Eduardo F. Camacho, Universidad de Sevilla, Spain

6. (11:40) Two-layer Real Time Optimization of the Drying of Pastes in a Spouted Bed: Experimental Implementation

Carlos E. S. Costa, Sym Consulting on Industrial Process Control, Brazil

Fábio B. Freire, University of British Columbia, Canada

Nivaldo Ap. Correa, State University of Sao Paulo, Brazil

José T. Freire, Federal University of Sao Carlos, Brazil

Ronaldo G. Correa, Federal University of Sao Carlos, Brazil

UNMANNED AERIAL VEHICLES

Friday 08-Jul-2005 10:00-12:00, North Hall

Chair: *Gianni Bertoni, Universita di Bologna, Italy*Co-Chair: *Antonios Tsourdos, Cranfield University, United Kingdom*

1. (10:00) **Hybrid Fault Detection and Isolation Method for UAV Inertial Sensor Redundancy Management System**
Youdan Kim, Seoul National University, Korea
Hyoung Seok Kim, Seoul National University, Korea
Sang Kyun Park, Seoul National University, Korea
Chan Gook Park, Seoul National University, Korea
2. (10:00) **Missile Endgame Analysis via Multiobjective Optimization**
Andrew Chipperfield, The University of Southampton, United Kingdom
N. Patel, The University of Southampton, United Kingdom
A. J. Keane, The University of Southampton, United Kingdom
3. (10:00) **Missile Guidance Design using Optimal Trajectory Shaping and Neural Network**
Horn-Yong Jan, Feng Chia University, Taiwan
Chun-Liang Lin, National Chung Hsing University, Taiwan
Kai-Ming Chen, National Chung Hsing University, Taiwan
Chi-Wen Lai, National Chung Hsing University, Taiwan
Thong-Shing Hwang, Feng Chia University, Taiwan
4. (10:00) **Nonlinear attitude and gyroscope's bias estimation for a VTOL UAV**
Jean-Michel Pflimlin, LAAS-CNRS, France
Tarek Hamel, I3S, France
Philippe Souères, LAAS-CNRS, France
Najib Metni, LCPC, France
5. (10:00) **Optimal UCAV path planning under missile threats**
Semyon Meerkov, University of Michigan, United States
Pierre T. Kabamba, University of Michigan, United States
Frederick H. Zeitz III, University of Michigan, United States

UNMANNED AERIAL VEHICLES

Friday 08-Jul-2005 10:00-12:00, North Hall

Chair: *Gianni Bertoni, Universita di Bologna, Italy*

Co-Chair: *Antonios Tsourdos, Cranfield University, United Kingdom*

6. (10:00) UAV Routing in a Stochastic, Time-Varying Environment

Emilio Frazzoli, Univ. of California, Los Angeles, United States

John J. Enright, Univ. of California, Los Angeles, United States

MODELING AND ESTIMATION OF STOCHASTIC SYSTEMS

Friday 08-Jul-2005 10:00-12:00, Terrace 1

Chair: *Ian Petersen, The University of New South Wales, Australia*Co-Chair: *Agnessa Kovaleva, Russian Academy of Sciences, Russian Federation***1. (10:00) A Duality Relationship for Regular Conditional Relative Entropy***Ian Petersen, University of NSW at ADFA, Australia**Li Xie, Chinese University of Hong Kong, Hong Kong**Valery Ugrinovskii, University of NSW at ADFA, Australia***2. (10:20) Estimation of the Mean Escape Time in Lagrangian Systems with Weak Noise***Agnessa Kovaleva, Russian Academy of Sciences, Russian Federation***3. (10:40) True Concurrent Stochastic Processes***Manuela Bujorianu, University of Cambridge, United Kingdom**Marius Bujorianu, University of Kent, United Kingdom**John Lygeros, University of Patras, Greece***4. (11:00) Detection of Random Targets in Sensor Networks with Applications***Minyi Huang, University of Melbourne, Australia**Girish Nair, University of Melbourne, Australia***5. (11:20) Minimax Parameter Estimation for Singular Linear Multivariate Models with Mixed Uncertainty***Konstantin V. Siemenikhin, Moscow Aviation Institute, Russian Federation**Alexei R. Pankov, Moscow Aviation Institute, Russian Federation***6. (11:40) On a Stochastic Algorithm for Sensor Scheduling***Vijay Gupta, Caltech, United States**Timothy H. Chung, Caltech, United States**Babak Hassibi, Caltech, United States**Richard M. Murray, Caltech, United States*

SPACE CONTROL

Friday 08-Jul-2005 10:00-12:00, North Hall

Chair: *Eveline Gottzein, EADS Astrium, Germany*Co-Chair: *Gianni Bertoni, Universita di Bologna, Italy*

1. (10:00) **Active Vibration Suppression of Flexible Spacecraft using Feed-Forward/Feedback Control Strategies**
Qinglei Hu, Harbin Institute of Technology, China
Guangfu Ma, Harbin Institute of Technology, China
Yaqiu Liu, Northeast Forestry University, China
2. (10:00) **Multiple Spacecraft Formation Control Using Theta-D Method**
Sivasubramanya Balakrishnan, University of Missouri-Rolla, United States
Ming Xin, University of Missouri-Rolla, United States
Hank Pernicka, University of Missouri-Rolla, United States
3. (10:00) **Optimal Trajectory Planning of Formation Flying Spacecraft**
Dan Dumitriu, Institute for Systems and Robotics - Instituto Superior Técnico, Portugal
Pedro Lima, Institute for Systems and Robotics - Instituto Superior Técnico, Portugal
Bogdan Udrea, ESA/ESTEC, Netherlands
4. (10:00) **Orientation Control of an Artificial Satellite by Means of the Interval-Multiplex Approach**
Vladimir Shevchenko, Space Research Institute of NAS and NSA of Ukraine, Ukraine
Mykhailo Lychak, Space Research Institute of NAS and NSA of Ukraine, Ukraine
5. (10:00) **Robust Load-sharing Control of Spacecraft Formations**
Mario Garcia-Sanz, Public University of Navarra, Spain
F.Y. Hadaegh, NASA-JPL, United States
6. (10:00) **The LORF Orbit Equation with Full Quaternions**
Davide Andreis, Politecnico di Torino, Italy
Enrico Canuto, Politecnico di Torino, Italy

CONTROL OF SYSTEMS WITH CONSTRAINTS

Friday 08-Jul-2005 10:00-12:00, Club B**Chair:** *Nicos Karcanias, City University, London, United Kingdom***Co-Chair:** *Thomas Meurer, Universität Stuttgart, Germany*

- 1. (10:00) A design method of compensation law for constrained linear systems**
Naoyuki Hara, Tokyo Metropolitan Institute of Technology, Japan
Akira Kojima, Tokyo Metropolitan Institute of Technology, Japan
- 2. (10:20) Complete Sets of Basic Types of 2DoF Tracking Controllers with Finite Length Control Sequences**
Pavel Pesek, University of West Bohemia, Czech Republic
Jiri Mosna, University of West Bohemia, Czech Republic
Jiri Melichar, University of West Bohemia, Czech Republic
- 3. (10:40) Design of Decentralised Control Schemes: An Algebraic Approach**
Nicos Karcanias, City University, United Kingdom
John Leventides, University Athens, Greece
- 4. (11:00) Design of Reference Governor for Linear Systems with Input Constraints**
Jin Young Choi, Seoul National Univ., Korea
Hyun Min Do, Hyundai Mobis, Korea
- 5. (11:20) Motion planning and feedforward control for distributed parameter systems under input constraints**
Thomas Meurer, Universität Stuttgart, Germany
Knut Graichen, Universität Stuttgart, Germany
Michael Zeitz, Universität Stuttgart, Germany

CONTROL OF SYSTEMS WITH CONSTRAINTS

Friday 08-Jul-2005 10:00-12:00, Club B**Chair:** *Nicos Karcanias, City University, London, United Kingdom***Co-Chair:** *Thomas Meurer, Universität Stuttgart, Germany***6. (11:40) Nonlinear Continuous-time Reference Governors for Constrained Nonlinear Systems***Hisakazu Nakamura, Nara Institute of Science and Technology, Japan**Nami Kidane, Nara Institute of Science and Technology, Japan**Yuh Yamashita, Hokkaido University, Japan**Kenichi Kato, Nara Institute of Science and Technology, Japan**Hirokazu Nishitani, Nara Institute of Science and Technology, Japan*

SET-INVARIANCE TECHNIQUES

Friday 08-Jul-2005 10:00-12:00, Club C

Chair: *Reza Moheimani, The University of Newcastle, Australia*

Co-Chair: *Paolo Caravani, University of L'Aquila, Italy*

1. (10:00) **Regulation of discrete-time linear systems with positive state and control constraints and bounded disturbances**

Sasa, V. Rakovic, Imperial College London, United Kingdom

David, Q. Mayne, Imperial College London, United Kingdom

2. (10:20) **Optimized robust control invariant sets for constrained linear discrete-time systems**

Sasa V. Rakovic, Imperial College London, United Kingdom

David Q. Mayne, Imperial College London, United Kingdom

Eric C. Kerrigan, University of Cambridge, United Kingdom

Konstantinos I. Kouramas, Imperial College London, United Kingdom

3. (10:40) **Set-Invariant Estimators for Linear Systems Subject to Disturbances and Measurement Noise**

Carlos Eduardo Dórea, Universidade Federal da Bahia, Brazil

Antonio Carlos Caldeira Pimenta, Universidade Federal da Bahia, Brazil

4. (11:00) **A Robust Invariance Approach to Idle Speed Control of a Spark Ignited Engine**

Paolo Caravani, Univ of L'Aquila, Italy

Giovanni Girasole, Univ of L'Aquila, Italy

5. (11:20) **On the Approximation of Invariant Sets for Constrained LDT Systems**

Paolo Caravani, Univ of L'Aquila, Italy

6. (11:40) **Relationships between Affine Feedback Policies for Robust Control with Constraints**

Paul Goulart, University of Cambridge, United Kingdom

Eric Kerrigan, University of Cambridge, United Kingdom

ENERGY SAVING THROUGH PLANT AND BUILDING AUTOMATION

Friday 08-Jul-2005 10:00-12:00, Meeting Room 2.2

Organizer: *Heinz Erbe, Technische Universität Berlin, Germany*

Co-Organizer *Serge Boverie, Siemens, France*

Co-Organizer *Georgi Dimirovski, Dogus University, Istanbul, Turkey*

Chair: *Timothy Salsbury, Johnson Controls, Milwaukee, United States*

Co-Chair: *Mile Stankowski, St. Cyril and Methodius University, Skopje, Macedonia, The Former Yugoslav Republic of*

1. (10:00) A Survey of Control Technologies in the Building Automation Industry

Timothy Salsbury, Johnson Controls, Inc, United States

2. (10:40) Improving the accuracy of sensors in building automation systems

Arthur Dexter, University of Oxford, United Kingdom

Huiling Tan, University of Oxford, United Kingdom

3. (11:00) Robust Ventilation Control for Building HVAC Performance Optimization

Shengwei Wang, The Hong Kong Polytechnic University, Hong Kong

Xinhua Xu, The Hong Kong Polytechnic University, Hong Kong

4. (11:20) Thermal Comfort Based Predictive Controllers for Building Heating Systems

Roberto Zanetti Freire, Pontifical Catholic University of Paraná, Brazil

Gustavo Oliveira, Pontifical Catholic University of Paraná, Brazil

Nathan Mendes, Pontifical Catholic University of Paraná, Brazil

ENERGY SAVING THROUGH PLANT AND BUILDING AUTOMATION

Friday 08-Jul-2005 10:00-12:00, Meeting Room 2.2

Organizer: *Heinz Erbe, Technische Universität Berlin, Germany*

Co-Organizer *Serge Boverie, Siemens, France*

Co-Organizer *Georgi Dimirovski, Dogus University, Istanbul, Turkey*

Chair: *Timothy Salsbury, Johnson Controls, Milwaukee, United States*

Co-Chair: *Mile Stankovski, St. Cyril and Methodius University, Skopje, Macedonia, The Former Yugoslav Republic of*

5. (11:40) Advanced Industrial Control using Fuzzy Logic of Tunnel Kiln Brick Production

Mile Stankovski, Faculty of Electrical Engineering, Skopje, Macedonia, The Former Yugoslav Republic of

Tatjana Kolemishavska-Gugulovska, Faculty of Electrical Engineering, Skopje, Macedonia, The Former Yugoslav Republic of

Goce Boshkovski, ULTRA DOO, Skopje, Macedonia, The Former Yugoslav Republic of

Georgi Dimirovski, Dogus University, Istanbul, Turkey

ADVANCES IN SYSTEMS THEORY AND NONLINEAR FILTERING

Friday 08-Jul-2005 10:00-12:00, Meeting Room 4.2

Chair: *Vojtech Vesely, Slovak University of Technology, Slovakia***1. (10:00) A Family of Polynomial Filters for Discrete-time Nonlinear Stochastic Systems***Costanzo Manes, University of L'Aquila, Italy**Germani Alfredo, University of L'Aquila, Italy**Palumbo Pasquale, Istituto di Analisi dei Sistemi e Informatica CNR, Italy***2. (10:20) A New Approach to System Structure Reconstruction based on a Generalized Tellegen Principle***Vaclav Cerny, University of West Bohemia, Czech Republic**Josef Hrusak, University of West Bohemia, Czech Republic**David Panek, University of West Bohemia, Czech Republic***3. (10:40) Dynamic Programming Solution of State Estimation Problems with Constrained Disturbances***José Mare, The University of Newcastle, Australia**Jose De Dona, The University of Newcastle, Australia***4. (11:00) Efficient Gaussian Process Based on BFGS Updating and Logdet Approximation***W. E. Leithead, University of Strathclyde, United Kingdom**Yunong Zhang, National University of Ireland, Maynooth, Ireland**D. J. Leith, National University of Ireland, Maynooth, Ireland***5. (11:20) Explicit Solution to Constrained Linear Estimation***Xiang Wei Zhuo, The University of Newcastle, Australia**Jose A. De Dona, The University of Newcastle, Australia**Maria M. Seron, The University of Newcastle, Australia***6. (11:40) Kalman-Yakubovich-Popov Lemma for Two-Dimensional Systems***Ran Yang, The University of Melbourne, Australia**Lihua Xie, Nanyang Technological University, Singapore**Cishen Zhang, Nanyang Technological University, Singapore*

CONTROL AND CHAOS

Friday 08-Jul-2005 10:00-12:00, Meeting Room 1.1

Chair: *Francisco Gordillo, Universidad de Sevilla, Spain*

Co-Chair: *Hyungbo Shim, Seoul National University, Korea*

1. (10:00) Stabilization of Chaos with FPIC: Application to ZAD-Strategy Buck Converters

Gerard Olivar, Technical University of Catalonia UPC, Spain

Fabiola Angulo, Universidad Nacional de Colombia, sede Manizales, Colombia

Enric Fossas, Technical University of Catalonia UPC, Spain

Carlos Ocampo, Technical University of Catalonia UPC, Spain

2. (10:20) On a stability property of nonlinear systems with periodic inputs having slowly varying average

Hyungbo Shim, Seoul National Univ., Korea

Yong Un Choi, Seoul National Univ., Korea

Jin Heon Seo, Seoul National Univ., Korea

3. (10:40) Stability results for some periodic feedback controllers

Omer Morgul, Bilkent University, Turkey

4. (11:00) Strict Lyapunov functions for generating robust oscillations in nonlinear systems

Fabio Gomez-Estern, University of Seville, Spain

A. Barreiro, University of Vigo, Spain

J. Aracil, University of Seville, Spain

F. Gordillo, University of Seville, Spain

5. (11:20) The first Lyapunov coefficient for a class of Systems

Fernando Verduzco, Sonora University, Mexico

6. (11:40) A generalization of the OGY control to continuous-time systems using Floquet theory

Noboru Sakamoto, Nagoya University, Japan

SPECIAL PROBLEMS OF AIRCRAFT CONTROL

Friday 08-Jul-2005 10:00-12:00, Meeting Room 2.3

Organizer: *Alexander Nebylov, State University of Aerospace Instrumentation, Russian Federation*

Co-Organizer *Haydn Thompson, University of Sheffield, United Kingdom*

Chair: *Alexander Nebylov, State University of Aerospace Instrumentation, Russian Federation*

Co-Chair: *Haydn Thompson, University of Sheffield, United Kingdom*

1. (10:00) Online approximators for the actuators FDI of a small commercial aircraft

Gaetano Paviglianiti, University of Reggio Calabria, Italy

Massimiliano Mattei, University of Reggio Calabria, Italy

2. (10:20) Robust Estimation versus Optimal Estimation and their Application for Airborne Gravimetry

Veronica I. Kulakova, State University of Aerospace Instrumentation, Russian Federation

Alexander V. Nebylov, State University of Aerospace Instrumentation, Russian Federation

Oleg A. Stepanov, Central Scientific & Research Institute Elektropribor, Russian Federation

3. (10:40) Kinematics optimization for a flapping-wing micro air vehicle

Mustapha Ouladsine, Marseille III, France

Thomas Rakotomonjy, Marseille III and ONERA, France

Thierry Le Moing, ONERA France, France

4. (11:00) On-Board Statistical Detection and Control of Anomalous Pilot-Aircraft Interactions

Dimitrios Dimogianopoulos, University of Patras, Greece

John D. Hios, University of Patras, Greece

Spilios D. Fassois, University of Patras, Greece

5. (11:20) Robust Control of PVTOL Aircraft using Saturations Functions

Sergio Salazar-Cruz, Universite de Technologies de Compiègne, France

Rogelio Lozano, Universite de Technologies de Compiègne, France

SPECIAL PROBLEMS OF AIRCRAFT CONTROL

Friday 08-Jul-2005 10:00-12:00, Meeting Room 2.3

Organizer: *Alexander Nebylov, State University of Aerospace Instrumentation, Russian Federation*

Co-Organizer *Haydn Thompson, University of Sheffield, United Kingdom*

Chair: *Alexander Nebylov, State University of Aerospace Instrumentation, Russian Federation*

Co-Chair: *Haydn Thompson, University of Sheffield, United Kingdom*

6. (11:40) Wing-in-Ground Flight Automatic Control Systems

Alexander Nebylov, State University of Aerospace Instrumentation, Russian Federation

Sergey Danilov, State University of Aerospace Instrumentation, Russian Federation

Vladimir Nebylov, State University of Aerospace Instrumentation, Russian Federation

Elizaveta Rumyantseva, State University of Aerospace Instrumentation, Russian Federation

HUMAN-MACHINE INTERFACE DEVELOPMENT AND COLLABORATION

Friday 08-Jul-2005 10:00-12:00, Meeting Room 3.1

Chair: *Detlef Zuehlke, University of Kaiserslautern, Germany***1. (10:00) Concept, Structure and Design of Colaborater in Human-Machine System***Koki Shibasato, Kumamoto National College of Technology, Japan**Hirofumi Ohtsuka, Kumamoto National College of Technology, Japan**Shigeyasu Kawaji, Kumamoto University, Japan***2. (10:20) Hyper-Bonds -Supporting Distributed Collaboration in Engineering Workspaces***Wilhelm Bruns, Bremen University, Germany***3. (10:40) Cooperating with an Assistance Tool for Safe Driving***Marie-Pierre Pacaux-Lemoine, LAMIH, France**Julien Ordioni, LAMIH, France**Jean-Christophe Popieul, LAMIH, France**Serge Debernard, LAMIH, France**Patrick Millot, LAMIH, France***4. (11:20) A Model-based Approach for Useware Development***Kizito Ssamula Mukasa, Institute for Production Automation/University of Kaiserslautern, Germany**Dirk Ziegeler, Institute for Production Automation/University of Kaiserslautern, Germany**Detlef Zuehlke, Institute for Production Automation/University of Kaiserslautern, Germany***5. (11:40) User-Centred Development of an User Interface for Mobile Devices in Automation***Carsten Wittenberg, SIEMENS AG, Germany*

ADVANCES IN H_∞ CONTROL THEORY AND APPLICATIONS

Friday 08-Jul-2005 10:00-12:00, Meeting Room 3.2

Chair: *Alexandre Trofino, DAS-UFSC, Brazil*Co-Chair: *Lihua Xie, Nanyang Technological University, China*

1. (10:00) **Design of H-infinity Feedback Control Systems with Quantized Signals**
Guisheng Zhai, Osaka Prefecture University, Japan
Yanchun Mi, Wakayama University, Japan
Joe Imae, Osaka Prefecture University, Japan
Tomoaki Kobayashi, Osaka Prefecture University, Japan
2. (10:20) **H₂/H-infinity Control without Lyapunov Matrix or Frequency Weights**
Mohamed Abbas-Turki, École Supérieure d'Electricité, France, Metropolitan
Gilles Duc, École Supérieure d'Electricité, France, Metropolitan
Benoît Clement, Centre National d'Etudes Spatiales, France, Metropolitan
3. (10:40) **H_∞ Filtering for Discrete-Time Piecewise Linear Systems**
Alexandre Trofino, UFSC, Brazil
C.E. de Souza, LNCC, Brazil
4. (11:00) **Multi-Parametric H-infinity Control of a Micro-Actuator**
George Nikolakopoulos, University of Patras, Greece
Anthony Tzes, University of Patras, Greece
Leonidas Dritsas, University of Patras, Greece
Yiannis Koveos, University of Patras, Greece
5. (11:20) **Non-synchronized H-infinity Estimation of Discrete-time Piecewise Linear Systems**
Lihua Xie, Nanyang Technological University, Singapore
Jun Xu, Nanyang Technological University, Singapore
6. (11:40) **Upper bound H-infinity and H₂ control for symmetric mechanical systems**
Kazuhiko Hiramoto, Akita University, Japan
Yuanqiang Bai, University of Houston, United States
Karolos M. Grigoriadis, University of Houston, United States

UNMANNED AERIAL, GROUND AND MARINE VEHICLES

Friday 08-Jul-2005 10:00-12:00, Meeting Room 3.3

Chair: *Jurek Sasiadek, Carleton University, Ottawa, Canada*Co-Chair: *Anibal Ollero, University of Sevilla, Spain*

1. (10:00) **Progress in mini-helicopter tracking with a 3D laser range-finder**
Jorge Martinez, University of Malaga, Spain
Alejandro Pequeno-Boyer, University of Malaga, Spain
Anthony Mandow, University of Malaga, Spain
Alfonso García-Cerezo, University of Malaga, Spain
Jesus Morales, University of Malaga, Spain
2. (10:20) **Robot Airship for Education and Research - Modelling and Control**
Jörg Kuhle, Universität Siegen, Germany
Hubert Roth, Universität Siegen, Germany
Christoph Klein, Universität Siegen, Germany
3. (10:40) **Fire detection using autonomous aerial vehicles with infrared and visual cameras**
J. Ramiro Martínez-de-Dios, University of Seville, Spain
Luis Merino, University of Seville, Spain
Anibal Ollero, University of Seville, Spain
4. (11:00) **Formation Control of Autonomous Underwater Vehicles**
Masaki Yamakita, Tokyo Institute of Technology, Japan
Takashi Ikeda, Tokyo Institute of Technology, Japan
Tsutomu Mita, Tokyo Institute of Technology, Japan
5. (11:20) **Laser-Based Pose-Tracking of a Wheeled Mobile Robot**
Ching-Chih Tsai, National Chung-Hsing University, Taiwan
Hung-Hsing Lin, National Chung-Hsing University, Taiwan
Kim-Hon Wong, National Chung-Hsing University, Taiwan
6. (11:40) **A mixed integer linear programming approach for strategic issues in RoboFlag**
Nicolas Foirien, Ecole Nationale Supérieure des Mines de Paris, France
Richard Murray, California Institute of Technology, United States

BIOMEDICAL ENGINEERING / BIOMEDICAL SIGNAL PROCESSING I

Friday 08-Jul-2005 10:00-12:00, Meeting Room 4.3

Chair: *Roman Prokop, Tomas Bata University in Zlin, Czech Republic***1. (10:00) A Differential Hysteresis Model***Daniele Carnevale, Univ. of Rome, Tor Vergata, Italy**Salvatore Nicosia, Univ. of Rome, Tor Vergata, Italy**Luca Zaccarian, Univ. of Rome, Tor Vergata, Italy***2. (10:20) Compensation of Time-Varying Harmonic Disturbances on Nonlinear Bearingless Slice Motors***Christian Hüttner, University of Stuttgart, Germany**Jochen M. Rieber, University of Stuttgart, Germany**Frank Allgower, University of Stuttgart, Germany**Jörg Hugel, ETH Zurich, Switzerland***3. (10:40) Classification of Fetal Heart Rate using Scale Dependent Features and Support Vector Machines***George Georgoulas, Laboratory for Automation and Robotics, University of Patras, Greece**Chrysostomos Stylios, Dept. of Communications, Informatics and Management, TEI of Epirus., Greece**Peter Groumpos, Laboratory for Automation and Robotics, University of Patras, Greece***4. (11:00) From DNA Micro-arrays to Disease Classification: An Unsupervised Clustering Approach***Sergio Bittanti, Politecnico di Milano, Italy**Simone Garatti, Politecnico di Milano, Italy**Diego Liberati, CNR - IEIIT, Italy***5. (11:20) Surface description for cornea topography using modified Chebyshev-polynomials***Alexandros Soumelidis, Computer and Automation Research Institute, Hungary**Zoltan Fazekas, Computer and Automation Research Institute, Hungary**Ferenc Schipp, Eotvos Lorand University, Budapest, Hungary**Janos Nemeth, Semmelweis University, Budapest, Hungary*

BIOMEDICAL ENGINEERING / BIOMEDICAL SIGNAL PROCESSING I

Friday 08-Jul-2005 10:00-12:00, Meeting Room 4.3

Chair: *Roman Prokop, Tomas Bata University in Zlin, Czech Republic*

6. (11:40) Hybrid Force/Impedance Control for the Robotized Rehabilitation of the Upper Limbs

Said Moughamir, University of Reims, France

Alexandre Deneve, University of Reims, France

Janan Zaytoon, University of Reims, France

Lissan Afilal, University of Reims, France

COMBINED KNOWLEDGE AND TECHNOLOGY TRANSFER I

Friday 08-Jul-2005 10:00-12:00, Meeting Room 2.1

- Organizer:** *Gheorghi M. Dimirovski, Dodus University, Turkey*
- Co-Organizer** *Ljubisa Vlacic, Griffith University, Australia*
- Co-Organizer** *Mile Stankovski, SS Cyril and Methodius University, Macedonia, The Former Yugoslav Republic of*
- Co-Organizer** *Hesham Gomma, Helwan University, Egypt*
- Chair:** *Gheorghi M. Dimirovski, Dogus University Istanbul, Turkey*
- Co-Chair:** *Ahmed A. Abo-Ismael, Assuit University, Egypt*

1. (10:00) **Knowledge and Technology Transfer: Novel Control Results While Teaching Advanced Courses**
Georgi M. Dimirovski, Dogus University of Istanbul, Turkey
Wen-Lei Li, Noretheastern University of Shenyang, China
Aleksandar Serafimovski, Toronto Co, Canada
Yuan-Wei Jing, Noretheastern University of Shenyang, China
A. Talha Dinibütün, Dogus University of Istanbul, Turkey
2. (10:20) **Coordinated Power Flow Control using Facts Devices**
Petr Korba, ABB Corporate Research Ltd., Switzerland
Alexandre Oudalov, ABB Corporate Research Ltd., Switzerland
3. (10:40) **Software Project Management for Developing Countries**
Christopher Peterson, University of Technology, Sydney, Australia
Zenon Chaczko, University of Technology, Sydney, Australia
Craig Scott, University of Technology, Sydney, Australia
David Davis, University of Technology, Sydney, Australia
4. (11:00) **Tasks of system identification: A simplified approach created in a developing country**
Hesham Gomma, Helwan University, Egypt

COMBINED KNOWLEDGE AND TECHNOLOGY TRANSFER I

Friday 08-Jul-2005 10:00-12:00, Meeting Room 2.1

- Organizer:** *Gheorghi M. Dimirovski, Dodus University, Turkey*
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- Co-Organizer** *Hesham Gomma, Helwan University, Egypt*
- Chair:** *Gheorghi M. Dimirovski, Dogus University Istanbul, Turkey*
- Co-Chair:** *Ahmed A. Abo-Ismael, Assuit University, Egypt*

5. (11:20) Development of PLC Courses for Practicing Control Engineers in Macedonian Industry

Tatjana Kolemishavska-Gugulovska, St Cyril and Methodius University Skopje, Macedonia, The Former Yugoslav Republic of

Mile Stankovski, St Cyril and Methodius University Skopje, Macedonia, The Former Yugoslav Republic of

Sonja Andonova, GTZ, Technology Transfer Center Skopje, Macedonia, The Former Yugoslav Republic of

6. (11:40) Fuzzy Optimization Of Cost Function in Product Mix Selection Problem

Pandian M. Vasant, Universiti Teknologi Petronas, Perak, Malaysia, Malaysia

Nadir N. Barsoum, Curtin University of Technology, Miri, Malaysia, Malaysia

'NOT IN MY BACKYARD' – INAPPROPRIATE USES OF TECHNOLOGY

Friday 08-Jul-2005 10:00-12:00, Meeting Room 3.4

Organizer: *Marion Hersh, University of Glasgow, United Kingdom*Chair: *Marion Hersh, University of Glasgow, United Kingdom***1. (10:00) End of Life Management of Automation Devices***Peter Kopacek, Vienna University of Technology, Austria**Bernd Kopacek, ECOTRONICS GmbH, Austria***2. (10:20) Adaptive mechanism for mastering capital and improving international stability***Vladimir Tsyganov, Institute of Control Sciences, Russian Federation**Ruslan Bagamaev, Commerisil bank, Russian Federation**Igor Gurlev, Institute of Control Sciences, Russian Federation***3. (10:40) Investigation into control of the global social system***Frederick Kile, Microtrend, United States***4. (11:00) Ethics and mon-disciplinarity: positivism, informed consent and informed participation***Marion Hersh, University of Glasgow, United Kingdom**Bill Tucker, University of the Western Cape, South Africa***5. (11:20) International Federation for Humanity Supported by Automatic Control***Tibor Vámos, Computer and Automation Research Institute, Hungarian Academy of Sciences, Hungary*

POLYNOMIAL DESIGN METHODS: THEORETICAL ACHIEVEMENTS

Friday 08-Jul-2005 10:00-12:00, Meeting Room 3.5

- Organizer:** *Martin Hromcik, Czech Technical University in Prague, Czech Republic*
- Co-Organizer** *Zdenek Hurak, Czech Technical University, Czech Republic*
- Co-Organizer** *Michael Sebek, Czech Technical University, Czech Republic*
- Chair:** *Martin Hromcik, Czech Technical University in Prague, Czech Republic*
- Co-Chair:** *Zdenek Hurak, Czech Technical University in Prague, Czech Republic*

- 1. (10:00) Infinite Eigenvalue Assingment by Output-Feedbacks for Singular Systems**
Tadeusz Kaczorek, Warsaw University of Technology, Poland
- 2. (10:20) Application of Polynomial Systems Theory to Nonlinear Systems**
Raimo Ylinen, University of Oulu, Finland
- 3. (10:40) Nonlinear Generalized Minimum Variance control under actuator saturation**
Pawel Majecki, University of Strathclyde, United Kingdom
Michael J. Grimble, University of Strathclyde, United Kingdom
- 4. (11:00) The odd world of periodic polynomials**
Sergio Bittanti, Politecnico di Milano, Italy
Patrizio Colaneri, Politecnico di Milano, Italy
- 5. (11:20) Youla-Kučera Parameterisation Approach to LQ Tracking and Disturbance Rejection Problem**
L'uboš Čirka, Slovak University of Technology, Slovakia
Miroslav Fikar, Slovak University of Technology, Slovakia
Ján Mikleš, Slovak University of Technology, Slovakia
- 6. (11:40) Polynomial Matrix Approach to Independent Component Analysis: (Part I) Basics**
Kenji Sugimoto, Nara Institute of Science and Technology, Japan
Masuhiko Nitta, Nara Institute of Science and Technology, Japan

PARAMETER ESTIMATION AND KINETIC MODELLING II

Friday 08-Jul-2005 13:00-15:00, North Hall

Chair: *Giovanni Pacini, LADSEB PD CNR, Italy*Co-Chair: *Koon-Pong Wong, The Hong Kong Polytechnic University, Hong Kong***1. (13:00) A Population Balance Model of Cell Cycle-Specific Tumor Growth***Robert Parker, University of Pittsburgh, United States**Jeffry Florian, University of Pittsburgh, United States***2. (13:00) A model of the cardiovascular system using bond graphs***Virginie Le Rolle, Supélec/IETR, France, Metropolitan**Pierre-Yves Richard, Supélec/IETR, France, Metropolitan**Alfredo Hernandez, LTSI/INSERM, France, Metropolitan**Guy Carrault, LTSI/INSERM, France, Metropolitan**Jean Buisson, Supélec/IETR, France, Metropolitan***3. (13:00) Adaptive Control of Low-flow Anaesthesia using a Mixture of Anaesthetic Gases***Daniel Coca, University of Sheffield, United Kingdom**Diana S. Coca, University of Sheffield, United Kingdom**Stephen A. Billings, University of Sheffield, United Kingdom***4. (13:00) Evaluation of Experiments for Estimation of Dynamical Crop Model Parameters***Ilya Ioslovich, Technion, Israel**Per-Olof Gutman, Technion, Israel***5. (13:00) Model Based Drug Delivery For Anesthesia***Pinky Dua, Imperial College London, United Kingdom**Vivek Dua, University College London, United Kingdom**Efstratios N. Pistikopoulos, Imperial College London, United Kingdom*

PARAMETER ESTIMATION AND KINETIC MODELLING II

Friday 08-Jul-2005 13:00-15:00, North Hall

Chair: *Giovanni Pacini, LADSEB PD CNR, Italy*

Co-Chair: *Koon-Pong Wong, The Hong Kong Polytechnic University, Hong Kong*

6. (13:00) Parameter Estimation for a Biological System: Model and Experimentations

Corine Lormel, DGA/DCE/CTA, France, Metropolitan

Laurent Autrique, DGA/DCE/CTA, France, Metropolitan

Jean-Jacques Serra, DGA/DCE/CTA, France, Metropolitan

Bernard Claudet, University of Perpignan, France, Metropolitan

7. (13:00) Recognition of Various Events From 3-D Heart Model

Sandor Miklos Szilagy, Sapientia - Hungarian Science University of Transylvania, Romania

Laszlo Szilagy, Budapest University of Technology and Economics, Hungary

Zoltan Benyo, Budapest University of Technology and Economics, Hungary

8. (13:00) State Monitoring in Bio-actuators of MIMO Bioprocess: An Application to Human Arm

Mingcong Deng, Okayama University, Japan

Akira Inoue, Okayama University, Japan

Sayaka Uyama, Okayama University, Japan

9. (13:00) Temperature modelling of an homogeneous medium using genetically selected RBF(LIC)

César Teixeira, Universidade do Algarve/Centre for Intelligent Systems, Portugal

Maria Graça Ruano, Universidade do Algarve/Centre for Intelligent Systems, Portugal

Wagner Pereira, Universidade Federal do Rio de Janeiro/COPPE, Brazil

António Ruano, Universidade do Algarve/Centre for Intelligent Systems, Portugal

CONTROL APPLICATION TO LIFE MEDICINE II

Friday 08-Jul-2005 13:00-15:00, North Hall

Chair: *Mahdi Mahfouf, The University of Sheffield, United Kingdom*Co-Chair: *Janan Zaytoon, CReSTIC, Université de Reims, France*

1. (13:00) **A System Dynamics Approach of the Temporary Work Disability produced by Musculoskeletal Disorders**
Fernando Morilla, UNED, Spain
M. Blanco, Hospital Clínico San Carlos, Spain
B. Fernández-Gutiérrez, Hospital Clínico San Carlos, Spain
J.A. Jover, Hospital Clínico San Carlos, Spain
2. (13:00) **A model based analysis of anti-CD4 therapy as adjuvant to HAART interruption**
Annah M. Jeffrey, University of Pretoria, South Africa
Xiaohua Xia, University of Pretoria, South Africa
Ian K. Craig, University of Pretoria, South Africa
3. (13:00) **A new mathematical index for the optimal control of drug doses in the treatment of AIDS**
José A. M. Felipe de Souza, UBI - Universidade Beira Interior, Portugal
Marco A L Caetano, IBMEC - Faculdade de Administração e Economia, São Paulo, Brazil
Takashi Yoneyama, Aeronautics Technological Institute, Brazil
4. (13:00) **An Intelligent Alarm System Based on Temporal Episodes for Intensive Care Units**
Sylvie Charbonnier, INPG, France, Metropolitan
Lyes Badji, INPG, France, Metropolitan
Sylviane Gentil, INPG, France, Metropolitan
5. (13:00) **Classical and Modern Control Strategies in Glucose-Insulin Stabilization**
Levente Kovacs, Budapest University of Technology and Economics, Hungary
Béla Paláncz, Budapest University of Technology and Economics, Hungary
Zoltán Benyó, Budapest University of Technology and Economics, Hungary

CONTROL APPLICATION TO LIFE MEDICINE II

Friday 08-Jul-2005 13:00-15:00, North Hall

Chair: **Mahdi Mahfouf, The University of Sheffield, United Kingdom**Co-Chair: **Janan Zaytoon, CReSTIC, Université de Reims, France****6. (13:00) Detection of novel respiratory mechanics parameters by means of forced oscillations***Clara Ionescu, Ghent University, Belgium**Robin De Keyser, Ghent University, Belgium***7. (13:00) Glucose Regulation in Type 1 Diabetic Patients by a Multi-Doses Regimen***Daniel Campos-Delgado, UASLP, Mexico**Martin Hernandez-Ordoñez, UASLP, Mexico**Ricardo Femat, IPICYT, Mexico***8. (13:00) Hand Movement Improvement on Visual Target Tracking by Model-Based Compensator***Takenao Sugi, Saga University, Japan**Junko Ide, Seinan Gakuin University, Japan**Masatoshi Nakamura, Saga University, Japan**Hiroshi Shibasaki, National Institute of Health, Japan***9. (13:00) Prediction of transcriptional start sites of genes using asymptotic local approach***C. W. Chan, The University of Hong Kong, Hong Kong**W. K. Yeung, The University of Hong Kong, Iceland***10. (13:00) Preliminary Study of the Heart Rate Variability as a Indicator of the Interaction between the Glycaemia Regulation System and the Autonomous Nervous System***Pablo Francisco Viñas, Cartif, Spain**Lázaro Gorostiaga Cánepa, Cartif, Spain**Enrique Baeyens Lázaro, Cartif, Spain**Javier Pérez Turiel, Cartif, Spain**José Ramón Ramón Perán González, Cartif, Spain*

CONTROL APPLICATION TO LIFE MEDICINE II

Friday 08-Jul-2005 13:00-15:00, North Hall**Chair:** *Mahdi Mahfouf, The University of Sheffield, United Kingdom***Co-Chair:** *Janan Zaytoon, CReSTIC, Université de Reims, France***11. (13:00) Risk Estimation Techniques in Case of WPW Syndrome***Sandor Miklos Szilagyi, Sapientia - Hungarian Science University of Transylvania, Romania**Laszlo Szilagyi, Budapest University of Technology and Economics, Hungary**Zoltan Benyo, Budapest University of Technology and Economics, Hungary***12. (13:00) Simulation of Antagonistic Muscle Actions Through the Use of Sliding-Mode Control Techniques***Sarah Spurgeon, University of Leicester, United Kingdom**S. J. Lister, University of Leicester, United Kingdom**J. A. Scott, University of Leicester, United Kingdom**N. B. Jones, University of Leicester, United Kingdom*

NONLINEAR OUTPUT FEEDBACK

Friday 08-Jul-2005 13:00-15:00, Terrace 2

Chair: *Alberto Isidori, Universita di Roma "La Sapienza", Italy*

Co-Chair: *Ansgar Rehm, University of Stuttgart, Germany*

1. (13:00) **Output Feedback Stabilization Control Design for the Disturbance Attenuation of a Class of MIMO Nonlinear Systems**
Ya-Jun Pan, Dalhousie University, Canada
Horacio J. Marquez, University of Alberta, Canada
Tongwen Chen, University of Alberta, Canada
2. (13:20) **A Simple Separation Result for Control Affine Systems**
Christian Ebenbauer, University of Stuttgart, Germany
Tobias Raff, University of Stuttgart, Germany
Frank Allgower, University of Stuttgart, Germany
3. (13:40) **A nonlinear SDP algorithm for static output feedback problems in COMPlib**
Michal Kocvara, UTIA AVCR, Czech Republic
Friedemann Leibfritz, University of Trier, Germany
Michael Stingl, University of Erlangen, Germany
Didier Henrion, LAAS CNRS Toulouse, France
4. (14:00) **Unit Vector Control of Uncertain Multivariable Nonlinear Systems**
Alessandro J. Peixoto, COPPE, Federal University of Rio de Janeiro, Brazil
Jose Paulo V. S. Cunha, State University of Rio de Janeiro, Brazil
Liu Hsu, COPPE, Federal University of Rio de Janeiro, Brazil
Ramon R. Costa, COPPE, Federal University of Rio de Janeiro, Brazil
Fernando Lizarralde, COPPE, Federal University of Rio de Janeiro, Brazil

NONLINEAR OUTPUT FEEDBACK

Friday 08-Jul-2005 13:00-15:00, Terrace 2

Chair: *Alberto Isidori, Universita di Roma "La Sapienza", Italy*

Co-Chair: *Ansgar Rehm, University of Stuttgart, Germany*

5. (14:20) Output Feedback Control via Adaptive Observers with Persistency of Excitation

Jesus de Leon Morales, Universidad Autonoma de Nuevo Leon, Mexico

Antoine Chaillet, Universite Paris Sud, France

Antonio Loria, CNRS, France

Gildas Besancon, LAG-ENSIEG, France

6. (14:40) Universal Output Feedback Control of Nonlinear Systems with Unknown Growth Rate

Wei Lin, Case Western Reserve University, United States

H. Lei, Case Western Reserve University, United States

BIOMEDICAL ENGINEERING / BIOMEDICAL SIGNAL PROCESSING II

Friday 08-Jul-2005 13:00-15:00, North Hall

Chair: *Mahdi Mahfouf, The University of Sheffield, United Kingdom*Co-Chair: *Balázs Benyó, Szechenyi Istvan University, Hungary***1. (13:00) A Generic Closed-Loop Model for the Cardiovascular System Thermoregulation and Brain Activity under Physical Stress Conditions***Mahdi Mahfouf, The University of Sheffield, United Kingdom**Emad Elsamahy, The University of Sheffield, United Kingdom**Derek A Linkens, The University of Sheffield, United Kingdom***2. (13:00) A dynamical model of a cognitive function: action selection***Ozkan Karabacak, Istanbul Technical University, Turkey**N., Serap Sengör, Istanbul Technical University, Turkey***3. (13:00) A preload and afterload sensitive artificial ventricle to test cardiovascular prostheses***Fabio Piedimonte, Università degli studi di Roma Tor Vergata, Italy**Maurizio Arabia, Università della Calabria, Italy**Francesco Maria Colacino, Università della Calabria, Italy**Guido Danieli, Università della Calabria, Italy**Francesco Moscato, Università della Calabria, Italy**Salvatore Nicosia, Università degli studi di Roma Tor Vergata, Italy***4. (13:00) Automatic White Blood Cell Segmentation based on Image Processing***Juma Almuhairey, American University of Sharjah, United Arab Emirates**Yousef Al-Assaf, American University of Sharjah, United Arab Emirates*

BIOMEDICAL ENGINEERING / BIOMEDICAL SIGNAL PROCESSING II

Friday 08-Jul-2005 13:00-15:00, North Hall

Chair: *Mahdi Mahfouf, The University of Sheffield, United Kingdom*Co-Chair: *Balázs Benyó, Szechenyi Istvan University, Hungary***5. (13:00) Characterization of Cerebral Blood Flow Oscillations using Different Classification Methods***Balázs Benyó, Szechenyi Istvan University, Hungary**Péter Somogyi, Budapest University of Technology and Economics, Hungary**Zoltán Benyó, Institute of Human Physiology, Hungary**Béla Paláncz, Budapest University of Technology and Economics, Hungary***6. (13:00) Comparison of Classification Methods for Fetal Heart Rate using Different Scale Dependent Features Selection***George Georgoulas, Laboratory for Automation and Robotics, University of Patras, Greece**Chrysostomos Stylios, Dept. of Communications, Informatics and Management, TEI of Epirus, Greece**Peter Groumpos, Laboratory for Automation and Robotics, University of Patras, Greece***7. (13:00) Embedded system chip design for medical image indexing and recognition***Long Xie, Waseda University, Japan**Youichi Kigawa, Waseda University, Japan**Masatoshi Ogawa, Waseda University, Japan**Harutoshi Ogai, Waseda University, Japan**Hirokazu Abe, Kushu Measurement & Control Co., Japan*

BIOMEDICAL ENGINEERING / BIOMEDICAL SIGNAL PROCESSING II

Friday 08-Jul-2005 13:00-15:00, North Hall

Chair: *Mahdi Mahfouf, The University of Sheffield, United Kingdom*Co-Chair: *Balázs Benyó, Szechenyi Istvan University, Hungary***8. (13:00) Identification of human gripping-force control from electro-encephalographic signals by artificial neural networks***Ales Belic, University of Ljubljana, Slovenia**Blaz Koritnik, Clinical Centre Ljubljana, Slovenia**Vito Logar, University of Ljubljana, Slovenia**Simon Brezan, Clinical Centre Ljubljana, Slovenia**Veronika Rutar, Clinical Centre Ljubljana, Slovenia**Gregorij Kurillo, University of Ljubljana, Slovenia**Rihard Karba, University of Ljubljana, Slovenia***9. (13:00) Independent Neuro-Fuzzy Control***Agustin Cabrera, Instituto Politecnico Nacional, Mexico**Guadalupe Ramirez, Instituto Politecnico Nacional, Mexico**Gonzalo Galvez, Instituto Politecnico Nacional, Mexico***10. (13:00) Medical Image Segmentation for Virtual Endoscopy***Laszlo Szilagy, Budapest University of Technology and Economics, Hungary**Zoltan Benyo, Budapest University of Technology and Economics, Hungary**Sandor Miklos Szilagy, Sapientia – Hungarian Science University of Transylvania, Marosvasarhely, Romania, Romania***11. (13:00) Model Reference Fuzzy Control System of Brain Temperature for Hypothermia Treatment***Hidetoshi Wakamatsu, Tokyo Medical and Dental University, Japan**Takuya Wakatsuki, Tokyo Medical and Dental University, Japan**Tomohiko Utsuki, Tokyo Medical and Dental University, Japan*

BIOMEDICAL ENGINEERING / BIOMEDICAL SIGNAL PROCESSING II

Friday 08-Jul-2005 13:00-15:00, North Hall

Chair: *Mahdi Mahfouf, The University of Sheffield, United Kingdom*Co-Chair: *Balázs Benyó, Szechenyi Istvan University, Hungary***12. (13:00) Prosthetic Protocol Definition Realizing an Applicative Profile Based Upon I²C Standard***Stefano Banzi, University of Ferrara, Italy**Elena Mainardi, University of Ferrara, Italy**Angelo Davalli, INAIL - Centro Protesi, Italy***13. (13:00) RBF Neural Network based Human Genome TSS Identification***Chen Jie, Beijing Institute of Technology, China**Peng Zhihong, Beijing Institute of Technology, China**Cao Lijun, Beijing Institute of Technology, China**Gao Tingting, Beijing Institute of Technology, China***14. (13:00) Study on Tactile Perception of Shape for Effective Tactile Display***Myoung-Jong Yoon, Chonbuk National University, Korea**Kee-Ho Yu, Chonbuk National University, Korea**Tae-Kyu Kwon, Chonbuk National University, Korea**Nam-Gyun Kim, Chonbuk National University, Korea*

ROBOT AND POSITION CONTROL

Friday 08-Jul-2005 13:00-15:00, Club A

Chair: *Michael Valášek, Czech Technical University in Prague, Czech Republic*

1. (13:00) **A Hybrid Automata Approach for Robotic Perceptive Control and Planning**
Yu Sun, Michigan State University, United States
Ning Xi, Michigan State University, United States
2. (13:20) **Stabilization of a flexible manipulator model with passive joints**
Alexander Zuyev, Inst. of Applied Mathematics and Mechanics, Ukraine
Oliver Sawodny, TU Ilmenau, Germany
3. (13:40) **Stable 2-Way Fuzzy Adaptive Control of a Flexible-Joint Robot Arm**
Evren Gurkan, Case Western Reserve Univ., United States
Aydan M. Erkmen, Middle East Technical University, Turkey
Ismet Erkmen, Middle East Technical University, Turkey
4. (14:00) **Jerk limited velocity profile generation for high speed industrial robot trajectories**
Soon Yong Jeong, Pohang University of Science and Technology, Korea
Yun Jong Choi, Pohang University of Science and Technology, Korea
PooGyeon Park, Pohang University of Science and Technology, Korea
Seung Gap Choi, POSCO, Korea
5. (14:20) **Vibration reduction abilities of some jerk-controlled movement laws for industrial machines**
Richard Béarée, CETIM, France, Metropolitan
Pierre-Jean Barre, ENSAM Lille, France, Metropolitan
Jean-Paul Hautier, ENSAM, France, Metropolitan

ROBOT AND POSITION CONTROL

Friday 08-Jul-2005 13:00-15:00, Club A

Chair: *Michael Valášek, Czech Technical University in Prague,
Czech Republic***6. (14:40) On the detection of unknown input in positional control problems with noisy measurements***Jozsef Bokor, Hungarian Academy of Sciences, Systems and Control Laboratory, Hungary**Josef Shinar, Technion, Israel Institute of Technology, Israel**Balazs Kulcsar, Hungarian Academy of Sciences, Systems and Control Laboratory, Hungary*

LINEAR AND NONLINEAR FILTERING IN STOCHASTIC SYSTEMS

Friday 08-Jul-2005 13:00-15:00, Terrace 1

Chair: *Lei Guo, Chinese Academy of Sciences, Beijing, China*Co-Chair: *Miroslav Simandl, University of West Bohemia, Czech Republic***1. (13:00) Filtering Problem for Discrete Volterra Equations with Combined Disturbances***Alexander Matasov, M.V. Lomonosov Moscow State University, Russian Federation**Alexander Bashkov, Moscow Aviation Institute, Russian Federation**Giuseppe De Nicolao, University of Pavia, Italy**Vladimir Kolmanovskii, Moscow Institute of Electronics and Mathematics, Russian Federation***2. (13:20) Minimax filter for statistically indeterminate stochastic differential system***Gregory Miller, Moscow Aviation Institute; Institute of Informatics Problems, Russian Federation**Alexey Pankov, Moscow Aviation Institute, Russian Federation***3. (13:40) Optimal Linear Filtering with State and Observation Delays***Michael Basin, Autonomous University of Nuevo Leon, Mexico**Maria Aracelia Alcorta-Garcia, Autonomous University of Nuevo Leon, Mexico**Jesus Guadalupe Rodriguez-Gonzalez, Autonomous University of Nuevo Leon, Mexico***4. (14:00) A Kalman filter-based stable dynamic inversion for discrete-time, linear, time-varying systems***Orest Iftime, Delft Center for Systems and Control, TU Delft and Faculty of Economics, University of Groningen, Netherlands**Michel Verhaegen, Delft Center for Systems and Control, TU Delft, Netherlands***5. (14:20) Optimal Estimation by using Neural Networks***Oleg Stepanov, CSRI Elektropribor, Russian Federation**Oleg Amosov, Komsomolsk-on-Amur State Technical University, Russian Federation*

LINEAR AND NONLINEAR FILTERING IN STOCHASTIC SYSTEMS

Friday 08-Jul-2005 13:00-15:00, Terrace 1

Chair: *Lei Guo, Chinese Academy of Sciences, Beijing, China*Co-Chair: *Miroslav Simandl, University of West Bohemia, Czech Republic***6. (14:40) Numerical Solution of Filtering Problem with Multimodal Densities***Miroslav Simandl, University of West Bohemia in Pilsen, Czech Republic**Jakub Kralovec, University of West Bohemia in Pilsen, Czech Republic*

LMI METHODS IN STABILIZATION AND CONTROL

Friday 08-Jul-2005 13:00-15:00, Club B

Chair: *Gisela Pujol, Universitat Politecnica de Catalunya, Spain*Co-Chair: *Hernan Haimovich, The University of Newcastle, Australia***1. (13:00) Pole Placement via Output Feedback: A Methodology based in Projections***Kaiyang Yang, Australian National University, Australia**Robert Orsi, Australian National University, Australia***2. (13:20) Reliable guaranteed cost control for parametrized interconnected systems with LMI characterization***Gisela Pujol, Universitat Politecnica de Catalunya, Spain**Jose Rodellar, Universitat Politecnica de Catalunya, Spain**Josep M. Rossell, Universitat Politecnica de Catalunya, Spain***3. (13:40) Robust G-passification via static output feedback - LMI results***Dimitri Peaucelle, LAAS-CNRS, France, Metropolitan**Alexander Fradkov, Institute for Problems of Mechanical Engineering of RAS, Russian Federation**Boris Andrievsky, Institute for Problems of Mechanical Engineering of RAS, Russian Federation***4. (14:00) Robust H-infinity Static Output Feedback Control of Fuzzy Systems: An ILMI Approach***Sing Kiong Nguang, The University of Auckland, New Zealand**Dan Huang, The University of Auckland, New Caledonia**Peng Shi, University of Glamorgan, United Kingdom***5. (14:20) Stabilizing Static Output Feedback via Coarsest Quantizers***Hernan Haimovich, The University of Newcastle, Australia*

CONTROL AND EMBEDDED SYSTEMS

Friday 08-Jul-2005 13:00-15:00, Club D

Organizer: *Karl-Erik Arzen, Lund University, Sweden*

Chair: *Karl-Erik Arzen, Lund University, Sweden*

Co-Chair: *Martin Sanfridson, Royal institute of technology, KTH, Sweden*

1. (13:00) Control and Embedded Computing; Survey of Research Directions

Karl-Erik Arzen, Lund University, Sweden

Anton Cervin, Lund University, Sweden

2. (13:40) Embedded control systems: some issues and solutions

Pedro Albertos, Univ. Politécnica de Valencia, Spain

Alfons Crespo, Univ. Politécnica de Valencia, Spain

Marina Vallés, Univ. Politécnica de Valencia, Spain

Ismael Ripoll, Univ. Politécnica de Valencia, Spain

3. (14:00) The Effect of Randomly Time-Varying Sampling and Computational Delay

Martin Sanfridson, Royal institute of technology, KTH, Sweden

Martin Törngren, Royal institute of technology, KTH, Sweden

Jan Wikander, Royal institute of technology, KTH, Sweden

4. (14:20) Analysis of Overrun Strategies in Periodic Control Tasks

Anton Cervin, Lund University, Sweden

5. (14:40) Sampling Period Dependent RST Controller used in Control/Scheduling Co-Design

David Robert, Laboratoire d'Automatique de Grenoble, France

Olivier Sename, Laboratoire d'Automatique de Grenoble, France

Daniel Simon, INRIA, France

PARAMETRIC ROBUSTNESS

Friday 08-Jul-2005 13:00-15:00, Club C

Chair: *Denis Arzelier, LAAS-CNRS, France*

Co-Chair: *Tomomichi Hagiwara, Kyoto University, Japan*

1. (13:00) A semi analytic approach to the robust stability of quasipolynomials

Sabine Mondie Cuzange, CENTRO DE INVESTIGACION Y DE ESTUDIOS AVANZADOS DEL IPN, Mexico

Joaquín Santos, CENTRO DE INVESTIGACION Y DE ESTUDIOS AVANZADOS DEL IPN, Mexico

Vladimir Kharitonov, CENTRO DE INVESTIGACION Y DE ESTUDIOS AVANZADOS DEL IPN, Mexico

2. (13:20) On the robust output control via reflection vectors

Ulo Nurges, Tallinn University of Technology, Estonia

Ennu Rustern, Tallinn University of Technology, Estonia

3. (13:40) Symbolic Techniques for Low Order LFT-Modelling

Simon Hecker, DLR - German Aerospace Center, Germany

Andras Varga, DLR - German Aerospace Center, Germany

4. (14:00) An Iterative Method for Robust Performance Analysis of Sampled-Data Systems against Parameter Uncertainties

Tomomichi Hagiwara, Kyoto University, Japan

Kazuhiro Horiguchi, Kyoto University, Japan

5. (14:20) Robust stability analysis of linear systems with affine parameter uncertainties

Guang-Hong Yang, National University of Singapore, Singapore

Kai-Yew Lum, National University of Singapore, Singapore

6. (14:40) Worst Case Analysis of a MIMO Mass Spring Damper System Using the Skew Structured Singular Value

Martin Hayes, University of Limerick, Ireland

Mark K. Halton, University of Limerick, Ireland

Petar I. Jordanov, National University of Ireland, Maynooth, Ireland

**DEVELOPMENT AND APPLICATIONS FOR COST ORIENTED
AUTOMATION**

Friday 08-Jul-2005 13:00-15:00, Meeting Room 2.2

Chair: *F. W. Bruns, Artec, University of Bremen, Germany*

Co-Chair: *Eduardo Santos, PUC Paraná, Curitiba, Brazil*

1. (13:00) Bi-directional Energy Interfaces for Mixed Reality Design — Virtual Equivalence —

Yong-Ho Yoo, Bremen University, Germany

Wilhelm Bruns, Bremen University, Germany

2. (13:20) Human-centred Collaborative System Supporting JIT Delivery in Manufacturing

Janko Cernetic, J. Stefan Institute, Slovenia

Robert Blatnik, J. Stefan Institute, Slovenia

3. (13:40) Human-Human Collaboration

Heinz Erbe, Technische Universität Berlin, Germany

4. (14:00) Cost Based Implementation of Modular Supervisory Control Theory

Eduardo Santos, Pontifical Catholic University of Parana, Brazil

Gilvan Costa, Pontifical Catholic University of Parana, Brazil

Marco Buseti, Pontifical Catholic University of Parana, Brazil

5. (14:20) Cost Aspects of Plant Automation – Cost of Ownership

Heinz Erbe, Technische Universität Berlin, Germany

SET-MEMBERSHIP TECHNIQUES FOR IDENTIFICATION

Friday 08-Jul-2005 13:00-15:00, Meeting Room 4.2

Chair: *Andrea Garulli, University of Siena, Italy*

Co-Chair: *Giuseppe Calafiore, Politecnico di Torino, Italy*

1. (13:00) Reachability Analysis under Control-dependent

Irina Digailova, Moscow State University, Russian Federation

Alexander Kurzhanski, Moscow State University, Russian Federation

2. (13:20) Error Bounds for FIR Models in Conditional Set-Membership Identification

Marco Casini, University of Siena, Italy

Andrea Garulli, University of Siena, Italy

Antonio Vicino, University of Siena, Italy

3. (13:40) Set Membership Parameter Identification with Complex Intervals using Polar Forms

Nacim Ramdani, Université Paris XII Val de Marne, France

Tarek Raissi, Université Paris XII Val de Marne, France

Yves Candau, Université Paris XII Val de Marne, France

Abderrahim Boudenne, Université Paris XII Val de Marne, France

Laurent Ibos, Université Paris XII Val de Marne, France

4. (14:00) Set-Membership Nonlinear Filtering with Second-Order Information

Giuseppe Calafiore, Politecnico di Torino, Italy

Basilio Bona, Politecnico di Torino, Italy

5. (14:20) Set-Membership identification of Wiener models with non-invertible nonlinearity

Vito Cerone, Politecnico di Torino, Italy

Diego Regruto, Politecnico di Torino, Italy

SET-MEMBERSHIP TECHNIQUES FOR IDENTIFICATION

Friday 08-Jul-2005 13:00-15:00, Meeting Room 4.2

Chair: *Andrea Garulli, University of Siena, Italy*

Co-Chair: *Giuseppe Calafiore, Politecnico di Torino, Italy*

6. (14:40) Simulation of Uncertain Dynamic Systems Described by Interval Models: A Survey

Joseba Quevedo, Universitat Politècnica de Catalunya (UPC), Spain

Vicenç Puig, Universitat Politècnica de Catalunya (UPC), Spain

Alexandru Stancu, Universitat Politècnica de Catalunya (UPC), Spain

CHAOS CONTROL AND SYNCHRONIZATION

Friday 08-Jul-2005 13:00-15:00, Meeting Room 1.1

Organizer: *Sergej Celikovsky, Czech Academy of Sciences - UTIA, Czech Republic***Co-Organizer** *Guanrong Chen, City University Hong Kong, China***Chair:** *Sergej Celikovsky, Czech Academy of Sciences, Czech Republic***Co-Chair:** *Guanrong Chen, City University Hong Kong, China***1. (13:00) An Algorithm for Computing Heteroclinic Orbits and Its Application to Chaos Synthesis in the Generalized Lorenz System***Sergej Celikovsky, Institute of Information Theory and Automation, Czech Republic**Tianshou Zhou, Dept. Math., Zhongshan University, China**Guanrong Chen, Dept. EE City U. Hong Kong, China***2. (13:20) A multiple pseudo-random bits generator based on a spatiotemporal chaotic map***Zhong Li, FernUniversitaet in Hagen, Germany**Ping Li, FernUniversitaet in Hagen, Germany**Wolfgang Halang, FernUniversitaet in Hagen, Germany**Guanrong Chen, City University of Hong Kong, Hong Kong***3. (13:40) Chaos-based Pseudo-Random Number Generators and Chip Implementation***Zhong Li, FernUniversitaet in Hagen, Germany**Ping Li, FernUniversitaet in Hagen, Germany**Yaobin Mao, Nanjing University of Science and Technology, China**Wolfgang Halang, FernUniversitaet in Hagen, Germany***4. (14:00) Closed-Loop Stabilization of a Class of Lur'e System: Application to Chaos Control***Daniel Campos-Delgado, UASLP, Mexico**Ricardo Femat, IPICYT, Mexico**Francisco Martinez-Lopez, UASLP, Mexico***5. (14:20) Investigation on Evolutionary Deterministic Chaos Control***Ivan Zelinka, Tomas Bata University in Zlin, Czech Republic*

CHAOS CONTROL AND SYNCHRONIZATION

Friday 08-Jul-2005 13:00-15:00, Meeting Room 1.1**Organizer:** *Sergej Celikovsky, Czech Academy of Sciences - UTIA, Czech Republic***Co-Organizer** *Guanrong Chen, City University Hong Kong, China***Chair:** *Sergej Celikovsky, Czech Academy of Sciences, Czech Republic***Co-Chair:** *Guanrong Chen, City University Hong Kong, China***6. (14:40) On Spreading Dynamics in Discrete Small-World Networks***Xiang Li, Department of Automation, Shanghai Jiao Tong University, China**Guanrong Chen, Department of Electronic Engineering, City University of Hong Kong, Hong Kong**Xiaofan Wang, Department of Automation, Shanghai Jiao Tong University, China*

EMOTIONS AND HUMAN BEHAVIOUR

Friday 08-Jul-2005 13:00-15:00, Meeting Room 3.1

Chair: *Gunnar Johannsen, University of Kassel, Germany*

1. (13:00) **Control of a Hybrid Motor Prosthesis for the Knee Joint**
Heike Vallery, Technische Universität München,, Germany
Thorsten Stütze, RWTH Aachen University, Germany
Martin Buss, TU München, Germany
Dirk Abel, RWTH Aachen University, Germany
2. (13:20) **A Novel Human-Machine Interaction Architecture – Intention Recognition Approach**
Karim Tahboub, Palestine Polytechnic University, Palestinian Territory, Occupied
3. (13:40) **An intelligent interface processor for a behavior-based control robot**
Shaidah Jusoh, University of Guelph, Canada
Fangju Wang, University of Guelph, Canada
Simon X. Yang, University of Guelph, Canada
4. (14:00) **Dynamical and Complex Behaviors in Human-Machine Co-Adaptive Systems**
Tetsuo Sawaragi, Kyoto University, Japan
5. (14:20) **Mind Model and Social Intelligence in Human-machine Collaborative Systems**
Hiroshi Nakajima, OMRON Corporation, Japan
Yasunori Morishima, International Christian University, Japan
Ryota Yamada, OMRON Advanced Systems, Inc., United States
Scott Brave, Stanford University, United States
Clifford Nass, Stanford University, United States
Masaki Arao, OMRON Corporation, Japan
Shigeyasu Kawaji, Kumamoto University, Japan
6. (14:40) **Emotional User Interfaces and Humanoid Avatars in Industrial Environments**
Dirk Ziegeler, TU Kaiserslautern, Germany
Detlef Zuehlke, TU Kaiserslautern, Germany

SAMPLED-DATA CONTROL

Friday 08-Jul-2005 13:00-15:00, Meeting Room 3.2

Chair: *Dina Shona Laila, Imperial College London, United Kingdom*

Co-Chair: *Kentaro Hirata, Osaka Prefecture University, Japan*

1. (13:00) **Discrete-time IDA-PBC for separable Hamiltonian systems**

Dina Shona Laila, Imperial College London, United Kingdom

Alessandro Astolfi, Imperial College London, United Kingdom

2. (13:20) **Discrete-time time-varying robust stabilization for systems in power form**

Dina Shona Laila, Imperial College London, United Kingdom

Alessandro Astolfi, Imperial College London, United Kingdom

3. (13:40) **Multi Criteria Sampled-Data Hinf Control applied to the Choice of Sampling Rate and Anti-alias Filter**

Bengt Lennartson, Chalmers University of Technology, Sweden

Rick Middleton, University of Newcastle, Australia

Anna-Karin Christiansson, University of Trollhattan, Sweden

Carl-Magnus Fransson, Chalmers University of Technology, Sweden

4. (14:00) **Multirate Digital Decentralized Control Design**

Seung-Hi Lee, Samsung Adv. Inst. of Tech., Korea

5. (14:20) **Nonlinear sampled-data controller redesign via Lyapunov functions**

Lars Gruene, University of Bayreuth, Germany

Dragan Nesic, The University of Melbourne, Australia

6. (14:40) **On a Design Method of Sampled-data Delayed Feedback Controller**

Kentaro Hirata, Osaka Prefecture University, Japan

LAUNCHER AND MISSILE SYSTEMS

Friday 08-Jul-2005 13:00-15:00, Meeting Room 3.3

Chair: *Antonios Tsourdos, Cranfield University, United Kingdom*

Co-Chair: *Angie Buckley, Ohio University, United States*

1. (13:00) **New Guidance Law and Autopilot Design for Launch Rockets**
Chia-Hao Cheng, EE, National Taiwan University, Taiwan
Fu-Kuang Yeh, EE, National Taiwan University, Taiwan
Li-Chen Fu, EECS, National Taiwan University, Taiwan
2. (13:20) **Attitude Control of Flexible Launch Vehicle Using Adaptive Notch Filter**
Choong-Seok Oh, KAIST, Korea
Hyochoong Bang, KAIST, Korea
3. (13:40) **LQG Controller Designs from Reduced Order Models for a Launch Vehicle**
Ashwin Dhabale, IIT-Bombay, India
Ravi Banavar, IIT-Bombay, India
M. V. Dhekane, ISRO-Thiruvananthapuram, India
4. (14:00) **Missile Autopilot Controlled by Aerodynamic Lift and Divert Thrusters via Second-order Sliding Mode**
Yuri Shtessel, University of Alabama in Huntsville, United States
Christian Tournes, Davidson Technologies, Inc., United States
Ilya Shkolnikov, Z/I Imaging Corporation, United States
5. (14:20) **Autopilot Design for Agile Missile Using LTV Control and Nonlinear Dynamic Inversion**
Jae Weon Choi, Pusan National University, Korea
Ho Chul Lee, Agency for Defense Development, Korea
6. (14:40) **Input-Dependent Threshold Function for an Actuator Fault Detection Filter**
Hector Rotstein, The Technion, Israel
Ryan Ingvalson, Honeywell, United States
Tamas Keviczky, University of Minnesota, United States
Gary Balas, University of Minnesota, United States

IDENTIFICATION OF BIOMEDICAL SYSTEM DYNAMICS

Friday 08-Jul-2005 13:00-15:00, Meeting Room 4.3

Chair: *Keith Godfrey, University of Warwick, United Kingdom*

Co-Chair: *Koon-Pong Wong, The Hong Kong Polytechnic University, Hong Kong*

1. (13:00) Chaotic Mode Transition Dynamics in Human Circulatory Systems

Taiki Narita, Thoku University, Japan

Noriyasu Homma, Thoku University, Japan

Masao Sakai, Thoku University, Japan

Makoto Yoshizawa, Thoku University, Japan

Kenichi Abe, Thoku University, Japan

2. (13:20) Parameter estimation based on a switched observer for the study of left ventricle contractility

Paolo Valigi, Universita di Perugia, Italy

3. (13:40) Visual Training for Population Vector Based Cortical Control

Jiping He, Arizona State University, United States

Steve Helms Tillery, Arizona State University, United States

Remy Wahnoun, Arizona State University, United States

4. (14:00) Identification and control of positive and compartmental systems applied to neuromuscular blockade

Hugo Magalhães, University of Oporto - Faculty of Sciences, Portugal

Teresa Mendonça, University of Oporto - Faculty of Sciences, Portugal

Paula Rocha, Department of Mathematics - University of Aveiro, Portugal

5. (14:20) Multiple model identification and control of neonate incubators using Laguerre basis

Gustavo Oliveira, Pontifical Catholic University of Parana, Brazil

Mardson Amorim, Pontifical Catholic University of Parana, Brazil

Krzysztof Latawiec, Technical University of Opole, Poland

IDENTIFICATION OF BIOMEDICAL SYSTEM DYNAMICS

Friday 08-Jul-2005 13:00-15:00, Meeting Room 4.3

Chair: *Keith Godfrey, University of Warwick, United Kingdom*

Co-Chair: *Koon-Pong Wong, The Hong Kong Polytechnic University, Hong Kong*

6. (14:40) Nonparametric identification of pharmacokinetic population models via Gaussian processes

Giuseppe De Nicolao, Universita' di Pavia, Italy

Marta Neve, Universita' di Pavia, Italy

Laura Marchesi, Universita' di Pavia, Italy

INVERTED PENDULUM CONTROL

Friday 08-Jul-2005 13:00-15:00, Meeting Room 2.1

Chair: *Karl Astrom, Lund Institute of Technology, Sweden*

Co-Chair: *Knut Graichen, University of Stuttgart, Germany*

1. (13:00) **Nonlinear feedforward and feedback tracking control with input constraints solving the pendubot swing-up problem**

Knut Graichen, Universitaet Stuttgart, Germany

Michael Zeitz, Universitaet Stuttgart, Germany

2. (13:20) **A new family of smooth strategies for swinging up a pendulum**

Karl J. Aström, Lund Institute of Technology, Sweden

Javier Aracil, Universidad de Sevilla, Spain

Francisco Gordillo, Universidad de Sevilla, Spain

3. (13:40) **Manual Control and Stabilization of an Inverted Pendulum**

Johan Åkesson, Lund University, Sweden

Karl Johan Åström, Lund University, Sweden

4. (14:00) **Modelling and Stabilisation of a Spherical Inverted Pendulum**

Guangyu Liu, the university of melbourne, Australia

Dragan Nesic, the university of melbourne, Australia

Iven Mareels, the university of melbourne, Australia

5. (14:20) **Orientation control via a non-minimal state representation: the pendulum case study**

Ricardo Campa, CICESE Research Center, Mexico

Rafael Kelly, CICESE Research Center, Mexico

6. (14:40) **State Dependent Switching Control for Inverted Pendulum**

Satoko Yamakawa, Toyo University, Japan

Atsushi Yamada, Nagoya Institute of Technology, Japan

Hideo Fujimoto, Nagoya Institute of Technology, Japan

PLAYING WITH AUTOMATION – ROBOTSOCCKER

Friday 08-Jul-2005 13:00-15:00, Meeting Room 3.4

Organizer: *Peter Kopacek, Vienna University of Technology, Austria*

Co-Organizer *Jong-Hwan Kim, KAIST, Korea*

Co-Organizer *Frantisek Solc, Brno University of Technology, Czech Republic*

Co-Organizer *Xinhe Xu, Northeastern University, China*

Co-Organizer *Albert Oller, Vienna University of Technology, Austria*

Co-Organizer *Man-Wook Han, Vienna University of Technology, Austria*

Co-Organizer *Thomas Klute, University of Dortmund, Germany*

Chair: *Peter Kopacek, Vienna University of Technology, Austria*

Co-Chair: *Frantisek Solc, Brno University of Technology, Czech Republic*

1. (13:00) Balance Control of Humanoid Robot for HuroSot

Bum-Joo Lee, KAIST, Korea

Yong-Duk Kim, KAIST, Korea

Joong-Hwan Kim, KAIST, Korea

2. (13:20) Design and Development of Decision-making and Control System for Vision-based Soccer Robots

Xinhe Xu, Northeastern University, China

Fangzhen Xue, Northeastern University, China

Ting Feng, Northeastern University, China

3. (13:40) A New Control Framework for Robotic Soccer System

Dong-Hun Lee, SungKyunKwan University, Korea

Seung-Min Baek, SungKyunKwan University, Korea

Tae-Kyung Moon, SungKyunKwan University, Korea

Chae-Wook Chung, Ansan College of Technology, Korea

Tae-Yong Kuc, SungKyunKwan University, Korea

PLAYING WITH AUTOMATION – ROBOTSOCCER

 Friday 08-Jul-2005 13:00-15:00, Meeting Room 3.4

Organizer: *Peter Kopacek, Vienna University of Technology, Austria*

Co-Organizer *Jong-Hwan Kim, KAIST, Korea*

Co-Organizer *Frantisek Solc, Brno University of Technology, Czech Republic*

Co-Organizer *Xinhe Xu, Northeastern University, China*

Co-Organizer *Albert Oller, Vienna University of Technology, Austria*

Co-Organizer *Man-Wook Han, Vienna University of Technology, Austria*

Co-Organizer *Thomas Klute, University of Dortmund, Germany*

Chair: *Peter Kopacek, Vienna University of Technology, Austria*

Co-Chair: *Frantisek Solc, Brno University of Technology, Czech Republic*

4. (14:00) A DSP-based Soccer Robot for FIRA MiroSot

Norman Weiss, University of Dortmund, Germany

Thomas Klute, University of Dortmund, Germany

Simon Schulz, University of Dortmund, Germany

Thomas Pfeifer, University of Dortmund, Germany

5. (14:20) A Game Theoretic Model of Cooperation and Non-Cooperation for Soccer Playing Robots

Mohamed Bader El Den, University of Mannheim, Germany

Essam Badreddin, University of Mannheim, Germany

Yehia Kotb, University of Mannheim, Germany

Jan Rüdiger, University of Mannheim, Germany

6. (14:40) Vision System and Game - Strategies for RobotSoccer

Peter Kopacek, Vienna University of Technology, Austria

Markus Würzl, Vienna University of Technology, Austria

Edmund Schierer, Vienna University of Technology, Austria

POLYNOMIAL DESIGN METHODS: APPLICATIONS

Friday 08-Jul-2005 13:00-15:00, Meeting Room 3.5

Organizer: *Martin Hromcik, Czech Technical University in Prague, Czech Republic*

Co-Organizer *Zdenek Hurak, Czech Technical University in Prague, Czech Republic*

Co-Organizer *Michael Sebek, Czech Technical University in Prague, Czech Republic*

Chair: *Martin Hromcik, Czech Technical University in Prague, Czech Republic*

Co-Chair: *Zdenek Hurak, Czech Technical University in Prague, Czech Republic*

1. (13:00) Polynomial Matrix Approach to Independent Component Analysis: (Part II) Application

Kenji Sugimoto, Nara Institute of Science and Technology, Japan

Arata Suzuki, Nara Institute of Science and Technology, Japan

Masuhiko Nitta, Nara Institute of Science and Technology, Japan

Naotoshi Adachi, Nara Institute of Science and Technology, Japan

2. (13:20) On computing determinants of large Sylvester type matrices

Petr Kujan, Czech Technical University, Faculty of Electrical Engineering, Czech Republic

Martin Hromcik, Czech Technical University, Faculty of Electrical Engineering, Centre for Applied Cybernetics, Czech Republic

Sebek Michael, Czech Technical University, Faculty of Electrical Engineering, Czech Republic

POLYNOMIAL DESIGN METHODS: APPLICATIONS

 Friday 08-Jul-2005 13:00-15:00, Meeting Room 3.5

Organizer: *Martin Hromcik, Czech Technical University in Prague, Czech Republic*

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Co-Organizer *Michael Sebek, Czech Technical University in Prague, Czech Republic*

Chair: *Martin Hromcik, Czech Technical University in Prague, Czech Republic*

Co-Chair: *Zdenek Hurak, Czech Technical University in Prague, Czech Republic*

3. (13:40) Idle Speed Control of Port-Injection Engines via the Polynomial Equation Approach

Alessandro Casavola, University of Calabria, Italy

Leonardo Albertoni, University of Florence, Italy

Andrea Balluchi, Parades S.r.l, Italy

Claudio Gambelli, University of Florence, Italy

Edoardo Mosca, University of Florence, Italy

Alberto L. Sangiovanni-Vincentelli, University of California at Berkely, United States

4. (14:00) Adaptive Control of Twin Rotor MIMO System: Polynomial Approach

Marek Kubalcik, Tomas Bata University, Czech Republic

Vladimír Bobál, Tomas Bata University, Czech Republic

Petr Chalupa, Tomas Bata University, Czech Republic

5. (14:20) Adaptive control of a coupled drives apparatus using dual Youla-Kucera parametrization

Frantisek Gazdos, Tomas Bata University, Czech Republic

Petr Dostal, Tomas Bata University, Czech Republic

6. (14:40) Case Studies of Coefficient Diagram Method - Practical Polynomial Design Approaches -

Shunji Manabe, Retired, previously Tokai University, Japan