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IFAC Council- and Related Meetings

Sun City, South Africa

August 25 - 28, 1995

It was with great pleasure that the IFAC Council had accepted the invitation extended by the South African Council of Automatic Control, SACAC, to hold its annual meetings in South Africa. For the first time the Council meeting was convened on the African continent. It stresses the truly international character of the Federation that not only the technical meetings but also the administrative meetings have been held on all continents. Apart from venues in Europe and in North America, the IFAC Council has held meetings in South America (Argentina in 1989), in Asia (Japan in 1981) and in Australia (in 1993).

As is already a tradition, the IFAC Council also made use of the opportunity of its visit to South Africa by listening to a lecture given by Dr. Peter van Eldik on August 28, with the title: Challenges Facing Science, Engineering & Technology, and by visiting the CSIR in Pretoria in the course of a pre-Council excursion. At that very interesting institution, the IFAC group was, among others, welcomed by Dr. Geoff Garrett, Acting President of CSIR and by Dr. Naude van Wyk from the Foundation of Research and Development. The Council members had the opportunity to listen to lectures and in turn, Prof. V. Kucera, Vice-President of IFAC (Technical Board) presented a short overview over IFAC objectives and activities.

The Council meeting was preceded by the meetings of the Executive Committees, i.e. the Administrative and Finance Committee, the Policy Committee, the Publications Committee, which held part of its meeting in conjunction with the Publications Managing Board. Of particular interest in this context was a report by the Task Force on Publications which focused on the problems and opportunities arising from the electronic availability of technical information. The subject of electronic means of communication also took up considerable space in the discussions on all levels. It is a fact that IFAC must be at the cutting edge of developments in this area. To achieve this, the Secretariat was asked to set up an internet link to permit installation of a Home Page on the World Wide Web. It is planned to do this within the next half year. The Executive Board, at its meeting on August 28 discussed the reports put before it. One particularly important subject were the applications for membership which the Executive Board has to consider before they go to Council followed by a postal

ballot among the National Member Organizations. IFAC is proud to say that at the current moment three applications for membership are pending approval by the NMOs, two new NMOs have recently been approved (NMOs in Indonesia and in Malaysia) and some further applications have just been received.

Before the Council meeting, the meetings of the International Program Committee for the San Francisco World Congress and the Meeting of the Technical Board were held as well. A major issue at that meeting was the discussion on various aspects of the new structure of the Technical Board. It was stated that care must be taken that technical areas that are 'going out of fashion' are detected and eliminated in time. At the same time it is essential to spot upcoming developments. To do this is one of the major tasks of the Coordinating Committee Chairmen. The CC Chairmen were also asked to continue looking at the Technical Committees under their guidance to see whether there are overlaps, and to either add, merge or eliminate Technical Committees as the need arises. The Technical Board studied the Master Plan and decided to add the Symposium on Transportation Systems. Currently there are 25 events on the Master Plan. A few of them are still seeking their next venues. NMOs are invited to host these events. More detailed information is available from the IFAC Secretariat. It may be stated quite generally that the new structure of the Technical Board, now in operation for the second year, is functioning well, but will be constantly monitored and updated.

The Council meeting proper took place on Monday, August 28, one day before the opening of the Symposium on Mining, Mineral and Metal Processing. One of the major issues at this Council Meeting was the vote on the venue for the 16th IFAC World Congress in 2005. In a Closed Council Meeting the decision was made in favour of Prague, Czech Republic, with Vladimir Kucera as President.

The next Council- and Related Meetings will take place in the framework of the 13th IFAC World Congress in San Francisco. At this Council Meeting, the dates for these meetings were specified. Meetings will start on Wednesday, June 26 and will last until Saturday, July 6, 1996. The General Assembly will take place on Monday, July 1, 1996. A more detailed schedule will soon be forthcoming.

TRANSPORTATION AND VEHICLES COORDINATING COMMITTEE

Control systems are essential for all vehicles whether they operate on land, in air, at sea, or in space. The six IFAC Technical Committees which compose the Transportation and Vehicles Coordinating Committee arrange technical meetings, publish research results, and engage in other activities which promote guidance, navigation, and control of all vehicle types. Our attention also focuses on ancillary functions including mission support, decision making, man-machine interfaces, and transportation systems management.

* The 'Aerospace' Technical Committee focuses on aeronautical and space-related systems including missiles, launch vehicles, satellites, space probes, airplanes, and autonomous aerospace vehicles.

* The 'Air Traffic Control Automation' Technical Committee addresses automated aircraft and air traffic control systems including time and fuel optimization, communications, safety, reliability, regulatory, and other air traffic system integration issues.

* The 'Automotive Control' Technical Committee is concerned with control of automotive powertrains, vehicle dynamics, intelligent highway systems, and traffic management. The automobiles include internal combustion, electric, and other alternative vehicles.

* The 'Marine Systems' Technical Committee addresses planning, control, operations, and safety of surface vessels, floating structures, sub-sea vehicles, and any other device which operates within the marine environment.

* The 'Transportation Systems' Technical Committee focuses on ground transportation systems including road-highway systems and guided transports (rail, metro/subway, monorail) for both passengers and goods transportation.

* The 'Intelligent Autonomous Vehicles' Technical Committee is concerned with sensing, perception, data fusion, planning, and navigation for autonomous vehicles or robots operating on land, at sea, or in space.

Transportation and Vehicles is a challenging application area because many technologies contribute to overall success. In addition to automatic control, engineers in these fields must address vehicle design and dynamics, performance measurement, communications, signal processing,

power trains, roadways, airspace control, safety, reliability, and man-machine systems management. Advances in any of these areas impact all of the others. Furthermore, the importance of remote control applications is increasing as autonomous operation is required in construction, mining, agriculture, manufacturing, and space exploration.

In the last 12 months, nine world-wide IFAC events have been conducted or co-sponsored by the over 250 members in the Technical Committees of the Transportation and Vehicles Coordinating Committee. There will be at least 26 sessions at the 1996 World Congress related to Transportation and Vehicles technology. Special editions of CONTROL ENGINEERING PRACTICE and contributions to AUTOMATICA, as well as other related journals are submitted by our Technical Committees. Some of the committees are planning their own new journals and/or text books. One of the most exciting events last year was an autonomous vehicle competition held in conjunction with the Intelligent Autonomous Vehicle conference.

Looking beyond the 1996 IFAC World congress, the Transportation and Vehicles Technical Committees have already begun to organize more events; 14 are already in planning with more to be added. Although budgets in some countries for military applications are declining, interest from private industry continues in space exploration, improved automotive-rail-sea vehicles, extended autonomous operations, improved air traffic control, and other challenges which are being addressed by this Coordinating Committee.

The following persons are in charge of the various Technical Committees:

Michael K. Masten, Chair

**Transportation and Vehicles
Coordinating Committee**

**Jerell Mitchell
Aerospace Technical Committee**

**Satish C. Mohleji
Air Traffic Control Automation Technical
Committee**

**Uwe Kiencke
Automotive Control Technical Committee**

**Mogens Blanke
Marine Systems Technical Committee**

**Jean-Paul Perrin
Transportation Systems Technical
Committee**

**Aarne Halme
Intelligent Autonomous Vehicles Technical
Committee**

For addresses of the persons mentioned above please contact the IFAC Secretariat.

San Francisco Congress Take the Information Superhighway to the AACC

The next major activity of the AACC and IFAC is the 13th IFAC World Congress, which will be attended by participants from all over the world. In some of the countries the standard means of transmitting information (mail service) is slow, expensive and unreliable. In order to bring up-to-date information about the Congress to every potential participant desk with higher speed, the AACC started a Home Page on the World Wide Web in which the latest information about the program or the registration and other critical information can be found at the click of a button. Of course, the Home Page allows us to provide current information about all major activities involving control, including the American Control Conference, the IFAC technical meetings held in the USA and nomination information for AACC awards.

The location of the AACC Home Page is:

<http://web.eecs.nwu.edu/~ahaddad/aacc.html>

and it provides a link to the IFAC gopher server as well.

Of course the AACC Home Page is also the official Home Page of the IFAC '96 Congress.

We shall be happy to display any information about other IFAC technical meetings elsewhere, and at the very least to provide a direct link to such information. For additional details contact

aacc@eecs.nwu.edu

Large Scale Systems: Theory and Applications (LSS'95)

**IFAC/IFORS/IMACS Symposium
London, UK 11 - 13 July, 1995.**

A worldwide representation of 171 participants from 35 countries gave the symposium a truly international flavour. Of the 158 papers presented, there were three plenary papers and 15 in invited sessions. Although, as is usual, the hosts of the UK had the largest representation of papers with 38, there were substantial representations from Japan (20 papers), Poland and France (17 papers each) and China (16 papers). There were also significant contributions from the newly established states of: Azerbaijan, Belarus, CIS, Czech Republic, Macedonia, Slovenia and Ukraine, CIS.

The Symposium papers covered a wide spectrum of the theory, methodology and applications in large scale systems. Particular areas which were well represented on the theory and methodology side included decentralized control and optimization; while on the applications side, transportation, manufacturing systems, process control, water systems and power systems received significant coverage.

The Symposium showed that the field of Large Scale Systems is very much alive and developments in this area can be looked forward to as we move to the next Symposium in this series in 1998.

P.D. Roberts, IPC Chairman
J.E. Ellis, NOC Chairman

Impressum:

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

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

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

Editor: Gusztáv Hencsey
Layout: Ernestine Rudas
published bimonthly

Control Engineering Practice

Volume 3 Number 10, October 1995

Preview:

Modelling and Simulation of a Soaking Pit/Rolling Mill Process Based on Extended Coloured Petri Nets

(Y.Y. Yang, D.A. Linkens and N. Mort)

Robust Flight Control Design with Respect to Delays, Control Efficiencies and Flexible Modes

(T. Livet, F. Kubica and J.F. Magni)

Nonlinear Parity Equation Based Residual Generation for Diagnosis of Automotive Engine Faults

(V. Krishnaswami, G.-C. Luh and G. Rizzoni)

Adaptive Control for Flexible-Joint Robots Using a Passive Systems Approach

(A. Benallegue)

Detailed Modelling and Estimation of Practical Robotic Parameters for Precision Control

(G. Dodds and N. Glover)

Controllability and Observability of Heat Exchanger Networks in the Time-Varying Parameter Case

(E.I. Varga, K.M. Hangos and F. Szigeti)

Causes and Effects of Algorithmic Error in Digital Filters

(M.A. Oliver and W. Forsythe)

A Closed-Loop System for Controlling Blood Oxygen and Carbon Dioxide Levels in Mechanically Ventilated Patients

(T.L. Fernando, J.S. Packer and J.F. Cade)

Fault Detection in a Control Loop

(C. Aubrun, M. Robert and T. Cecchin)

Design and Implementation of a Bond-Graph Observer for Robot Control

(D.W. Roberts, D.J. Ballance and P.J. Gawthrop)

Special Section on Benchmarking for Paper Machine MD-Control

(Guest Editors: M. Hagberg and A.J. Isaksson)

Preface to the Special Section on Benchmarking for Paper Machine MD-Control

(M. Hagberg and A.J. Isaksson)

Basis Weight and Fiber Content: Decoupled Smith Predictor Approach

(J. Pipponen and R. Ritala)

Design of an Extended Smith Controller with Gain Adaptation

(U. Ebach and A. Gräser)

Three Control Schemes for Paper Machine MD-Control

(A. Makkonen, R. Rantanen, A. Kaukovirta, H. Koivisto, J. Lieslehto, T. Jussila, H.N. Koivo and T. Huhtelin)

Robust Control of a Paper Machine

(J.F. Whidborne, I. Postlethwaite and D.-W. Gu)

Dynamic Matrix Control of a Paper Machine Benchmark Problem

(A.S. Bozin and P.C. Austin)

A Generalized Predictive Control Design for the Paper Machine Benchmark

(Ye Fu and G.A. Dumont)

Benchmarking for Paper Machine MD-Control: Simulation Results

(A.J. Isaksson, M. Hagberg and L.E. Jönsson)

A Control-Loop Performance Monitor

(T. Hägglund)

An Implementation of Fast Globally-stable Adaptive Robot Control on a Multi-processor Network

(S.M. Ziauddin and A.M.S. Zalzal)

A Fuzzy Controlled Pneumatic Gripper for Asparagus Harvesting

(G. Mattiazzo, S. Mauro, T. Raparelli and M. Velardocchia)

Expert Control of a Self-tuning Automatic Voltage Regulator

(D. Flynn, B.W. Hogg, E. Swidenbank and K.J. Zachariah)

The Application of Setpoint Gain Scheduling to High-speed Independent Drives

(R.W. Beaven, M.T. Wright, S.D. Garvey, M.I. Friswell and D.R. Seaward)

DSP-based Motion Control by H_∞ Axis-controller and Fuzzy Adaptive Feedrate

(M.C. Tsai, S.J. Lau and S.C. Lee)

Control Aspects of Interplanetary Spacecraft - An Introduction to the Cassini/Huygens Mission

(K. Schilling)

Cassini Interplanetary Trajectory Design

(F. Peralta and S. Flanagan)

Design of the Cassini Tour Trajectory in the Saturnian System

(A.A. Wolf and J.C. Smith)

The Huygens Mission: Design Approach for an Atmosphere Entry Probe

(B. Patti)

Cassini Huygens: Mission Operations

(C. Sollazzo, J. Rakiewicz and R.D. Wills)

IFAC Meeting Papers - Keyword Listing:

Computer Applications in Biotechnology, May 1995, Garmisch-Partenkirchen, Germany

Artificial Intelligence in Agriculture, May 1995, Wageningen, The Netherlands

Modeling and Control in Biomedical Systems, March 1994, Galveston, TX, USA

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Book Reviews

Conference Calendar

Nonlinear Control Systems Design - NOLCOS '95

IFAC Symposium

Tahoe City, CA, USA, 25 - 28 June, 1995

The third IFAC Symposium in this series was held at the Granlibakken Conference Center, Tahoe City, CA, USA. The interesting program coupled with the attractive surroundings and the fine facilities of the conference center helped create a pleasant atmosphere which permeated the meetings and discussions, and contributed substantially to the success of the conference.

The conference continued the traditions set in the earlier two meetings; in particular, it addressed the same area, design of nonlinear control systems, and provided participants with an excellent overview of current research. It differed, perhaps, from earlier meetings in several respects. Firstly, a deliberate effort was made to include younger researchers as plenary speakers. And, secondly, a serious attempt was made to cover a wider range of research, by including a substantial number of papers devoted to design and application issues while preserving the excellent record of earlier conferences on theoretical aspects of nonlinear systems. Each speaker was allocated a full half hour, including discussion, to permit adequate exposition. The many positive comments made by participants at the end of the conference confirm its success in meeting its objectives.

Plenary Sessions

There were six plenary sessions. The first, by Carl Nett, on generic conceptual paradigms for active control of complex physical systems provided, through its analysis of gas turbine control, a practitioner's view of the future of nonlinear control system design. Jean-Michel Coron provided an exciting overview of recent research on stabilization by time-varying state and output feedback. Richard Murray surveyed recent results on nonlinear control of mechanical systems from a Lagrangian perspective, focusing on the relationships between phases, controllability and curvature, and the role of trajectory generation in nonlinear controller synthesis and illustrated his talk with examples from robotics and flight control. Mathew James surveyed the problems and methods of nonlinear H_∞ control, explained the connections between risk sensitive stochastic control, H_∞ and H_2 control, and differential games, and demonstrated the power of the concept of 'information state' in solving the output feedback H_∞ control problem. William Shadwick showed how techniques from exterior differential systems provide a powerful geometric tool for the study of nonlinear systems. Finally, Ricardo Marino surveyed and motivated the main results on the design of adaptive state feedback controllers, adaptive observers and adaptive output feedback controllers, illustrating his talk with interesting applications to transient stabilization of a synchronous generator connected to an infinite bus, and tracking control of a single link rotating in a vertical plane. The plenary addresses were highly successful and attracted much praise from the participants.

Special Sessions

These were limited in number and addressed a variety of theoretical and practical issues including control of chemical processes, (organized by F. Allgöwer), identification and control problems in computer vision (C. Martin), external stability of nonlinear control systems (A. Bacciotti), sliding mode control (V.I. Utkin), and gain and passivity based control of nonlinear systems (D. Hill).

General Sessions

Apart from the plenary sessions, there were 30 sessions covering a wide range of topics in nonlinear control systems design. These sessions can be broadly classified into the three areas of theory, design and application, with 3 to 6 papers in each session; a total of 160 papers was presented at the conference.

Theory

The conference was attended by most of the researchers active in nonlinear control, and the theoretical issues addressed included stability (internal and external), passivity, decoupling, optimal control, homogeneous systems H_∞ and risk sensitive filtering and control, feedback linearization, adaptive nonlinear control, differential algebraic systems, nonlinear stabilization, non-holonomic systems, differential inclusions, tracking, observers and observer-based control, nonlinear discrete-time control, bilinear systems, and operator differential systems.

Design

There was a number of sessions devoted to design on nonlinear control systems and design-related issues such as feedback linearization, sliding mode control, model predictive control, modeling and computation and frequency domain methods in nonlinear control.

Applications

A wide range of application studies was presented in sessions devoted to control of chemical processes, identification and control problems in computer vision, control of chemical processes, control of mobile robots and acrobats, control of manipulators and control of electrical systems.

Closing Comments

I took advantage of my role as chairman of the last session to make the following comment which reflected the opinion of many of the participants: 'This is the last plenary session that is not chaired by one of the organizers. Therefore, it is appropriate for me to make a comment. This conference is one of exceptional quality. The talks were very interesting, the organization perfect, and the banquet speeches were mercifully short. During these speeches Art Krener gave David Mayne all the credit and David gave Art all the credit. I think it is better that we as participants do not enter in this discussion and simply thank them both.'

Jan Willems, IPC Chairman

Control Engineering Practice

Volume 3 Number 11, November 1995

Preview:

Enhancing Off-Line and On-Line Condition Monitoring and Fault Diagnosis

(R.A. Vingerhoeds, P. Jansen, B.D. Netten and M. Aznar Fernandez-Montesinos)

Designing Feedback Controllers to Regulate Deposited Mass in Hot-Dip Galvanizing

(O.L.R. Jacobs)

Papers

Trade-offs in Linear Filter Design
(G.C. Goodwin, D.Q. Mayne, J. Shim)
Twenty-One ML Estimators for Model Selection
(F. Gustafsson, H. Hjalmarsson)
The Regulator Problem with Robust Stability
(M.K.K. Cevik, J.M. Schumacher)
Optimal and Minimum-energy Optimal Tracking
of Discrete Linear Time-varying Systems
(Danyang Liu, Xuanhuang Liu)
Discrete-time Adaptive Control in the Presence of
Input Constraints
(A.M. Annaswamy, S.P. Kárasón)
On Compensation of Nonminimum-phase Zeros
(U. Holmberg, P. Myszkorowski, Y. Piguet,
R. Longchamp)

Brief Papers

A Receding-horizon Regulator for Nonlinear
Systems and a Neural Approximation
(T. Parisini, R. Zoppoli)
Absolute Stability Approach to Stochastic Stability
of Infinite-dimensional Nonlinear Systems
(V. A. Brusilov, V.A. Ugrinovskii)
Estimation of Quantized Linear Errors-in-variables
Models
(V. Krishnamurthy)
A Global Output Feedback Controller for Flexible
Joint Robots
(S. Nicosai, P. Tomei)
Internal Model Predictive Control (IMPC)
(E. Coulibaly, S. Maiti, C. Brosilow)
A Novel Iterative Learning Control Formulation of
Generalized Predictive Control
(G.M. Bone)
Robust Linear Regulator Design for Discrete-time
Systems Under Polyhedral Constraints
(B.E.A. Milani, A.N. Carvalho)
A Recurrent Neural Network-based Adaptive
Variable Structure Model-following Control of
Robotic Manipulators
(A. Karakasoglu, M.K. Sundareshan)

Technical Communiques

Robust Discrete Quasi-sliding Mode Tracking
Controller
(C.Y. Chan)
The Kantorovich Inequality for Error Analysis
of the Kalman Filter with Unknown Noise
Distribution (J.C. Spall)

Book Reviews

Adaptive System Identification and Signal
Processing Algorithms, N. Kalouptsidis,
S. Theodoridis, Eds.
(J. Kadlec)
Designing Linear Control Systems with Matlab,
by K. Ogata
(S. Carabelli)
Linear Multichannel Control: A System Matrix
Approach, by A.B. Özgüler
(P. Zagalak)

Editorial

Some Statistics about AUTOMATICA authors
(H. Kwakernaak)

Papers

Robustness and Continuity of the Spectrum for
Uncertain Distributed Parameter Systems
(R. Rebarber, S. Townley)
The Application of an Iterative Identification and
Controller Design to a Sugar Cane Crushing Mill
(A.G. Partanen, R.R. Bitmead)
Uncertainty Structures in Adaptive and Robust
Stabilization
(G. Nahapetian, Wei Ren)
Iterative Weighted Least Squares Identification
and Weighted LQG Control Design
(Zhuquan Zang, R.R. Bitmead, M. Gevers)
Nonlinear Adaptive Control of Permanent Magnet
Step Motors
(R. Marino, S. Peresada, P. Tomei)
Efficient Eigenvalue Assignments for General
Linear MIMO Systems
(M. Valasek, N. Olgac)
On some Key Issues in the Windsurfer Approach to
Adaptive Robust Control
(W.S. Lee, B.D.O. Anderson, I.M.Y. Mareels,
R.L. Kosul)
Model Validation for Robust Control: An
Experimental Process Control Application
(R.S. Smith)

Brief Papers

An Uncertainty Averaging Approach to Optimal
Guaranteed Cost Control of Uncertain Systems
with Structured Uncertainty
(A.V. Savkin, I.R. Petersen)
Unstable and Nonproper Weights in H-infinity
Control
(G. Meinsma)
Feedback Linearization Using Neural Networks
(A. Yesidrek, F.L. Lewis)
Output Zeroing with Internal Stability by Learning
(P. Lucibello)
A MIMO Variable Structure Model of the Controller
of Voluntary Arm Movements: An Identification
Study
(M. Letizia Corradini, G. Orlando)

Book Review

Linear Robust Control, by M. Green and D.J.N.
Limebeer
(Jan.C. Willems)

**This Newsletter may be re-
produced in whole or in part.
We encourage reprinting
in national and local auto-
matic control periodicals.
Acknowledgement to IFAC
would be appreciated.**

Instrumentation and Control Society of Malaysia

The Instrumentation and Control Society of Malaysia, or ICSM in short, is the umbrella society in Malaysia that groups engineers, researchers, academicians and those who work or have interest in the field of instrumentation, industrial electronics, and control. The Society was set up in late 1993 and officially registered with the Malaysian Registrar of Societies on the 8th of September 1994. On the 13th of November, 1994, the inaugural Annual General Meeting of the Society was held and a total of twelve office bearers were elected. The officers of the Society are a President, a Vice President, a Secretary, an Assistant Secretary, a Treasurer and seven Committee Members.

The main aims of the Society are as follows: (1) To advance and reinforce the arts and sciences related to the theory, design, manufacture, and use of instrumentation, computers, and systems for measurement and control in the various sciences and technologies for the benefit of mankind; (2) to hold meetings, seminars, training, exhibitions, visits and other activities as deemed necessary by the Society; and (3) to communicate to members information on all matters affecting the profession of instrumentation and control and to print, issue and circulate related publications, subject to prior approval of the competent authority.

The Society hopes to gather as many members as possible. The members of the Society can benefit from the following activities that the Society plans and hopes to organise regularly and occasionally:

- international conferences and workshops
- national seminars and exhibitions
- industrial training and short courses
- tea talks
- public lectures by leaders in the field
- annual dinner and cultural excursions
- industrial and technical visits
- newsletters and journals

ICSM also hopes to offer assistance and expertise in the development of this field in Malaysia. Among others, ICSM hopes to collaborate with the Malaysian Ministry of International Trade and Industry (MITI) and also the Ministry of Science, Technology and Environment (MOSTE) for Malaysian industries to be more competitive.

ICSM is in the midst of organizing an international conference and exhibition jointly with SIRIM (Standards and Industrial Research Institute of Malaysia) in 1997 as one of its major activities. This year we have already organized tea talks and public lectures by leaders in the field of control and instrumentation for the benefit of its members. ICSM also regularly organizes short courses and publishes newsletters for its members.

With ICSM becoming a National Member Organization of IFAC in July 1995, we hope to bring one of the IFAC Symposia or Workshops to Malaysia for the benefit of its members and for the progress of instrumentation and control in this country and also throughout the world.

Dr. Marzuki Bin Khalid
President of ICSM



FORTHCOMING EVENTS

(ctf.) 1995
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Title	1995	Place	Deadlines	Further Information
IFAC Workshop Motion Control	Oct. 9 - 11	Munich Germany	-	Prof. Dr. Ing. F. Pfeiffer Lehrstuhl B f. Mechanik, TU Munich D-80290 Munich, Germany FAX +49/89/2105 3209 e-mail: ifacmoco@lbm.mw.tu-muenchen.de
IFAC/IFORS/IMACS/ISPE Symp. Information Control Problems in Manufacturing - INCOM '95	Oct. 11-13	Beijing China, P.R.	-	INCOM '95 Secretariat Institute of Manufacturing Systems /720) Beijing University of Aero-Astro, POB 85 Beijing 100083, China, P.R. FAX 86/11/201 5347
IFAC Workshop Intelligent Manufacturing Systems - IMS '95	Oct. 24 - 26	Bucharest Romania	-	University Politehnica Bucharest Faculty of Control & Computers IMS'95, corp. ED Automatica Spl. Independentei 313, sector 6 RO-77206 Bucharest, Romania FAX +40/1/3113242 e-mail: ims95@ulise.cs.pub.ro
IFAC Workshop Intelligent Components for Auto- nomous and Semi-Autonomous Vehicles	Oct. 25-26	Toulouse France	-	SITEF-CCIT Secretariat Colloques 2 rue Alsace Lorraine - BP 606 F-31002 Toulouse Cedex, France FAX +33/61254260 e-mail: icasav@laas.laas.fr
IFAC Workshop Safety and Reliability in Emerging Control Technologies	Nov. 1 - 3	Daytona Beach FL, USA	-	Dr. Andrew Kornecki Dept. of Computer Science Embry-Riddle Aeronautical Univ. 600 S. Clyde Morris Blvd. Daytona Beach, FL 32114-3900, USA FAX +1/904/226 6678
IFAC Workshop Real Time Programming	Nov. 6-10	Ft. Lauderdale FL, USA	-	Dr. Phil Laplante Dept. of Math and Computer Science Fairleigh Dickinson University 285 Madison Avenue, Madison, NJ 07940, USA FAX +1/201 593 8886 e-mail: laplante@fdi.edu
IFIP/(IFAC) Working Conference Models and Methodologies for Enterprise Integration	Nov. 8 - 11	Heron Islands QLD, Australia	-	Angela Laffey, Conference Secretary Australian Computer Society POB 135 Aspley (Brisbane) Queensland 4034, Australia FAX +61/7/263 7020 e-mail: ei95@cit.gu.edu.au
IFAC Workshop Artificial Intelligence in Real-Time Control	Nov. 29 - Dec. 1	Bled Slovenia	-	Dr. Jus Kocijan Faculty of El. & Computer Engg. Univ. of Ljubljana, Trzaska 25, SL-61000 Ljubljana, Slovenia FAX +386/61/264 991 e-mail: jus.kocijan@fer.uni-lj.si
IFAC Symposium Control of Power Plants and Power Systems	Dec. 6 - 8	Cancun Mexico	-	SIPOWER'95 Instituto de Investigaciones Electricas AP 475 , Cuernavaca, Mor. 62000, Mexico FAX +52/73/189 535 e-mail: sifac@piie.org.mx
IFAC Workshop Control Applications of Optimization	Dec. 19 - 21	Haifa Israel	-	Prof. Yosef Shinar Faculty of Aerospace Engineering Technion, Technion City Haifa 32000, Israel, FAX +972/4 231848 e-mail: aer4301@technion.technion.ac.il
Title	1996	Place	Deadline	Further Information
IFAC Workshop (4th) Artificial Intelligence in Economics and Management	January 8 - 10	Tel-Aviv Israel	-	Prof. Phillip Ein-Dor, Faculty of Management Tel-Aviv University Tel-Aviv 69978, Israel FAX +972/3/6409560 e-mail: eindor@taunivm.bitnet
IFAC WORLD CONGRESS	JULY 1 - 5	SAN FRANCISCO USA		IFAC '96 POB 111, Mabelton GA 30059, USA Phone +1/708/491-3641 FAX +1/708/491-4455 e-mail: ifac96@nwu.edu

FORTHCOMING EVENTS (ctd.)

Title	1997	Place	Deadline	Further Information
IMACS/IFAC Symposium (2nd) Mathematic Modelling MATHMOD '97	Feb. 5 - 7	Vienna Austria	1 May 1996	Prof. I. Troch Technical University of Vienna (E114/5) Wiedner Hauptstrasse 8 - 10 A-1040 Vienna, Austria FAX +43/1/586 8093 e-mail: itroch@email.tuwien.ac.at
IFAC Symposium (3rd) Modelling and Control of Biomedical Systems including Biological Systems	March 23 - 26	Warwick UK	Sept. 1996	Prof. K. Godfrey, Dept. of Engineering University of Warwick Coventry CV4 7AL, UK FAX +44/1203/418922
IFAC/IEEE Symposium Computer-Aided Control Systems Design - CACSD 97	April 28-30	Ghent Belgium	1 Oct. 1996	Prof. Luc Boullart University of Ghent, Campus Ardoyen Technologiepark - Zwijnaarde, 9 B-9052 Zwijnaarde, Belgium FAX +32/9/264 5839 e-mail: boullart@autoctrl.rug.ac.be
IMEKO/IFAC Congress New Measurements - Challenges and Visions	June 2 - 6	Tampere Finland	*	Prof. O. Aumala, TTKK/MIT POB 692, SF-33101 Tampere, Finland FAX +358/31 316 2171
1997 American Control Conference (in cooperation with IFAC)	June 4 - 6	Albuquerque NM, USA	15 Sept. 1996	Prof. A. Haddad AACC Secretariat, Dept. of EECS Northwestern University 2145 Sheridan Road Evanston, IL 60208-3118, USA FAX +1/708/491-4455 e-mail: ahaddad@eeecs.new.edu
IFAC Symposium (3rd) Intelligent Components and Instruments for Control Applications - SICICA '97	June 9 - 11	Annecy France	1 Sept. 1996	Prof. Laurent Foulloy LAMII/CESALP, BP 806 F-74016 Annecy, France FAX +33/50 66 60 63 e-mail: foulloy@univ-savoie.fr
IFAC Symposium Robust Control Design	June 25-27	Budapest Hungary	30 Sept. 1996	Ms. Csilla Banyasz Computer and Automation Research Inst. POB 63, H-1518 Budapest, Hungary FAX +361/1667 503 e-mail: h10kev@huella.bitnet
1997 European Control Conference (in cooperation with IFAC)	July 1 - 4	Brussels Belgium	1 Sept. 1996	M. Gevers/G. Bastin CESAME, Batiment Euler B-1348 Louvain la Neuve, Belgium FAX +32/10/472 180 e-mail: gevers@auto.ucl.ac.be
IFAC/(IFORS) Symposium (11th) System Identification - SYSID '97	July 8 - 11	Fukuoka Japan	1 Sept. 1996	SYSID'97 Secretariat - Mrs. Y. Hayashi Fukuoka Institute of Technology 3-30-1 Wajiro-higashi, Higashi-ku Fukuoka 811 02, Japan FAX +81/92/606 1342 e-mail: y-hayashi@dw.ee.fit.ac.jp
IFAC Symposium (4th) Advances in Control Education ACE 97	July 14-16	Istanbul Turkey	15 Oct. 1996	Prof. A. Talha Dinibütin Istanbul Technical University Mech. Engg. Faculty Gümüşsuyu 80191, Istanbul, Turkey FAX +90/212-245 0795 e-mail: mkdnib@tritu.bitnet
1997 Asian Control Conference (in cooperation with IFAC)	July 22-25	Seoul Korea, Rep.	1 Sept. 1996	Prof. Dong-il Cho, 1997 ASCC Secretariat Automation and Systems Research Institute Seoul National University, Bldg. 133 Kwanak-ku, Shinrim-dong, San 56-1 Seoul 151-742, Korea, Rep. FAX +82/2/889-4239 e-mail: ascc@asri.snu.ac.kr
IFAC/(CIGRE) Symposium Control of Power Plants and Power Systems	August 18 - 21	Beijing China, P.R.	-	Chinese Association of Automation POB 2728, Beijing 100080, China FAX +86/10/25 45 229
IFAC Symposium Fault Detection, Supervision and Safety for Technical Processes - SAFEPROCESS '97	August 25 - 28	Hull UK	30 Sept. 1996	Prof. Ron Patton Dept. of Electronic Engg. Hull University Hull HU6 7RX, UK FAX +44/482/466664 e-mail: r.j.patton@e-eng.hull.ac.uk
IFAC Conference Manoeuvring and Control of Marine Craft - MCMC'97	Sept. 10 - 12	Brijuni Croatia	1 Feb. 1997	Prof. Z. Vukic University of Zagreb Fac. of El. Engg. and Computing, Unska 3 HR-10000 Zagreb, Croatia FAX +385/1/6129809 e-mail: zoran.vukic@fer.hr