IFAC Technical Committees and their Scopes

The Technical Board of IFAC is composed of nine Coordinating Committees, each of which has several Technical Committees under its wings. In this issue of the Newsletter and in the ones to come, we are going to introduce the Technical Committees, their chairs and their scopes to our readers. In this issue we present the Coordinating Committee on Systems and Signals.

Coordinating Committee on Systems and Signals
Chair: R. Ortega France
ortega@iss.supelec.fr

Addresses all aspects of system modeling and identification, from theoretical and methodological developments to practical applications. Considers model selection, model fitting, identification methods, robust estimation, tracking and adaptation, measures of model fit, model validation, fault detection, linear/nonlinear models, experiment design, and automatic identification methods. Includes nonparametric, state-space, and frequency domain methods as well as distributed parameter models. Promotes interactions among modeling, control and signal processing.

Technical Committee on Modelling, Identification, and Signal Processing
Chair: L. Guo
China, P.R.
lguo@iss03.iss.ac.cn

Fosters continuous and discontinuous adaptation rules for prediction, filtering and control. Includes model-based and data-based adaptive control, learning of functional relationships for adaptive control, plugging intelligence into adaptive systems, gain scheduling techniques like LPV methodologies. Considers autotuning of controllers, control design based on iterative schemes, supervised switching control, randomized algorithms for control design, safety critical implementations, adaptive techniques for fault detection and isolation, full range of industrial, aerospace and marine applications.

Technical Committee on Discrete Event Dynamic Systems
Chair: X.R. Cao
Hong Kong,
China, P.R.
eecao@ust.hk

Focuses on the analysis and control of hybrid systems and discrete event dynamic systems (DEDS) characterized by (countably) finite state spaces with evolution by "jumps" (discrete events) from one state to another. Almost human-made systems with a finite number of resources shared by several users. Dynamic interactions characterized by (a)synchronization, concurrency, and conflicts. Considers both timed and untimed relationships based on algebraic approaches (queuing theory, perturbation analysis, etc.) and logical relationships based on formal languages (Petri nets, etc.). Applications include manufacturing systems, computer and communications networks, and traffic control.

Technical Committee on Fuzzy and Neural Systems
Chair: P.J. Antsaklis
USA
antsaklis.1@nd.edu

Fosters all aspects of fuzzy and neural systems relevant to control theory and applications: modeling, identification, control design, adaptation, stability analysis, implementation, and evaluation. Definition of operating constraints and multiple performance objectives; motivation for development of theoretical foundations; awareness of computational issues and software support. Promotes information exchange among practicing industrial engineers and the academic community to articulate industrial state-of-the-art applications.

Contents:

- IFAC Technical Committees and their Scopes – CC on Systems and Signals
- Fault Detection, Supervision and Safety for Technological Processes – SAFEPROCESS 2000
- IFAC Symposium Hungary, June 2000
- Control Engineering Practice Volume 8, Nos 8, 9 & 10
- Forthcoming Events
- Control Systems Design – CSD 2000
- IFAC Conference Slovak Republic, June 2000
- Modelling and Control in Agriculture, Horticulture and Post-Harvest Processing – AgriControl 2000
- IFAC Conference The Netherlands, July 2000
- Papers from Automatica, No 11, 2000
- Annual Reviews of Control Contents
- Who is Who in IFAC Romeo Ortega, Member of the Technical Board, CC Chair, Systems and Signals
Fault Detection, Supervision and Safety
For Technical Processes
SAFEPROCESS 2000
4th IFAC Symposium
Budapest, Hungary, 14 – 16 June 2000

The 4th IFAC Symposium on Fault Detection, Supervision and Safety for Technical Processes (SAFEPROCESS 2000) was held at the Hotel Agro, Budapest, Hungary. The Symposium was sponsored by the IFAC Technical Committee on Fault Detection, Supervision and Safety of Technical Processes and co-sponsored by the TCs on Automotive Control, Transportation, and Real-Time Control, and Social Impact of Automation. It was organized by the Committee of the Hungarian Academy of Sciences, Budapest, Hungary, on behalf of the Hungarian IFAC. It was held in coordination with the KKr-Bremsen, Budapest, and Nuclear Power Plant Paks, Hungary. The theme of the symposium was: the reliability, availability and safety of technical processes and their control systems.

The opening ceremony delegates were welcomed by András Edelmayr on behalf of the National Organizing Committee (NOC). Addresses were given by Professor Jozsef Bokor, chairman of the International Programme Committee (IPC) and, on behalf of IFAC, by Professor Rolf Isermann, Vice-President. The Budapest symposium had a distinctive character. It lent a special significance to this meeting that it took place at the turn of the millennium. It certainly inspired the experts, coming together from all corners of the world (together from 28 countries), to take a critical look at the development of the field during the century ending 2000, and to chart its future development for the one to start.

SAFEPROCESS 2000 provided an important forum for research in the field of systems science and systems engineering and for the development of methodologies for the design and operation of safety-related systems. The 36 technical sessions of the program were compiled from 217 carefully selected, invited and regular papers, in 566 pages. These comprised 6 plenary sessions covering the fields of diagnosis in process control and automation, estimation, statistical reviews and surveys, contributed papers describing the latest results, and 9 specially organized invited sessions striking a good balance between application and theory. The papers were published in symposium preprints and finally included in the volume excluding the papers of no-show authors (there were 12 papers whose authors did not show up at the symposium).

Each of the three days featured plenary lecture sessions followed by morning, midday and afternoon sessions of two hours (max. 6 papers each). The programme was strong both in applications such as automotive engineering and process control and in theoretical aspects such as robust estimation and detection filters, fault tolerant control, neural networks and fuzzy reasoning. The selected papers, to the extent feasible, had been pre-reviewed by the IPC Committee into parallel tracks each of which featured a particular theme. Virtually, these tracks covered the established and emerging aspects of safety intensive systems.

The organizers of the symposium had the task to prepare the symposium on the basis of the contributed papers, selecting the plenary lectures and organizing them in theoretical areas such as robust estimation and detection filters, fault tolerant control, neural networks and fuzzy reasoning.

Control Engineering Practice
A Journal of IFAC the International Federation of Automatic Control
Papers from the August 2000 Issue

IFAC Meeting Papers - Keyword Listing
Control (K. Kim)

IFAC Meeting Papers - Conference Calendar
Papers from the September 2000 Issue


IFAC Meeting Papers - Key Note List
Index of IFAC Meeting Papers Conference Calendar

Papers from the October 2000 Issue

IFAC Meeting Papers - Keywords List
Low Cost Automation, Shenyang, China, September 1998
Index of IFAC Meeting Papers Conference Calendar
The IFAC Conference "Control Systems Design" (CSD2000) sponsored by the IFAC Technical Committee on Control Design, was convened in Bratislava, Slovak Republic, from June 18-20, 2000. The Conference was organized by the Faculty of Electrical Engineering and Information Technology of the Slovak University of Technology in Bratislava, Slovak Republic, on behalf of the Slovak Society of Cybernetics and Informatics, which is the Slovak IFAC National Member Organization. From the organisational point of view it was one of the triple of subsequent "Central-European" IFAC events organized in June (SAFEPROCESS – Budapest, Hungary, CSD – Bratislava, Slovak Republic, ROCOND – Prague, Czech Republic). The IFAC Conference CSD2000 has been considered a direct continuation of the two preceding IFAC Workshops "New Trends in Design of Control Systems" held in 1994 and 1997 respectively at Smolenice, Slovak Republic.

The aim of the IFAC Conference "Control Systems Design" was to bring together researchers and practitioners dealing with theoretical and applied areas of Control Engineering to report on latest theoretical developments as well as applications in a variety of practical problems. The Conference was specific by its interdisciplinary character reflected by a wide range of addressed topics (Linear and Non-linear Control, Adaptive and Self-Tuning Control, Robust Control, Discrete Event Dynamic Systems Control, Predictive Control, Intelligent Control and Manufacturing). A number of scientists and researchers from world-wide leading research institutions and universities of more than 25 countries participated in the Conference and presented 110 papers organised within one plenary, six regular, two invited and four poster sessions covering the following fields:

- Linear and Non-linear Control Systems Design
- Predictive Control Systems Design
- Discrete Event Dynamic Systems Design
- Robust Control Systems Design
- Intelligent Control Systems Design
- Control Systems Design Applications

A Round Table Discussion with the title "Quo Vadis, Control Systems Design?" allowed the attendees to join a broad discussion on the acceptance of new control methods in practice in individual countries. It is not an exaggeration to say that the IFAC Conference "Control Systems Design" had a high professional level and has contributed to outline the directions for further development of advanced control methods and their applications in practice.

All papers accepted for presentation and duly submitted in the camera-ready version were published in the Preprints of the Conference and distributed to the participants. The presented papers will be available as Proceedings published by Elsevier Science Ltd., Oxford, UK and those papers which have been recommended by the IPC and chairmen of pertinent sessions, are being screened for a possible publication in IFAC journals Automatica and Control Engineering Practice.

Stefan Kozák, IPC Chair
Mikuláš Huba, NOC Chair

This Newsletter may be reproduced in whole or in part. We encourage reprinting in national and local automatic control periodicals. Acknowledgement to IFAC would be appreciated.

Impressum:
Medieninhaber und Herausgeber:
International Federation of Automatic Control (IFAC),
Schloßplatz 12, A-2361 Laxenburg, Austria
Verlag und Redaktion:
Dipl.-Ing. Dr. Gustav Hencsey
Schlößplatz 12, A-2361 Laxenburg
Herausgeber:
Armin Schloßbeck & Sohn
August-Reuss-Gasse, A-1130 Wien

Editor: Gustáv Hencsey
Layout: Ernestine Rudas
Published bimonthly

Modelling and Control in Agriculture, Horticulture and Post-Harvest Processing – AgriControl2000
IFAC Conference
Wageningen, The Netherlands,
10 – 12 July, 2000

Over 100 participants from 28 countries participated in the first international IFAC Conference on agricultural applications of control. The conference was a natural follow-up of a series of successful workshops in the past years. Four plenary keynote addresses and two parallel streams of altogether 10 presentation sessions, as well as a poster session showed that agricultural and biological systems dynamics and control have become high-tech sectors, where ideas from the world of systems dynamics and control can be applied with profit.

A keynote address by K.C. Tien from Rutgers University (presently Ohio State University) presented an inside view in the challenges of production for advanced animal systems in space, from which much can be learned for advanced on-earth production as well. Successful sessions on climate control, protected cultivation and animal products have been organized, applying modern control theory, while assuring human and animal welfare.

A. Munack from Germany gave an interesting overview over expected developments in agricultural production, in the view of the needs of the growing human population. The challenge is to assure sustainability while increasing production and production quality. It is clear that precision agriculture, harvesting robots, and modern information technology, for instance, will play a key role. The methodology also requires advanced sensors and image processing techniques. This was the subject of an overview given by H. Murase from Japan, who coined the term Biomechatronics, and of an interesting session on this subject.

Production must be followed by storage and processing. Several sessions were devoted to these issues. J. van Impe (Belgium) showed how optimization techniques could be used to optimize identification experiments as well as to improve the performance of biosystems at the same time. W. de Jongen from The Netherlands discussed how research and development could be guided by the notion that production is part of a chain.

The best paper award was granted to R. Liniker from Israel, while the best poster award went to Mrs. P. Barreiro (from Spain, working in Belgium). The Conference allowed the participants to re-strengthen old friendships, and establish new contacts in a friendly atmosphere. The convener, G. van Straten and the chairman of the local organizing committee, J. Bontsema, received the outstanding contribution award. There were also awards for the chairman of the CC on Life Support Systems, Y. Hashimoto, and the Chairman of the TC on Modelling and Control in Agricultural Processes, I. Farkas and the TC on Intelligent Control in Agricultural Automation, H. Murase, for their continuous efforts to put the field of agricultural control on the IFAC agenda.

Several participants took the opportunity to familiarize themselves with the progress in this area in The Netherlands by taking part in the post-conference excursions to the co-organising IMAG and ATO, two outstanding research institutes in Wageningen.

G. van Straten, IPC Chair

Annual Reviews of Control
A Journal of IFAC the International Federation of Automatic Control

Annual Reviews of Control is the third journal of IFAC, after Automatica and Control Engineering Practice, published once a year. It carries review articles covering various aspects of the theory, tools, applications and implications of automatic control. At present, these papers are drawn from the material of the most recent IFAC symposia, conferences and workshops. Plans for the near future call for the inclusion of more extensive review articles written especially for the journal, and for an increase of frequency to two or perhaps per year. Annual Reviews is published by Elsevier Science Ltd.; in addition to the present institutional subscriptions, a reduced personal rate is under consideration.

CONTENTS

SOCIO-ECONOMIC ISSUES

Functional investigation concerning a sustainable social economic evolution of the globalized industrial society: E. WELFONDER

Decision support methods and applications: The cross-sections of economic and engineering or environmental factors: A. P. WIERZBICKI

AIR-TRAFFIC CONTROL

Research issues in the transition to free flight: S. KAHNE

PROCESS SUPERVISION

A survey on interval model simulators and their properties related to fault detection: J. ARMENGOL, L. TRAVE-MASSUYES, J. VEHI, J. L. DE LA ROSA

Process supervision by means of qualitative models: J. LUNZEE

Predicting the performance of soft sensors as a route to low cost automation: G.C. GOODWIN

SYSTEMS IDENTIFICATION


CONTROL OF NETWORK SYSTEMS

Control of dynamic systems in spatial networks: Application, results, and challenges: J. J. SPEYER

CONTROL THEORY

Control zeros and nonminimum phase LTI MIMO systems: K. LATAWIEC, S. BANKA and J. TOKARZEWKSI

WHO IS WHO IN IFAC

Prof. Romeo Ortega
Member of the Technical Board

Romeo Ortega was born in Mexico. He obtained his BSc in Electrical and Mechanical Engineering from the National University of Mexico, Master of Engineering from Polytechnic Institute of Leningrad, USSR, and the Doctor d’Etat from the Polytechnic Institute of Grenoble, France in 1974, 1978 and 1984 respectively.

He then joined the National University of Mexico, where he worked until 1989. He was a Visiting Professor at the University of Illinois in 1987–88 and at the McGill University in 1991–1992, and a Fellow of the Japan Society for Promotion of Science in 1990–1991. He has been a member of the French National Research Council (CNRS) since June 1992. Currently he is in the Laboratoire de Signaux et Systèmes (SUPELEC) in Paris. His research interests are in the fields of nonlinear and adaptive control, with special emphasis on applications.

Dr. Ortega is a Fellow Member of the IEEE. He was the Chairman of the IEEE Working Group on Adaptive Control and Systems Identification, of the IFAC Technical Committee on Adaptive Control and Tuning and of the Automatica Paper Prize Award Committee. He is currently a member of the IFAC Technical Board and chairman of the IFAC Coordinating Committee on Systems and Signals. He is an Associate Editor of Systems and Control Letters, International Journal of Adaptive Control and Signal Processing, European Journal of Control and IEEE Transactions on Control Systems Technology.

Systems over rings: Geometric theory and applications: G. CONTE, A. M. PERDON

Finite spectrum property and predictors: A.W. OLBROT

Algebraic tools for the control and stabilization of time-delay systems: J. J. LOISEAU

Laboratory experiments for control theory courses: A survey: P. HORACEK

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Framework-based software architectures for process automation systems: F. BUSCHMANN, A. GEISLER, T. HEIMKE and C. SCHUERDER

A comparison of CAN and TTP: H. KOPETZ

MOTION CONTROL

Control for simulated human and animal motion: M. VAN DE PANNE

Control of self-optimizing exercise machines: R. HOROWITZ, P. V. LI and J. SHIELDS
# FORTHCOMING EVENTS

As of this Newsletter Issue, the list of Forthcoming Events does not give mailing addresses, but lists e-mail addresses and homepage links to the event homepages wherever available. The list of events and all links are also given on the IFAC homepage at http://www.ifac-control.org

In the unlikely event that you do not have access to e-mail or the internet, please contact the IFAC Secretariat.

<table>
<thead>
<tr>
<th>Title</th>
<th>2000</th>
<th>Place</th>
<th>Deadline</th>
<th>Further Information</th>
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<tbody>
<tr>
<td>Latin American Control Conference (in cooperation with IFAC)</td>
<td>Nov. 1 – 3</td>
<td>Cali, Colombia</td>
<td></td>
<td><a href="http://www.control-automotico.net/lacongresso.htm">http://www.control-automotico.net/lacongresso.htm</a></td>
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<tr>
<td>IFAC Workshop Bio-Robotics Information Technology and Intelligent Control for Bio-production Systems BIO-ROBOTICS II</td>
<td>Nov. 25 – 26</td>
<td>Osaka area, Japan</td>
<td></td>
<td>e-mail: <a href="mailto:nkondo@cc.okayama-u.ac.jp">nkondo@cc.okayama-u.ac.jp</a></td>
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<tr>
<td>Title</td>
<td>2001</td>
<td>Place</td>
<td>Deadline</td>
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<tr>
<td>IFAC Workshop Advances in Automotive Control</td>
<td>March 28 – 30</td>
<td>Karlsruhe, Germany</td>
<td></td>
<td>e-mail: <a href="mailto:kiencke@iit.etec.uni-karlsruhe.de">kiencke@iit.etec.uni-karlsruhe.de</a></td>
</tr>
<tr>
<td>IFAC Workshop Intelligent Manufacturing Systems – IMS 2001</td>
<td>April 24 – 26</td>
<td>Poznan, Poland</td>
<td>31 Oct. 2000</td>
<td>e-mail: <a href="mailto:ims2001@put.poznan.pl">ims2001@put.poznan.pl</a></td>
</tr>
<tr>
<td>IFAC Workshop Mobile Robot Technology</td>
<td>May 21 – 22</td>
<td>Cheju, Korea</td>
<td>15 Jan. 2001</td>
<td>e-mail: <a href="mailto:ilshu@email.hanyang.ac.kr">ilshu@email.hanyang.ac.kr</a></td>
</tr>
<tr>
<td>IFAC Workshop Automatic Systems for Building Infrastructure in Developing Countries</td>
<td>May 21 – 23</td>
<td>Lake Ohrid, Macedonia (former Rep. of Yu)</td>
<td>31 Dec. 2000</td>
<td>e-mail: <a href="mailto:georgi@regpro.mechatronik.uni-linz.ac.at">georgi@regpro.mechatronik.uni-linz.ac.at</a></td>
</tr>
<tr>
<td>IFAC/CIGR Workshop Artificial Intelligence in Agriculture</td>
<td>June 4 – 6</td>
<td>Budapest, Hungary</td>
<td>15 Nov. 2000</td>
<td><a href="http://ffl.gau.hu/e-mail">http://ffl.gau.hu/e-mail</a>: <a href="mailto:ifrakas@ffl.gau.hu">ifrakas@ffl.gau.hu</a></td>
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<tr>
<td>IFAC Conference Computer Applications in Biotechnology – CAB 8</td>
<td>June 24 – 27</td>
<td>Quebec City, Canada</td>
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<td><a href="http://www.gch.polymtl.ca/cab8">http://www.gch.polymtl.ca/cab8</a></td>
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<tr>
<td>American Control Conference ACC01 (in co-operation with IFAC)</td>
<td>June 25 – 27</td>
<td>Arlington, Virginia, USA</td>
<td></td>
<td><a href="http://acc201">http://acc201</a>, che.ufl.edu/e-mail: <a href="mailto:krogh@ece.cmu.edu">krogh@ece.cmu.edu</a></td>
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<tr>
<td>IEE/ASME Int'l Conference Advanced Intelligent Mechatronics (AIM)’01 – in cooperation with IFAC</td>
<td>July 8 – 11</td>
<td>Como, Italy</td>
<td>1 Nov. 2000</td>
<td><a href="http://www.AIM01.unima.it/e-mail">http://www.AIM01.unima.it/e-mail</a>: <a href="mailto:siciliano@unima.it">siciliano@unima.it</a></td>
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<tr>
<td>IFAC Conference Control Applications in Marine Systems – CAMS 2001</td>
<td>July 17 – 20</td>
<td>Glasgow, UK</td>
<td>January 2001</td>
<td><a href="http://www.ice.strath.ac.uk/~cams2001/e-mail">http://www.ice.strath.ac.uk/~cams2001/e-mail</a>: <a href="mailto:system@icu.strath.ac.uk">system@icu.strath.ac.uk</a></td>
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<tr>
<td>IFAC Symposium Large Scale Systems LSS 2001</td>
<td>July 18 – 20</td>
<td>Bucharest, Romania</td>
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<td><a href="http://www.ici.ro/be2001/e-mail">http://www.ici.ro/be2001/e-mail</a>: <a href="mailto:florin@ici.ro">florin@ici.ro</a></td>
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<tr>
<td>IFAC Conference Telematics Applications in Automation and Robotics</td>
<td>July 24 – 26</td>
<td>Weingarten, Germany</td>
<td>2 Oct. 2000</td>
<td><a href="http://www.ars.fh-weingarten.de/ta2001/e-mail">http://www.ars.fh-weingarten.de/ta2001/e-mail</a>: <a href="mailto:ta2001@ars.fh-weingarten.de">ta2001@ars.fh-weingarten.de</a></td>
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## FORTHCOMING EVENTS (ctd.)

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<tr>
<td>IFAC Workshop: Modelling and Control in Environmental Issues</td>
<td>August 22 - 23</td>
<td>Yokohama, Japan</td>
<td>15 Feb. 2001</td>
<td>e-mail: <a href="mailto:nishikawa@skl.keio.ac.jp">nishikawa@skl.keio.ac.jp</a></td>
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<td>IFAC Workshop: Intelligent Control for Agriculture Applications</td>
<td>August 22 - 24</td>
<td>Bali, Indonesia</td>
<td>1 Nov. 2000</td>
<td>e-mail: <a href="mailto:tpphp@indo.net.id">tpphp@indo.net.id</a></td>
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<tr>
<td>IFAC Workshop: Periodic Control Systems</td>
<td>August 27 - 28</td>
<td>Como, Italy</td>
<td>1 Feb. 2001</td>
<td><a href="http://www.elet.polimi.it/PSYCO">http://www.elet.polimi.it/PSYCO</a></td>
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<td>IFAC Workshop: Adaptation and Learning in Control and Signal Processing</td>
<td>August 29 - 31</td>
<td>Como, Italy</td>
<td>15 Jan. 2001</td>
<td>e-mail: <a href="mailto:bittanti@elet.polimi.it">bittanti@elet.polimi.it</a></td>
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<tr>
<td>IFAC Symposium: Automatic Control in Aerospace</td>
<td>Sept. 2 - 7</td>
<td>Bologna/Forli, Italy</td>
<td>1 October 2000</td>
<td>e-mail: <a href="mailto:zaglarak@iutia.cas.cz">zaglarak@iutia.cas.cz</a></td>
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<tr>
<td>IFAC Symposium 10th Automatic Control and Manufacturing - MM2001</td>
<td>Sept. 4 - 6</td>
<td>Tokyo, Japan</td>
<td>15 October 2000</td>
<td>e-mail: <a href="mailto:kuchida@iichi.elec.waseda.ac.jp">kuchida@iichi.elec.waseda.ac.jp</a></td>
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<tr>
<td>IFAC Symposium 4th Intelligent Autonomous Vehicles - IAV</td>
<td>Sept. 5 - 7</td>
<td>Sapporo, Japan</td>
<td>31 December 2000</td>
<td>e-mail: <a href="mailto:iav01@complex.eng.hokudai.ac.jp">iav01@complex.eng.hokudai.ac.jp</a></td>
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<tr>
<td>IFAC Symposium: Modelling &amp; Control of Economic Systems</td>
<td>Sept. 6 - 8</td>
<td>Klagenfurt, Austria</td>
<td>1 March 2001</td>
<td>e-mail: <a href="mailto:iav01@complex.eng.hokudai.ac.jp">iav01@complex.eng.hokudai.ac.jp</a></td>
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<tr>
<td>IFAC/IFIP/IFORS/IFR Symposium Information Control. Problems in Manufacturing Technologies - INCOM 2001</td>
<td>Sept. 20 - 22</td>
<td>Vienna, Austria</td>
<td>31 January 2001</td>
<td>e-mail: <a href="mailto:nemetz@ihtr.tuwien.ac.at">nemetz@ihtr.tuwien.ac.at</a></td>
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<tr>
<td>IFAC Conference: Social Stability: The Challenge of Technology Development</td>
<td>Sept. 27-29</td>
<td>Vienna, Austria</td>
<td>15 January 2001</td>
<td>e-mail: <a href="mailto:swiss01@ihtr.tuwien.ac.at">swiss01@ihtr.tuwien.ac.at</a></td>
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<tr>
<td>IFAC Workshop: Control Applications in Post-Harvest and Processing Technology - CAPPT 2001</td>
<td>Oct. 3 - 5</td>
<td>Tokyo, Japan</td>
<td>31 March 2001</td>
<td>e-mail: <a href="mailto:asseo@mail.ecc.u-tokyo.ac.jp">asseo@mail.ecc.u-tokyo.ac.jp</a></td>
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<td>IFAC Symposium 6th Cost Oriented Automation (LCA2001)</td>
<td>Oct. 8 - 10</td>
<td>Düsseldorf, Germany</td>
<td>2 January 2001</td>
<td>e-mail: <a href="mailto:rosenzweig@vdi.de">rosenzweig@vdi.de</a></td>
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<tr>
<td>IFAC Workshop: Singular Solutions and Perturbations</td>
<td>Oct. 18 - 20</td>
<td>Bucharest, Romania</td>
<td>1 Dec. 2000</td>
<td>e-mail: <a href="mailto:nandre@u3.ici.ro">nandre@u3.ici.ro</a></td>
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<td>IFAC Workshop: Computation in Economic, Financial and Engineering-Economic Systems</td>
<td>Oct. 22 - 24</td>
<td>Tianjin, China</td>
<td>15 Nov. 2000</td>
<td>e-mail: <a href="mailto:ifacee@chinaexporter.org">ifacee@chinaexporter.org</a></td>
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<td>IFAC Workshop: Intelligent Assembly and Disassembly – IAD 2001</td>
<td>Nov. 5 - 7</td>
<td>Gramado, Brazil</td>
<td>30 March 2001</td>
<td>e-mail: <a href="mailto:cperere@jcufrgs.br">cperere@jcufrgs.br</a></td>
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<td>IFAC Conference: New Technologies for Computer Control</td>
<td>Nov. 19 - 22</td>
<td>Hong Kong, China</td>
<td>15 December 2000</td>
<td>e-mail: <a href="mailto:mecham@hkuce.hku.hk">mecham@hkuce.hku.hk</a></td>
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### Title: IFAC WORK CONGRESS 15th

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<tr>
<td>IFAC World Congress 15th</td>
<td>Barcelona, Spain</td>
<td>15 June 2001</td>
<td>b'02 Secretariat. Internat. Center for Numerical Methods in Engineering</td>
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<td></td>
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<td>(paper support)</td>
<td>Universitat Politecnica de Catalunya</td>
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<td>Campus Nord</td>
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<td>Gran Capita, s/n - Edificio C1</td>
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### Title: 2003

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<td>Nov. 2002</td>
<td>e-mail: <a href="mailto:colaneri@elet.polimi.it">colaneri@elet.polimi.it</a></td>
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