



2000  
No. 2  
April

# Newsletter

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## Informal Meeting of the Elected IFAC Officers

**Laxenburg, Austria  
25 - 27 March, 2000**

As has been a tradition since the Presidency of Professor Sawaragi 1981 - 84, the Elected IFAC Officers held their annual meeting at the premises of the IFAC Secretariat in Laxenburg. This meeting usually serves the purpose of taking a close look at the administrative operation of the Federation.

IFAC is in the fortunate situation of having a very stable and efficient Secretariat. The mode of operation and the requirements of the work have changed enormously over the past decade. From the use of telex, electric typewriters to the use of fax, computers, e-mail and internet - the Secretariat has coped with all innovations and the enormous progress in the communications world. Currently a Task Force made up of Spanish, Korean and Austrian experts is working at a new design of the IFAC homepage with a view to having even better access to IFAC activities. The Secretariat staff was in the past and will in the future be trained to be able to handle updates and changes of the homepage independently.

But the annual meeting is not only dedicated to looking at the operation of the Secretariat, but also to looking at developments within the Federation. It is important to note, however, that no decisions are taken at this Informal Meeting.

Another aspect of this meeting but also of the annual Council- and Related Meetings is the presentation of IFAC to the outside world. In the framework of the Laxenburg meetings, the President of IFAC used the opportunity to give a lecture to an audience of scientists, people from industry and journalists on the subject "Control and Society". The summary of the lecture was published in the last issue of the Newsletter and the full version is available from the Secretariat (by e-mail or mail) upon request. At the Council meeting this summer in Greece there will be a panel discussion with several key persons of the IFAC Technical Board and representatives from the Technical Chamber of Greece.

G. Hencsey

## Aerospace Applications of the Global Positioning System IFAC Workshop

**Breckenridge, Colorado, USA 31 January - 02 February 2000**

A workshop addressing aerospace applications of the Global Positioning System (GPS) was convened in Breckenridge, Colorado, USA 31 January - 02 February 2000. Attending the workshop were 107 participants from Government, Industry and Academe representing 12 countries. The workshop comprised one plenary and six multi-presentation sessions. In addition to IFAC, other sponsors of the workshop included the European Space Agency, the Institute of Navigation, the American Astronautical Society, and the Ohio University Division of Lifelong Learning. Registration for the workshop opened the evening of 30 January with a wine and cheese social with breakfast served at each morning session. The first two days were conducted in "ski" format; that is, sessions convened for three hours in the morning with a long break in the middle of the day and another three hour session in the evening. This format allowed the participants to participate in the workshop sessions with sufficient time to enjoy the unique venue offered by the Breckenridge Ski Area. The majority of the participants appreciated the slope-side conference facilities and group-discounted lift passes. The third day was conducted in a conventional full-day format.

Colonel Hoene's presentation was entitled "GPS - The Way Forward" and focused on current and future upgrades to the GPS constellation. He emphasized the broad scope of GPS applications and discussed the fact that, even though the system was designed to support the US Military, that it has found a plethora of civilian applications. These applications range from precision farming, to search and rescue, to outdoor recreational activities such as hiking, backpacking, and fishing.

The emphasis of the first session was on GPS Applications to Range Safety. The five presentations in this session emphasized recent developments ranging from the generation of requirements for range safety systems to the development of an operational GPS based range tracking system suited for use at any launch site location in the world. The second session included six presentations in the area of GPS Use for Satellite Formation-Fly, Rendezvous, and Docking. The majority of the excellent presentations focused on formation-flying of satellite constellations. On the second day of the workshop, the two sessions were, in the morning, Rocket, Missile and Launch Vehicle Applications and, in the afternoon, Aircraft Applications. The morning session presentations complemented those presented the previous morning in the range safety session with significant emphasis on implementation

The plenary presentation was delivered by Colonel Pete Hoene, Deputy Director of the United States Air Force Global Positioning System Joint Program Office.

Papers from the February 2000 Issue

Experimental Demonstration of Reset Control Design  
(Y. Zheng, Y. Chait, C.V. Hollot, M. Steinbuch, M. Norg)  
Grey Box Fault Detection of Heat Exchangers  
(E. Weyer, G. Szederkényi, K. Hangos)  
Continuous Gain Scheduling Control for a Micro-positioning System: Simple, Robust and no Overshoot Response  
(S.Q. Lee, Y. Kim, D.-G. Gweon)  
A Flexible Interactive Environment for Embedded Controllers  
(J. Eker, A. Blomdell)  
On-line PID Tuning for Engine Idle-speed Control Using Continuous Action Reinforcement Learning Automata  
(M.N. Howell, M.C. Best)  
Optimization of Power System Controls Within a Simulation Software Package  
(X. Lei, D. Povh)  
Monitoring and Control of Fluid-bed Drying of Tea  
(S.J. Temple, S.T. Tambala, A.J.B. van Boxtel)

**Special Section on Control Applications in Marine Systems**

Preface  
(T.I. Fossen)  
An Adaptive Neural-net Controller System for an Underwater Vehicle  
(K. Ishii, T. Ura)  
Autopilot and Track-keeping Algorithms for High-speed Craft  
(C.G. Källström)  
Decoupled Cushion Control in Ride Control Systems for Air Cushion Catamarans  
(D. Bertin, S. Bittanti, S.M. Savaresi)  
Positioning of Small-waterplane-area Marine Constructions with Roll and Pitch Damping  
(A.J. Sørensen, J.P. Strand)  
Bayesian Estimation of Directional Wave Spectra Based on Ship Motions  
(T. Iseki, K. Ohtsu)

IFAC Meeting Papers – Keyword Listing  
Information Control in Manufacturing, Nancy/Metz, France, June 1998

Index of IFAC Meeting Papers  
Conference Calendar

Papers from the March 2000 Issue

Systematic  $H_2$  Weighting Function Selection and its Application to the Real-time Control of a Vertical Take-off Aircraft  
(J. Hu, C. Bohn, H.R. Wu)  
A New Method of Generating Differential GPS Corrections  
(J.L. Martinez, M.A. Martinez, A. Garcia-Cerezo)  
Design of a Torque Observer for Detecting Abnormal Load  
(M.-C. Tsai, E.-C. Tseng, M.-Y. Cheng)  
Control of an Alternating Aerobic-anoxic Activated Sludge System – Part I: Development of a Linearization Based Modelling Approach  
(J.S. Anderson, H. Kim, T.J. McAvoy, O.J. Hao)  
Control of an Alternating Aerobic-anoxic Activated Sludge System – Part II: Optimization Using a Linearized Model  
(H. Kim, T. McAvoy, J.S. Anderson, O.J. Hao)  
Application of the Extended Kalman Filter to a

Lysine Hydrochlorination Process  
(E. Boje, M. Petrick)  
Hybrid Modelling of a Sugar Boiling Process  
(P. Lauret, H. Boyer, J.C. Gatina)

**Special Section on Mineral, Mining and Metal Processing**

Preface  
(J. Heidepriem)  
Modelling of Visual Flotation Froth Data  
(H. Hyötyniemi, R. Ylinen)  
An Implementation of Generalized Predictive Control in a Flotation Plant  
(M. Suichies, D. Leroux, C. Dechert, A. Trusiak)  
Implementation and Industrial Experiences of Advanced Control and Monitoring in Coal Injection  
(W. Birk, A. Johansson, R. Johansson, A. Medvedev)  
Hot Strip Mill Tension-looper Control Based on Decentralization and Coordination  
(K. Asano, K. Yamamoto, T. Kawase, N. Nomura)  
Implementation of a Predictive Controller for Thermal Treatment Processes  
(C. Lazar, E. Poli, B. Mustata)

IFAC Meeting Papers – Keyword Listing  
Artificial Intelligence in Real-time Control, Arizona, USA, October 1998

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Papers from the April 2000 Issue

Nonparametric Identification and Adaptive Control of an Anaerobic Fluidized Bed Digester  
(N. Hilgert, J. Harmand, J.-P. Steyer, J.-P. Vila)  
Tuning of Observer-based Estimators: Theory and Application to the On-line Estimation of Kinetic Parameters  
(M. Perrier, S. Feyo de Azevedo, E.C. Ferreira, D. Dochain)  
Fuzzy Reasoning in Co-operative Supervision Systems  
(A. Evsukoff, S. Gentil, J. Montmain)  
Challenges in the Control and Autonomy of Communication Satellites  
(E. Gottzein, W. Fichter, A. Jablonski, O. Juckenhöfel, M. Mittnacht, C. Müller, M. Surauer)  
Ship Steering Control System Optimization Using Genetic Algorithms  
(E.W. McGookin, D.J. Murray-Smith, Y. Li, T.I. Fossen)  
Model Predictive Control of an Electric Arc Furnace Off-gas Process  
(J.G. Bekker, I.K. Craig, P.C. Pistorius)  
Identification of Aircraft Gas Turbine Dynamics Using Frequency-domain Techniques  
(A. Evans, D. Rees, A. Borrell)

IFAC Meeting Papers – Keyword Listing  
Nonlinear Systems Design, Enschede, The Netherlands, July 1998

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Impressum:

Medieninhaber und Herausgeber:  
International Federation of Automatic Control (IFAC),  
Zürich  
Schlossplatz 12, A-2361 Laxenburg, Austria

Verlagsort und Redaktion:  
Dipl.-Ing. Dr. Gusztáv Hencsey  
Schlossplatz 12, A-2361 Laxenburg

Hersteller:  
Artur Schefczik & Sohn  
August-Reuss-Gasse, A-1130 Wien

Editor: Gusztáv Hencsey  
Layout: Ernestine Rudas  
published bimonthly

**IFAC Affiliate Program  
10th Anniversary**

The IFAC Affiliate Program was launched in August 1990 as a way of allowing more direct involvement of individuals in the work of IFAC and of permitting direct access for event organizers to individuals and vice-versa.

The Secretariat has closely monitored the development of the Program by making annual statistics and by having a triennial review by which Affiliates have to confirm their registration.

Over the years the number of Affiliates has moved in a cycle, going from between 1400 and 1700 after each triennial review to 2500 to 3000 before each such review.

Countries with the largest numbers of Affiliates are the USA, the UK and Germany, followed by Turkey, China, France and Romania. Countries where the number of Affiliates has multiplied recently are Austria, Croatia, Cuba, the Czech Republic, Hungary, Korea, Rep., Portugal, Romania, the Slovak Rep., Slovenia, Turkey, Sweden and the United Kingdom.

Affiliate registration forms are always available at IFAC events, directly from the IFAC Secretariat or from the IFAC homepage. In addition to IFAC Affiliates there is a number of persons (about 500) who receive the Newsletter electronically from the IFAC Secretariat and a further group (about 200) who just want to be notified when the Newsletter is published on the web.

The advantage of being an Affiliate is the registration of keywords which is mutually beneficial for Affiliates and event organizers. When they publish their Calls for Papers, event organizers receive a list with names and addresses of persons interested in the subject from the IFAC Secretariat.

Keywords where the interest has grown significantly over the years are: Computers in Control, Chemical Process Control and Automotive Control. Being at the cutting edge of developments is among the most important considerations of IFAC. The Affiliate Program is one of many factors which shows the direction into which the Federation is going.

Gusztáv Hencsey

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and applications of GPS on actual flight systems. The afternoon session provided an extremely informative set of presentations on GPS local and wide area augmentation and instrument approach systems for aircraft. On the third and final day of the workshop, the morning session focused on Attitude Determination using GPS-Based Systems and the afternoon session was devoted to Satellite Applications. Eight presentations covering a broad range of attitude determination applications were presented in the morning session. In the afternoon session, seven presentations were delivered that addressed more general applications of the GPS to satellite systems.

The quality of the presentations was outstanding. No papers were withdrawn resulting in a full agenda for all three days. The European Space Agency will produce the workshop proceedings document comprising all the materials presented and any papers that were generated for the workshop. The proceedings will be available in the early summer.

Angie Bukley, Workshop General Chair



# FORTHCOMING EVENTS 2000\*

2000  
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Title	2000	Place	Deadline	Further Information
IFAC/CIGRE Symposium Power Plants and Power Systems	April 26 - 29	Brussels Belgium	-	IBRA/BIRA Federation Attn. Mr. F. Desclefs - General Secretary Ravensteinstreet 3 B-1000 Brussels, Belgium FAX: +32 /2 /511 7004 e-mail: ifac2000@skynet.be http: www.fpms.ac.be/~ibra/
IFAC Workshop 6 <sup>th</sup> Algorithms and Architectures for Real- Time Control - AARTC2000	May 15 - 17	Palma de Mallorca, Spain	-	Prof. Vicente Hernandez Garcia Dept. of Information Systems and Computation Polytechnic University of Valencia Camino de Vera s/n E-46020 Valencia, Spain FAX: +34 96 3877359 e-mail: vhernand@disic.upv.es http://www.disca.upv.es/aartc2000
IFAC Workshop Real Time Programming - WRTP2000	May 17 - 19	Palma de Mallorca, Spain	-	Prof. Alfons Crespo Dept. of Information Systems and Computation Polytechnic University of Valencia Camino de Vera s/n E-46020 Valencia, Spain FAX: +34 96 3877 579 e-mail: alfons@disca.upv.es http://www.disca.upv.es/wrtp2000
IFAC Workshop Instability Resolution in Regions of Long Confronted Nations - SWIIS 2000	May 22 - 24	Skopje MK	-	Dr. Mile J. Stankovski Fac. of Electrical Engineering Karpos 2 B.B., POB 574 MK-91000 Skopje, Rep. of Macedonia FAX: +389/91/364262 e-mail: milestk@freemail.org.mk http://www.etf.ukim.edu.mk/~swiis
IFAC Symposium 9 <sup>th</sup> Control in Transportation Systems 2000	June 13 - 15	Braunschweig Germany	-	Prof. E. Schnieder Inst. f. Regelungs- und Automatisierungs- technik, Langer Kamp 8 D-38106 Braunschweig, Germany Fax: +49/531/391 5197 e-mail: trans-system2000@tu-bs.de http://www.ifra.ing.tu-bs.de/ifac/
IFAC Symposium Fault Detection, Supervision and Safety for Technical Processes - SAFEPROCESS 2000	June 14 - 16	Budapest Hungary	-	Prof. Andras Edelmayer Computer and Automation Institute H A S Kende u. 13 - 17 H-1111 Budapest, Hungary FAX: +36/1/386 9378 e-mail: edelmayer@sztaki.hu http://www.sztaki.hu/conferences/safeprocess2000
IFAC Symposium Advanced Control of Chemical Processes - ADCHEM 2000	June 14 - 16	Pisa Italy	-	IFAC ADCHEM 2000 Prof. Alessandro Brambilla Dip. of Chem. Engg., University of Pisa Via Diotisalvi, 2 I-561226 Pisa, Italy FAX: +39/50 511266 e-mail: adchem2000@ing.unipi.it http://adchem-2000@diccism.unipi.it http://adchem-2000.cheme.cmu.edu
IFAC Symposium 7 <sup>th</sup> Automated Systems Based on Human Skill - Joint Design of Technology and Organization	June 15 - 17	Aachen Germany	-	VDI/VDE GMA IFAC - NMO Secretariat POB 10 11 39 D-40002 Düsseldorf, Germany FAX: +49/211/6214 161 e-mail: rosenzweig@vdi.de http://www.vdi.de/gma/call-joint-design.htm
IFAC Conference Control Systems Design	June 18 - 20	Bratislava Slovak Rep.	-	Prof. Stefan Kozak Ilkovicova 3 SK-81219 Bratislava, Slovak Rep. FAX: 42/77/65429734 e-mail: kozak@kasr.elf.stuba.sk http://www.kasr.elf.stuba.sk/csd2000

# FORTHCOMING EVENTS (ctd.)

Title	2000	Place	Deadline	Further Information
IFAC Symposium Robust Control Design - ROCOND 2000	June 21 - 23	Prague Czech Rep.	-	Dr. Michael Sebek Institute of Information Theory and Automation, CZ-18208 Prague, Czech Rep. FAX: +420/2/6884554 e-mail: msebek@utia.cas.cz
IFAC Symposium 12 <sup>th</sup> System Identification - SYSID 2000	June 21 - 23	Santa Barbara CA, USA	-	SYSID 2000 Secretariat Dept. of El. & Comp. Engineering University of California Santa Barbara, CA, 93106, USA FAX: +1/805/893 3262 e-mail: sysid2000@ece.ucsb.edu <a href="http://www.ece.ucsb.edu/ceec/SYSID2000">http://www.ece.ucsb.edu/ceec/SYSID2000</a>
American Control Conference ACC2000 (in cooperation with IFAC)	June 28 - 30	Chicago, IL USA	-	Prof. A. Haddad AACC Secretariat Dept. of ECE, North Western Univ. 2145 Sheridan Road Evanston, IL 60208-3118, USA FAX: +1/647/491 4456 e-mail: acc00@ece.nwu.edu <a href="http://che.vill.edu/acc2000/acc.html">http://che.vill.edu/acc2000/acc.html</a>
IFAC Workshop Control Applications of Optimization	July 3 - 6	St. Petersburg Russia	-	CAO 2000 Organizing Committee St. Petersburg State University Fac. of Applied Mathematics and Control Processes Bibliotechnaya pl. 2, Petrodvorets St. Petersburg 198904, Russia FAX: +7/812/428 7189 e-mail: cao2000@apmath.spbu.ru <a href="http://www.apmath.spbu.ru/cao2000/">http://www.apmath.spbu.ru/cao2000/</a>
Asian Control Conference ASCC 2000 (in cooperation with IFAC)	July 4 - 7	Shanghai China	-	The Secretariat of ASCC' 2000 c/o Dept. of Automation Shanghai Jiaotong University Shanghai 200030, China FAX: +86/21/629 32045 e-mail: secretariat@ascc2000.sjtu.edu.cn <a href="http://ascc2000.sjtu.edu.cn">http://ascc2000.sjtu.edu.cn</a>
IFAC Conference Technology Transfer in Developing Countries Automation in Infrastructure Creation	July 5 - 7	Pretoria South Africa	-	Prof. Ian K. Craig Dept. of Electrical and Electronic Engg. University of Pretoria Pretoria, South Africa FAX: +27/12/362 5000 e-mail: icraig@postino.up.ac.za <a href="http://www.ee.up.ac.za/decom/">http://www.ee.up.ac.za/decom/</a>
IFAC/IFIP/IEEE Conference 2 <sup>nd</sup> Management and Control of Production and Logistics - MCPL 2000	July 5 - 8	Grenoble France	-	Prof. B. Descotes-Genon L A G, ENSIEG-INPG BP 46 F-38402 Saint Martin-d'Herès-Cedex France FAX: +33/04/76826388 e-mail: mcpl@lag.ensieg.inpg.fr <a href="http://www.w-lag.ensieg.inpg.fr/conferences/mcpl2000">http://www.w-lag.ensieg.inpg.fr/conferences/mcpl2000</a>
IFAC Conference Modelling and Control in Agriculture Horticulture and Post-Harvest Processing - AGRICONTROL 2000	July 10 - 12	Wageningen NL	-	Congress Office Wageningen Agricultural University Costerweg 50 NL-6701 BH Wageningen, Netherlands e-mail: Joost.Meulenbroek@alg.vl.wau.nl <a href="http://www.aenf.wau.nl/conf2000">http://www.aenf.wau.nl/conf2000</a>
IFAC Conference Manufacturing Modelling, Management and Control - MIM 2000	July 12 - 14	Patras Greece	-	MIM 2000 Symposium Secretariat Lab. for Automation and Robotics Dept. of El. & Computer Engg. GR-26500 Rio Patras, Greece FAX: +30/61/997309 e-mail: groumpos@ee.upatras.gr <a href="http://www.lar.ee.upatras.gr/mim2000/">http://www.lar.ee.upatras.gr/mim2000/</a>
IFAC Workshop Future Trends in Automation of the Mineral and Metal Processing	August 22 - 24	Cruise liner Silja Serenade Helsinki/Stockholm	-	Finnish Society of Automation MMM2000 Secretariat Asemapiällikönkatu 12 B FAX: +358/9/146 1650 e-mail: atufin@ibm.net <a href="http://kepo.hut.fi/">http://kepo.hut.fi/</a>
IFAC Conference 5 <sup>th</sup> Manoeuvring and Control of Marine Craft - MCMC 2000	August 23 - 25	Aalborg DK	-	Prof. Mogens Blanke Dept. of Control Engineering Aalborg University, Fredrik Bajers Vej 7C DK-9220 Aalborg, Denmark FAX: +45/98/151739 e-mail: mcmc2000@control.auc.dk <a href="http://www.control.auc.dk/MCMC2000">http://www.control.auc.dk/MCMC2000</a>

## FORTHCOMING EVENTS (ctd.)

Title	2000	Place	Deadline	Further Information
IFAC Symposium 8 <sup>th</sup> Computer Aided Control Systems Design - CACSD 2000	Sept. 11 - 13	Salford UK		CACSD 2000 Secretariat IEE Control, Savoy Place London WC2R 0BL, UK FAX: +44/171 497 3633 e-mail: scurwen@iee.org.uk <a href="http://www.iee.org.uk/Control/CACSD2000/">http://www.iee.org.uk/Control/CACSD2000/</a>
IFAC Workshop Linear Time Delay Systems	Sept. 11 - 13	Ancona Italy		Prof. Giuseppe Conte Dip. di Elettronica e Automatica Universita di Ancona Via Breccia Bianche I-60131 Ancona, Italy FAX: +39/071/2804334 e-mail: gconte@popcsi.unian.it <a href="http://dipmat.unian.it/LTDS2000">http://dipmat.unian.it/LTDS2000</a>
IFAC Symposium 4 <sup>th</sup> Intelligent Components and Instruments for Control Application - SICICA 2000	Sept. 13 - 15	Buenos Aires Argentina		AADECA Av. Callao 220 1o B 1022 Buenos Aires Argentina FAX: +54/1/372-3780 e-mail: gerencia@aadeca.net <a href="http://www.aadeca.org">http://www.aadeca.org</a>
IFAC Conference Mechatronic Systems	Sept. 18 - 20	Darmstadt Germany		VDI/VDE-GMA Mechatronics 2000 POB 10 11 39, D-40002 Düsseldorf, Germany FAX: +49/211/6214-161 e-mail: mechatronics2000@vdi.de <a href="http://www.vdi.de/gma/mechatronics2000.htm">http://www.vdi.de/gma/mechatronics2000.htm</a>
IAARC/CIB/IFAC Symposium (17 <sup>th</sup> ) Automation and Robotics in Construction ISARC 2000	Sept. 18 - 20	Taipei Taiwan		ISARC 2000 Secretariat Prof. H. Ping Tserng Dept. of Civil Engineering National Taiwan University No. 1, Roosevelt Rd. Sec. 4 Taipei, Taiwan 10617, ROC FAX: +886 2 2366 1640 e-mail: isarc17@ce.ntu.edu.tw <a href="http://www.ce.ntu.edu.tw/~isarc17">http://www.ce.ntu.edu.tw/~isarc17</a>
IFAC Symposium Robot Control - SYROCO 2000	Sept. 21 - 23	Vienna Austria		SYROCO 2000 Inst. for Handling Devices and Robotics Vienna University of Technology Favoritenstrasse 9, A-1040 Vienna, Austria e-mail: syroco@ihrt.tuwien.ac.at <a href="http://www.ihrt.tuwien.ac.at/SYROCO/">http://www.ihrt.tuwien.ac.at/SYROCO/</a>
IFAC Symposium Artificial Intelligence in Real-Time Control - AIRTC 2000	Oct. 2 - 4	Budapest Hungary		Prof. Imre Rudas Nepszinhaz u. 8 H-1081 Budapest, Hungary FAX: +36/1/333 9183 e-mail: rudas@zeus.banki.hu
Latin American Control Conference (in cooperation with IFAC)	Nov. 1 - 3	Cali Colombia		Prof. E. Naranjo Perez e-mail: fnaranjo@verne.cua.edu.co
IFAC Workshop Bio-Robotics, Information Technology and Intelligent Control for Bio-production Systems - BIO-ROBOTICS II	Nov. 25 - 26	Osaka area Japan		Prof. Naoshi Kondo Faculty of Agriculture Okayama University 1-1-1, Tsushima-Naka Okayama 700-8530, Japan FAX: +81/86/251-8351 e-mail: nkondo@cc.okayama-u.ac.jp
IFAC Workshop Distributed Computer Control Systems 2000	Nov. 29 Dec. 1	Sydney Australia	3 July 2000	Dr. Arcot Sowmya School of Computer Science and Engineering, University of New South Wales Kensington, NSW 2052, Australia FAX: +61 2 9385 1814 e-mail: sowmya@cse.unsw.edu.au <a href="http://www.cse.unsw.edu.au/~dccs2000/">http://www.cse.unsw.edu.au/~dccs2000/</a>
IFAC/IEEE Symposium 5 <sup>th</sup> Advances in Control Education ACE - 2000	Dec. 17 - 19	Gold Coast Australia	30 March 2000	Dr. Ljubo Vlacic School of Microelectronic Engg. Griffith University Nathan, Qld. 4111, Australia FAX: +61/7/3875 5384 e-mail: ace2000@me.gu.edu.au <a href="http://www.gu.edu.au/centre/ics/ace2000/">http://www.gu.edu.au/centre/ics/ace2000/</a>

\* The list of events as of 2001 will be published in the next issue of the IFAC Newsletter

## Papers

Model-based Iterative Learning Control with a Quadratic Criterion for Time-varying Linear Systems  
(J.H. Lee, K.S. Lee, W.C. Kim)

## Brief Papers

On the Approximation of Delay Elements by Feedback  
(C. Battle, A. Miralles)

Stability Preserving Interpolation Methods for the Synthesis of Gain Scheduled Controllers  
(D.J. Stilwell, W.J. Rugh)

Parallel Structure and Tuning of Fuzzy PID Controller  
(Jian-Xin Xu, C.-C. Hang, Chen Liu)

Unfalsified Model Parametrization Based on Frequency Domain Noise Information  
(Tong Zhou)

Control of Nonlinear Systems Using Generalized Invariants  
(A. Palazoglu, A. Karakas)

Selection of Measurement Locations for the Control of Rapid Thermal Processor  
(C.J. Huang, C.C. Yu, S.H. Shen)

An Adaptive PID Learning Control of Robot Manipulators  
(T.-Y. Kuc, W.-G. Han)

Cyclic Linear Differential Automata: A Simple Class of Hybrid Dynamical Systems  
(A.V. Savkin, A.S. Matveev)

Extended H infinite Control - H infinite Control with Unstable Weights  
(T. Mita, X. Xin, B.D.O. Anderson)

On the Limitations of some Variable Structure Output Feedback Controller Designs  
(B. Edwards, S.K. Spurgeon)

Some Results on Optimal Experiment Design  
(U. Forssell, L. Ljung)

## Survey Paper

Constrained Model Predictive Control: Stability and Optimality  
(D.Q. Mayne, J.B. Rawlings, C.V. Rao, P.O.M. Scokaert)

## Papers

Regulation by Tables  
(J. Glaria, R. Rojas, M. Salgado, M. Vera)

A Weighted View on the Partial Least-squares Algorithm  
(D. Di Ruscio)

## Brief Papers

Robust Filtering with Guaranteed Energy-to-Peak Performance - An LMI Approach  
(R.M. Palhares, P.L.D. Peres)

On Simultaneous H infinite Control and Strong H infinite Stabilization  
(Y.-Y. Cao, J. Lam)

MIMO Fuzzy Internal Model Control  
(C. R. Edgar, B.E. Postlethwaite)

Task Space Regulation of Cooperative Manipulators  
(F. Caccavale, P. Chiacchio, S. Chiaverini)

A Model Reference Adaptive Controller for Systems with Uncertain Relative Degrees  $r, r+1$  or  $r+2$  and Unknown Signs of High Frequency Gains  
(Yoshihiko Miyasato)

Stability Analysis of Digital Feedback Control Systems with Time-varying Sampling Periods  
(B. Hu, A.N. Michel)

Robust Decentralized Adaptive Stabilization of Interconnected Systems with Guaranteed Transient Performance  
(Ying Zhang, Changyun Wen, Yeng Chai Soh)

## Programmable Devices and Systems - PDS 2000

### IFAC Workshop

Ostrava, Czech Republic

8 - 9 February, 2000

The IFAC Workshop on Programmable Devices and Systems - PDS 2000, organised by the Department of Measurement and Control, Technical University of Ostrava, Czech Republic in co-operation with the Institute of Electronics, Silesian Technical University of Gliwice, Poland was held in Ostrava, Czech Republic from February 8-9, 2000. The workshop is a continuation of the conferences PDS, which were held in Ostrava in 1996 and in Gliwice in 1995 and 1998.

On the basis of its organisers' experience and participants' opinions it has been decided to continue this scope in the PDS 2000 IFAC workshop. The organisers' belief that there are some problems specific in the area of programmable devices and systems sufficiently justifies the decision to organise the PDS 2000 IFAC Workshop.

The main objective is to provide a forum to present the latest research results and experiences in the area of the design and application of programmable devices and systems. PDS is a forum to discuss the current status and future trends of this particular branch of the programmable devices in measurement, control, and computer science.

The topics of the workshop were i) Industrial Programmable Controllers & PLCs, ii) Field Programmable Logic (PLD, CPLD, FPGA) and High End Design Means, iii) Microprocessor and Micro-controllers, iv) Signal Processing, and v) Reliability and Safety of Circuits and Systems.

The IFAC Technical Committees - Components and Instruments and Safety of Computer Control Systems, sponsored the workshop.

During the two days of the PDS 2000 workshop 50 papers presented both theoretical and practice-oriented viewpoints from 11 countries. All papers accepted for presentation appear in the Preprints of the meeting and will be distributed to the participants. Papers duly presented are archived and offered for sale, in the form of Proceedings, by Elsevier Science Ltd., Oxford, UK.

The presented papers are further screened for possible publication in the IFAC journals Automatics and Control Engineering Practice. Copyright of materials at an IFAC meeting is held by IFAC.

The technical programme of the workshop included technical visits to enterprises ON SEMI-CONDUCTOR - TESLA SEZAM and MOTOROLA Design Centre. The social programme of the workshop included a chamber music concert.

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VŠB Technical University of Ostrava, CZ.

Vilém Srovnal, NOC Chair,  
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Acknowledgement to IFAC would be appreciated.