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International Federation of Automatic Control

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Automatica Editorial Staff Changes

During the past few years, the number of papers submitted to Automatica for possible publication has increased considerably. This has created an overload for the Editorial Staff in some areas of interest, particularly in the fields of theory, adaptive control, and parameter and system estimation.

Meanwhile Patrick C. Parks, who has been evaluating papers in the latter three fields for over 23 years, ever since Automatica became the IFAC Journal, wishes to retire as an Editor of Automatica at the end of 1992. Because of the increasing number of papers being received in his areas of interest he has found two very well qualified editors to succeed him. Both have served as capable Associate Editors working with him for several years. They are

Professor Torsten Söderström
Automatic Control Group
Uppsala University
POB 27, S-751 03 Sweden

He will evaluate papers in the following areas of interest: System Parameter Estimation, including applications in this field, and new topics such as System Fault Detection; and

Professor C.C. Hang
Vice-Dean, Faculty of Engineering
National University of Singapore
10 Kent Ridge Crescent, Singapore 0511

He will evaluate papers in the following areas of interest: Adaptive Control, including applications, robotics and new topics such as Use of Neural Networks in this field.

Therefore, effective immediately, no papers, except revised papers previously evaluated by him, should be sent to Professor Parks. Instead, papers in the areas of interest indicated above must be sent to the appropriate editor, either Professor Söderström or Professor Hang. Note that Editor Parks will continue to evaluate revised papers which he has previously considered in all areas of Adaptive Control and System Parameter Estimation throughout 1992. In addition to the above there is another new well qualified editor who has been working with Editor Huibert Kwakernaak as Associate Editor for a number of years. He is

Professor Tamer Basar
University of Illinois at Urbana-Champaign
Decision and Control Laboratory
1101 West Springfield Avenue
Urbana, IL 61801, USA

He will evaluate papers in the following areas of interest: Control and Estimation Theory, in particular optimal, stochastic and nonlinear control, games and state estimation.

Note that these were fields in which Editor Kwakernaak previously evaluated papers. However, from the present time onward he will

evaluate papers only as indicated in the following: System Theory, including robust, distributed and geometric control systems.

Therefore, effective immediately, only papers in the areas of System Theory, as defined above, should be sent to him at his usual address:

Professor Huibert Kwakernaak
Faculty of Applied Mathematics
University of Twente, POB 217
NL-7500 AE Enschede, The Netherlands

However, papers in the areas of Control and Estimation Theory - in particular optimal, stochastic and nonlinear control, games, and state estimation, except those revised and previously evaluated by Professor Kwakernaak, must be sent to Professor Basar.

Meanwhile, the other Automatica Editors, K.J. Åström, P.M. Larsen, W.S. Levine, A.P. Sage, and H. Austin Spang III will continue their efforts to obtain significant contributions in their respective areas of interest. Again, all, including P.C. Parks and H. Kwakernaak, are to be congratulated on the excellent work they have done and the results they have achieved.

As often noted in the past, the list of Associate Editors continues to change and the Automatica Editorial Board, including the Editor in Chief in particular, are deeply grateful for the outstanding and essential service which they and their referees provide.

As in the past, authors wishing to have their papers considered for possible publication in Automatica, whether or not also submitted to an IFAC meeting, should send five copies of their paper to the Editor whose area of interest is most closely related to the subject of the paper. Also one copy should be sent to the Editor-in-Chief to be recorded in a central, global file. Preferably the papers should be prepared according to 'Information for Contributors to Automatica' printed on the inside cover of the Journal.

Another significant change must be noted: IFAC President Brian D.O. Anderson has appointed Editor Huibert Kwakernaak to the position of Automatica Deputy Editor-in-Chief, an appointment well deserving congratulations. This is in keeping with a new IFAC policy that all IFAC officers having responsible positions should have a deputy in the event the officer should not be able to carry out his or her responsibilities.

With the foregoing changes and additions, we expect that Automatica will be better prepared to meet future developments in the field of automatic control and thereby provide increased service to IFAC and to the international control community.

George S. Axelby, Editor in Chief of Automatica

News from NMOs

Chinese Association of Automation – CAA

The Chinese Association of Automation is one of the largest professional engineering and scientific associations in China. The Association holds membership in the China Association for Science and Technology.

The purpose of the Chinese Association of Automation is to promote the science and technology of automatic control in manifold systems.

The Chinese Association of Automation was founded in 1961. The national congresses of the Association are held every four years.

The Chinese Association of Automation has several means for reaching its goals including sponsoring exchanges, workshops and investigations.

The Chinese Association of Automation has elected the following leaders to administer the organization:

President: Yang Jiachi, Hu Qiheng
Vice-Presidents: Lu Yongzai, Huang Taiyi, Sun Buolin, Jiang Xinsong
Secretary General: Ling Weihou

The CAA has organized its members into twenty six local branches in provinces, municipalities and autonomous regions of China. The technical areas covered by the Chinese Association of Automation are the following, with each one standing for a technical committee:

Application, Biomedical Engineering, Computer-Aided Design and Computer Graphics, Electrical Automation, Office Automation, Components and Instruments, Computer and Applications, Economic- and Management Systems, Manufacture, Pattern Recognition and Machine Intelligence, Robotics, Simulation, Space, Systems Engineering, Telecontrol, Theory.

The Chinese Association of Automation serves about 20,000 members who are organized

geographically into local branches throughout China.

The CAA publishes three official scientific journals, i.e. the *Acta Automatica Sinica*, *Information and Control* and *Robot and Automation*.

In IFAC, the Chinese Association of Automation is a very active National Member Organization, with many of its representatives being either members of Technical Committees or Vice-Chairmen of these TCs. One of IFAC's Vice-Presidents for the 1990-93 Triennium is Professor Yongzai Lu, who holds the position of Executive Board Chairman in this function. The Chinese Association of Automation, as NMO of IFAC, has applied to host and been awarded the organization of the 1999 IFAC World Congress in Beijing. Professor Yongzai Lu was nominated to be President of IFAC for the 1996-1999 Triennium.

The CAA is also very active in organizing IFAC Symposia, Workshops and Conferences. In 1992, the CAA will hold five meetings in China, i.e. The IFAC Workshop on Expert Systems in Automation, Hefei, 12-14 August; the IFAC/IFORS/IFIP Symposium on Modelling and Control of National Economies, 18-20 August; the IFAC/IFORS Symposium on Large Scale Systems, Theory and Applications, 23-25 August; the IFAC Workshop on Distributed Computer Control Systems - DCCS, 23-25 August; and the IFAC Symposium on Automation in Mining, Mineral and Metal Processing, 26-28 August. All these meetings will be held in Beijing.

For further information on the CAA or any of the above events, please contact Mrs. Hong WANG
Chinese Association of Automation
Chinese Academy of Sciences
Beijing 100080, P.R. China
Phone: (861)2560935
Fax: (861)2565279

Identification and System Parameter Estimation

IFAC/IFORS Symposium

Budapest, Hungary, July 8 – 12, 1991

The development of advanced control, communication and information systems cannot be separated from research on identification and system parameter estimation. Such development is strongly based on models of real-life processes, phenomena, technologies, etc. and on the methods by which the structures and parameters of these models can be obtained.

The Symposium was a forum for experts from different fields to provide an overview of new research results and to forecast future developments in this interdisciplinary field.

The Symposium was sponsored by the following committees of IFAC: APCOM, BIOMED, DECOM, EDCOM and THEORY, and co-sponsored by IFORS. It was organized by the Computer and Automation Institute of the Hungarian Academy of Sciences on behalf of the NOC and attended by 283 participants of whom 21 were from Hungary and the rest coming from 35 countries.

From 498 papers submitted, the International Program Committee selected 339 for the technical program, of which 248 were presented at the Symposium in 26 technical sessions.

The highlights of the program were 5 excellent plenary papers.

This 9th Symposium provided new aspects in three different ways:

It tried to accommodate new directions, research fields and applications being in the focus of interest of recent years (e.g. robust identification and control; failure and fault detection; stochastic complexity and modelling; expert systems, agricultural applications; etc.) It increased the ratio of the invited papers, where the organizers had the full responsibility for the technical contents and level of the respective session. It introduced computer software sessions with demonstrations.

The Symposium offered an opportunity for fruitful discussions and strengthened the emphasis for continuing the series.

The participants also had the chance to get acquainted with the hospitality and beauty of the capital of Hungary and to trace the considerable changes that have taken place during the past years and even months.

László Keviczky
IPC Chairman

Gusztáv Hencsey
NOC CHairman

Algorithms and Architectures for Real-Time Control

IFAC Workshop

Bangor, Wales, UK
11 – 13 September, 1991



D.P. Atherton, IFAC Council Member
Addressing the Meeting

There has always been a close relationship between the fields of automatic control and computer systems and today the performance requirements of modern control systems demand that this affinity be closer than ever. It was this observation that stimulated the International Federation of Automatic Control to sponsor a Workshop which spanned the two disciplines.

The Workshop was held at the University of Wales, Bangor, which organized the meeting on behalf of the United Kingdom Automatic Control Council, and drew a widespread response, resulting in a selection of about 50 papers being presented. The Workshop was truly international, having attracted about 60 participants from 20 different countries with representatives from South America, Australia and the Far East.

A strong unifying theme of the Workshop was the relationship between algorithms and architecture. In the first keynote paper, Prof. George Irwin (Queen's University of Belfast, Northern Ireland) compared the performance of two model reference control schemes - one based on a neural network and the other one on a conventional technique. Prof. Irwin showed that the conventional approach gave slightly better performance on linear systems but the neural network scheme was superior for a highly non-linear system.

The second keynote paper was given by Mr. Eric Verhulst (Intelligent Systems International, Belgium) who gave an overview of the recently introduced TRANS-RTXc operating system for transputers and described some of the implementation issues of the real-time kernel.

The final keynote speaker was Dr. Dave Harrison (University of Newcastle upon Tyne, England) who described a real-time language based on explicit timeout blocks and explained its advantages for implementing time-critical control systems where it is better for the computer to produce any (defined) answer within a given deadline than none at all.

The Workshop maintained a relaxed and productive atmosphere. The Workshop dinner was held in the grand setting of the Great Hall at nearby Penrhyn Castle and allowed participants to view the historical picture galleries and enjoy a short harp recital in the traditional Welsh manner. The Call for Papers for the second workshop in this series, which will be held at Seoul National University, Korea, in September 1992, has been announced.

Safety in Process Control – SAFEPROCESS IFAC Symposium Baden-Baden, Germany, Sept. 10 – 13, 1991

With this Symposium IFAC has started a new series of Symposia on a subject related to the reliability, availability and safety of technical processes. The abbreviation SAFEPROCESS tries to sketch the direction of the Symposium and can be seen parallel to the IFAC Workshops SAFECOMP, which deal with safety, security and reliability related computer systems.

Based on the call for papers sent out in March 1990, 119 contributed papers and 45 invited papers were obtained. The International Program Committee then decided to accept 82 contributed papers and the invited papers. Altogether 136 papers were finally provided for presentation, which made it necessary to arrange three parallel sessions. 287 participants from 29 countries attended the Symposium, among them about 55 % from industry.

During the opening session the intention of the Symposium was described in detail by the IPC chairman. An on-going task in engineering is to increase the reliability, availability and safety of technical processes. Therefore health and operation of elements of controlled systems must be observed by automated monitoring. This procedure begins with monitoring the status of each element of the process, actuators, sensors, control equipment - including their behaviour in open and closed loop operation. Initial fault monitoring is followed by appropriate actions and management to cope with faults, failures and disturbances to meet reliability and safety requirements. The monitoring procedure as a whole ends with the management of maintenance and repair. Human factors are also important, e.g. for an appropriate division of functions and a suitable interface between man and machine.

Three plenary papers gave an overview of the state-of-the-art in selected areas. D. Reichow (FRG) reported on the fault management in a modern airliner. W. Aleite and D. Wach (FRG) described the status of supervision and fault diagnosis for the safe operation of nuclear power plants. A theoretical oriented contribution on analytical redundancy methods in fault detection for discrete time systems was given by J. Gertler (USA).

In addition to these plenary contributions seven survey papers were presented at the beginning of selected sessions. The purpose was to provide a tutorial introduction, a presentation of the state-of-the-art and examples of applications. The topics were: Aspects of achieving total control systems availability (R. Lauber, FRG); model based fault diagnosis of machines via parameter estimation and knowledge processing (R. Isermann, FRG); a standard interface for self-validating sensors (D.W. Clarke, M.P. Henry, UK); a review of parity space approaches to fault diagnosis (R.J. Patton, J. Chen, UK); safety management in chemical plants (J. König, W. Oberhoff, FRG); advanced fault detection for sensors and actuators in process control (A. Halme, J. Selkänaho, SF); enhancement of robustness in observer-based fault detection (P.M. Frank, FRG).

The Technical Sessions were divided into the following six areas: Reliability and safety analysis; fault detection and diagnosis; knowledge-based systems/expert systems; actions for maintenance; applications; human factors.

Three discussion sessions had been arranged covering the following topics: Education in safety management of technical systems; modern maintenance; signal and/or model based diagnosis.

Finally, some statistics of the Symposium are given. From originally 136 papers, 6 papers (5 %) were withdrawn after printing the program and 16 of the remaining papers (12 %) were not presented. 287 participants came from 29 countries, among them 138 from Germany, 27 from France, 16 from Japan, 15 from the United Kingdom, 13 from Finland, 12 from the USA, 10 from Italy, etc.

The Symposium gave an overview of the state-of-the-art in the field and showed new research results on the theoretical side and presented many applications for industrial processes and pilot processes. It was very rewarding for the organizers to see that 30 % of the papers and 55 % of the participants were from industry. This proves that the topics of fault detection, supervision and safety are of increasing practical importance and therefore theoretical as well as applied research is a challenge for the future.

To support the continuity in the further development of this field within IFAC, a steering committee SAFEPROCESS was founded in Baden-Baden. The 2nd IFAC Symposium SAFEPROCESS is scheduled for Finland, June 13-16, 1994.

R. Isermann
B. Freyermuth

News from Sister Federations

13th Triennial Conference on Operations Research – IFORS '93 OR: Expanding Horizons July 12 – 16, 1993, Lisbon, Portugal

The IFORS XIII Conference will look to the future and highlight new and evolving methodological advances and areas of applications that will take OR into the next century. Invited and contributed sessions will address OR's important role in shaping the future of business, industry, government, education and related scientific fields such as artificial intelligence computer science, decision and information systems, and statistics. And, recognizing that 'What's past is prologue', the members of the international OR community are invited and encouraged to present papers describing their current research and applications, and state-of-the-art reviews.

Calls for papers and paper submission forms are available from the Conference Secretariat. The abstract should reach the Conference Secretariat by April 1, 1992 for inclusion into the Invitation Program.

Further information is available from

Conference Secretariat - IFORS '93
Faculdade de Economia
Universidade Nova de Lisboa
Travessa Estevao Pinto
1000 Lisbon, Portugal
Fax: 351/1/387 1105

IFAC Congratulates

Dr. Stephen Kahne (USA), President-Elect of IFAC, was awarded the R.M. Emberson Award of IEEE in 1991.

Professor László Keviczky (Hungary), Vice Chairman of the Technical Board was appointed a Foreign Member of the Royal Swedish Academy of Engineering Sciences by King Carl-Gustaf on 24 October, 1991.

Professor Boris Tamm (Estonia), Past President of IFAC, was appointed a Foreign Member of the Royal Swedish Academy of Engineering Sciences by King Carl-Gustaf on 24 October, 1991.

Offenlegung:

Das Medienwerk „IFAC Newsletter“ wird als Organ der „International Federation of Automatic Control (IFAC)“ verlegt und ist Eigentum dieser Internationalen Föderation, deren Tätigkeit der Förderung von Wissenschaft und Technik automatischer Regelung und Steuerung dient. Die Föderation hat ihren Sitz in Zürich und ist nach Schweizer Recht als gemeinnütziger Verein angemeldet. Sie verfolgt weder wirtschaftliche noch praktische Ziele.

Das Sekretariat der IFAC befindet sich seit 1978 aufgrund eines Übereinkommens mit der Österreichischen Bundesregierung und der Österreichischen Akademie der Wissenschaften in Laxenburg.

Der „IFAC Newsletter“ erscheint sechsmal jährlich in englischer Sprache unter der Redaktion des Generalsekretärs der IFAC, Dipl.Ing. Dr. Gusztáv Hencsey. Die Zeitschrift dient der Information über die Aktivitäten der IFAC. Sie wird kostenlos an Abonnenten in 48 Ländern versandt, die Kosten werden von der IFAC aus Beiträgen der derzeit 44 Mitgliedsländer getragen.

Präsident der IFAC ist für 1990/93 Prof. Dr. Brian D.O. Anderson, Vizepräsidenten sind Prof. Dr. L. Ljung (S) und Prof. Dr. Y.Z. Lu (China, P.R.). Alle Funktionen werden ehrenamtlich ausgeübt.

(To our readers: To comply with the Austrian „Media Act“ every publication must contain a declaration once a year concerning ownership and purpose as above.)

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Papers

- Optimal Control of the Wafer Temperatures in Diffusion/LPCVD Reactors
(H. De Waard, W.L. de Koning)
- Open Channel Transient Flow Control by Discrete Time LQR Methods
(A. Garcia, M. Hubbard, J.J. de Vries)
- Robust Adaptive Control of a Class of Nonlinear Mechanical Systems with Unbounded and Fast-Varying Uncertainties
(Y. Stepanenko, J. Yuan)
- Sufficient Conditions for Robust Performance of Adaptive Controllers with General Uncertainty Structure
(J.M. Krause, G. Stein, P.P. Khargonekar)
- Robust Control Synthesis for Uncertain/Nonlinear Dynamical Systems
(S. Hui, S.H. Zak)
- A Class of Algorithms for Identification in H_{∞}
(G. Gu, P.P. Khargonekar)
- Recursive Nonlinear Estimation: Geometry of a Space of Posterior Densities
(R. Kulhavy)
- Exact Modelling and Identifiability of Linear Systems
(C. Heij)
- A Review of 2-D Implicit Systems
(F.L. Lewis)
- Towards a New Quality of Automation in Complex Man-Machine Systems
(G. Johannsen)

Brief Papers

- A Robust Failure Diagnostic System for Thermofluid Processes
(J. Wagner, R. Shoureshi)
- A Synthesis of an Optimal Control Law for Path Tracking in Mobile Robots
(A. Hemami, M.G. Mehrabi, R.M.H. Cheng)
- Distance Estimation and Collision Prediction for On-Line Robotic Motion Planning
(K.J. Kyriakopoulos, G.N. Saridis)
- A Computationally Efficient Technique for State Estimation of Nonlinear Systems
(J.S. Dhingra, R.L. Moose, H. Van Landingham, T.A. Lauzon)
- A Semiinfinite Horizon LQ Self-Tuning Regulator for ARMAX Plants Based on RLS
(E. Mosca, J.M. Lemos)
- Further Results on Implicit Models with Application to LQ Adaptive Optimization
(G. Casalino, R. Minciardi)
- Decoupling with Internal Stability for Unity Output Feedback Systems
(Q-G. Wang)
- The Combined Sensitivity and Phase Margin Problem
(W-Y. Yan, B.D.O. Anderson, R.R. Bitmead)
- Model Matching of Descriptor Systems by Proportional State Feedback
(V. Kucera)
- Disturbance Rejection of Left-Invertible Systems
(P. Paraskevopoulos, F.N. Koumboulis, K.G. Tzierakis)
- Stabilizability of Nonholonomic Control Systems
(A.M. Bloch)

IFAC Report

- Contemplative Stance for Chemical Process Control
(T.J. McAvoy)

Book Reviews

- Fuzzy Control and Fuzzy Systems, by W. Pedrycz
(C.J. Harris)
- Continuous-Time Self-Tuning Control, Vol. II, Implementation, by P.J. Gawthrop
(Cs. Banyasz)
- Dynamic Modelling and Control of Engineering Systems (Textbook, Instructions, Diskette), by Lowen Shearer and B.T. Kulakowski
(P. Wellstead)

Nonsmooth and Discontinuous Problems of Control and Optimization – NODPOC '91 IFAC Workshop

Vladivostok, USSR, 9–13 September, 1991

The Workshop was organized by a group from the Institute of Applied Mathematics of the Far Eastern Department of the Academy of Sciences of the USSR and the Institute of Automation and Control Processes of the Department (Vladivostok, USSR). An active role in the organization was played by the Institute of Control Sciences (Moscow), the Institute of Mathematics and the Byelorussian State University (Minsk, USSR). More than 100 scientists from the USSR, Germany, Japan, Korea, China and Mongolia took part in the Workshop and there were 68 papers reported. 14 papers were invited. The themes of the plenary papers dealt with algorithms of optimal control, feedback optimal controls, and singular and sliding motions. Great attention was paid to non-smooth problems of mathematical programming and optimal control (new optimality conditions, stability condition, controlled optimization methods were suggested by reporters for mathematical programming problems: nondifferentiable cost function, elements of dynamic systems, sliding, chattering motions were considered.)

It should be mentioned that the meeting on the algorithms of solving optimal control problems and feedback optimal control problems were the most active. A number of applied optimal control problems were discussed during the workshop (problems of economics, ecology, optimal control problems for moving objects under conditions of uncertainty.) Abstracts of the papers have been published.

Prof. F. Kirillova
IPC Chairman

New Publication

Safety of Computer Control Systems Proceedings of the IFAC/IFIP/EWICS/SRE Symposium, Trondheim, Norway, 30 October – 1 November, 1991

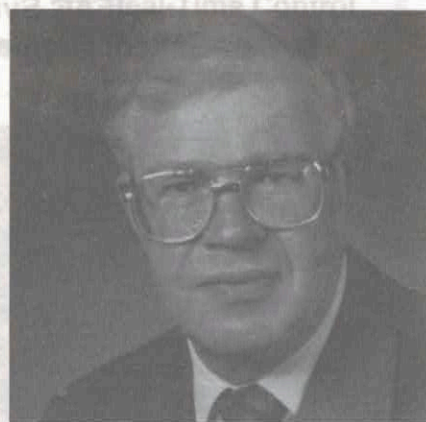
Editor: J.F. Lindeberg, DELAB, Trondheim, Norway

Containing 29 papers, this volume contributes to the literature published on the safety of computer systems. The papers cover all aspects - specification, development, analysis, verification, validation of hardware and software, as well as the problems involved in the reliability, availability and security of systems.

For further information and pricing information please contact

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Pergamon Press plc
Headington Hill Hall
Oxford OX3 0BW, UK

WHO IS WHO IN IFAC



Prof. Gunnar Johannsen
Chairman of SECOM

Gunnar Johannsen was born in Hamburg, Germany, on 22 December, 1940. He received the Dipl. Ing. degree in electrical engineering and the Dr. Ing. degree in guidance and control from the Technical University of Berlin in 1967 and 1971 respectively. In 1980 he habilitated as Privat-Dozent (Dr. habil.) for teaching in the field man-machine systems of aeronautics at the Technical University of Aachen. From 1967 to 1971 he was a research assistant at the Institute of Aircraft Guidance, Technical University of Berlin. From 1971 to 1982 he was head of the Human Operator Branch, Research Institute for Human Engineering (FGAN/FAT), Wachtberg-Werthhoven, Germany, as well as lecturer of manual vehicle control, Technical University, Aachen, from 1974 to 1982. During 1977-1978, he was a visiting faculty member in the Department of Mechanical and Industrial Engineering and the Coordinated Science Laboratory, University of Illinois at Urbana Champaign, USA, where he held an appointment as adjunct associate professor from 1978 to 1981. Currently he is professor of systems engineering and man-machine systems in the Department of Mechanical Engineering, University of Kassel, Germany. His research interests are in human controlling and problem solving in man-machine systems, vehicle and process control, integrated automation, decision support systems, computer-aided systems design, man-machine interface design, graphical design, human-machine dialogue, and knowledge based systems. He is co-author of 'Der Mensch im Regelkreis: Lineare Modelle' (The Human in the Control Loop: Linear Models, Series: Methods in Control Theory, in German Oldenburg, München, 1977); co-editor of 'Monitoring Behaviour and Supervisory Control' (Plenum Press, 1976); and co-editor of two volumes of 'Analysis, Design and Evaluation of Man-Machine Systems' (Pergamon Press, 1983 and 1986 - Proceedings of the IFAC/IFIP/IFORS/IEA Conferences 1982 and 1985, which he organized as Co-Chairman of the International Program Committee - he had the same responsibility as Chairman also for the Conference in 1989). Dr. Johannsen is a member of several German professional societies (DGLR, VDI/VDE - GMA, VDE-ITG, GI, GfA), a senior member of the Institute of Electrical and Electronics Engineers (IEEE: SMC, Computer, CS), and a member of the Human Factors Society. In IFAC, he is now chairman of the Committee on Systems Engineering (SECOM) in which he founded the working group on Man-Machine Systems in 1981 and served as its chairman until 1990, and in which he was vice-chairman between 1984 and 1990.



FORTHCOMING EVENTS

1992
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Title	1992	Place	Deadlines	Further Information
IFAC Symposium Control of Power Plants and Power Systems	March 9-11	Munich Germany	-	VDI/VDE-GMA Secretariat Symposium, Power Plants and Systems, POB 1139 D-W-4000 Düsseldorf 1, Germany
IFAC Conference Modelling and Control of Biotechnical Processes	March 29 April 2	Keystone CA USA	-	Prof. M. Karim, Dept. of Agriculture & Chem. Engg, Colorado State Univ. Fort Collins, CO 80523, USA
IFAC Workshop AI, Control and Advanced Technology in Marine Automation	April 8-10	Genoa Italy	-	Prof. E. Volta, Ist. Automazione Navale C.N.R., Viale Causa 18R I-16145 Genoa, Italy
IFAC Symposium On-Line Fault Detection and Supervision in the Chemical Process Industries	April 22-24	Newark Delaware USA	-	Dr. P. Dhurjati, Dept. of Chem. Engg. Univ. of Delaware Newark, DE 19716, USA
IFAC Symposium DYCORD '92	April 26-29	College Park MD, USA	-	Dr. T. McAvoy Dept. of Chem. & Nuclear Engg. University of MD, College Park MD 20742-2111, USA
IFAC/IFIP Workshop Experience with the Management of Software Projects	May 18-19	Schloß Seggau Austria	-	MSP 92, c/o ÖPWZ Rockhgasse 6, A-1014 Vienna Austria
IFAC Symposium Intelligent Components and Instruments for Control Applications - SICICA	May 20-22	Malaga Spain	-	Prof. A. Ollero, Aut. Contr. Dept. Faculty of Information, Plaza El Ejido s/n E-29013 Malaga, Spain
IFAC Symposium (7th) Information Control Problems in Manufacturing Technology	May 25-28	Toronto Canada	-	Dr. J. Scrimgeour, Advanced Manufacturing Technologies & Ind. Automation, Div. of EE National Research Council Ottawa, Ont. K1A 0R8, Canada
IFAC Workshop Automatic Control for Quality and Productivity	June 3-5	Istanbul Turkey	-	Prof. A. Talha Dinibütün, Istanbul Tech. Univ., Inst. of Science & Technology Ayazaga 80626-Istanbul, Turkey
IFAC/IFIP/IFORS/IEA Symposium Man-Machine Systems; Analysis, Design and Evaluation	June 9-11	The Hague Netherlands	-	Ir. P. L. Brinkman Delft Univ. of Technology Fac. of Mech. Engg. & Marine Tech. Mekelweg 2, NL-2628 CD Delft, Netherlands
IFAC Workshop Artificial Intelligence in Real Time Control	June 16-18	Delft Netherlands	-	Ir. H. B. Verbruggen, Delft Univ. of Technology, Dept. of EE, POB 5031 NL-2600 GA Delft, Netherlands
IFAC Workshop Trends in Hydraulic and Pneumatic Components and Systems	June 18-20	Chicago, IL USA	-	Dr. D. Wormley MIT, Dept. of Mech. Engg. Cambridge, MA 02139, USA
IFAC Workshop Real-Time Programming	June 23-25	Bruges Belgium	-	Mr. Luk Pauwels, Coordinator BIRA, Desguinlei 214, B-2018 Antwerp, Belgium
1992 American Control Conference in cooperation with IFAC	June 24-26	Chicago, IL USA	-	Dale E. Seborg, Dept. of Chem. & Nucl. Engg. Univ. of Calif., Santa Barbara, CA 93106, USA
IFAC Symposium Nonlinear Control Systems Design NOLCOS	June 24-26	Bordeaux France	-	Dr. M. Fliess, CNRS, Lab. des Signaux & Systèmes, Plateau de Moulon, F-91192 Gif s/Yvette, France
IFAC/(IFORS) Workshop Support Systems for Decision and Negotiation Processes	June 24-26	Warsaw Poland	-	R. Kulikowski, System Res. Inst. Newelska 6, PL-01 447 Warsaw Poland
IFAC Symposium Adaptive Control and Signal Processing	July 1-3	Grenoble France	-	L. Dugard, Lab d'Automatique de Grenoble-ENSIEG, BP 46 F-38402 St. Martin d'Herès, France
ISDG/IFAC International Symposium Dynamic Games and Applications	July 15-16	Geneva Switzerland	-	Mr. A. Haurie, Dept. d'Economie Commerciale et Industrielle Univ. de Genève, 2, rue de Candolle CH-1204 Geneva, Switzerland
IEEE/IFAC Workshop Emerging Technologies & Factory Automation	August 12-14	Melbourne Australia	-	Dr. R. Zurawski, Lab. for Con- current Computing Systems School of E & Comp. Engg. Swinburne School of Technology POB 218, Hawthorne 3122, Australia
IFAC Workshop Expert Systems in Agriculture	August 12-14	Hefei China, P.R.	15 Jan. 1992	Prof. Ting-Jian Feng, Inst. of Intelligent Machines Acad. Sinica, POB 1130, Hefei, Anhui, China, P.R.
IFAC/IFORS/IFIP/(IIASA) Symp. (7th) Modelling and Control of National Economies	August 18-20	Beijing China, P.R.	-	Prof. Jong-Ming Wu, Dept. of Computer Science and Techn., Beijing Info. Techn. Inst., Beijing, China, P.R.

FORTHCOMING EVENTS (ctd.)

Title	1992	Place	Deadlines	Further Information
IFAC/IFORS Symposium (6th) Large Scale Systems: Theory and Applications	August 22-25	Beijing China, P.R.	-	Prof. Y. P. Zhang, IFAC LSS92 Chinese Assoc. of Automation POB 2728, Beijing 100080, China, P.R.
IFAC Workshop [*] Distributed Computer Control Systems - DCCS '92	August 23-25	Beijing China, P.R.	15 Jan 1992	Prof. Bing Zhong Gong POB 927, Beijing 100080 China, P.R.
IFAC Symposium (7th) Automation in Mining, Mineral and Metal Processing	August 26-28	Beijing China, P.R.		Prof. Huang Tai-Yi, Chinese Association of Automation Institute of Automation, Academia Sinica, POB 2728, Beijing, China, P.R.
IFAC Workshop Algorithms and Architecture for Real Time Control	August 31 Sept. 2	Seoul Korea	31 Jan 1992	UFAC AARTC Workshop Secr. Engg. Research Center for Adv. Conf. & Instrumen., Bldg 133 Seoul Nat. Univ., Seoul 151-742, Korea
IFAC Workshop Mutual Impact of Computing Power and Control Theory	Sept. 1-2	Prague CSFR	*	Dr. M. Karny, Inst. of Information Theory & Automation, Pod vodarenskou vezi 4 CS-182 08 Prague, CSFR
IFAC Workshop (2nd) System Structure and Control CSFR	Sept. 3 - 5	Prague CSFR	10 Jan. 1992	2nd IFAC WS, Inst. of Information Theory & Autom., POB 18, CS 182 08 Prague,
IFAC Workshop Interactions between Process Design and Process Control	Sept. 6-8	London UK	*	Ms. S. Topley, Centre for Process Systems Engineering, ICSTM Prince Consort Rd, London SW7 2AZ, UK
IFAC/IAF Symposium Automatic Control in Aerospace	Sept. 7-11	Munich Germany		Dr. Ing. E. Gottzein, c/o MBB POB 801169, D-W-8000 Munich 80, Germany
IFAC Symposium (3rd) Low Cost Automation - LCA-92	Sept. 9-11	Vienna Austria		Prof. P. Kopacek c/o OePWZ Rockhgasse 6, A-1014 Vienna, Austria
IFAC/IFORS Workshop Spacecraft Automation and On-Board Autonomous Mission Control	Sept. 14-16	Darmstadt FRG	31 Jan. 1992	Mr. W. Wimmer, c/o ESOC Robert Bosch Str. 5 D-W-6100 Darmstadt, Germany
IFAC/IFORS Workshop Supplemental Ways for Improving Intern. Stability - SWIIS	Sept. 21-24	Toronto area Canada	1 Feb. 1992	Prof. J. O'Shea, Ecole Polyt. CP 6079, Succ. A Montreal, QUE H3C 3A7, Canada
IFAC Symposium Automated Systems Based on Human Skill	Sept. 23-25	Madison, WI USA	1 April 1992	School of Workers - UWEX, Langdon Str. Madison, WI 53703, USA
CPPA/IFAC Conference Control Systems '92 - Dreams vs. Reality, Modern Process Control in the Pulp and Paper Industry	Sept.28 Oct. 1	Whistler, BC Canada	*	Prof. J. O'Shea, Ecole Polyt. CP 6079, Succ. A Montreal, QUE, H3C 3A7, Canada
IFAC Workshop Intelligent Manufacturing Systems	Oct. 1-2	Dearborn MI, USA	-	Prof. N. A. Kheir El & Systems, Oakland Univ. Rochester, MI 48309-4401, USA
IFAC/IMACS/IUTAM/IEEE Workshop Motion Control for Intelligent Automation	Oct. 28-29	Perugia Italy	31 March 1992	Prof. A. DeCarli, Dept. of Comp. & Systems Science, Univ. of Rome 'La Sapienza' Via Eudossiana 18, I-100184 Rome, Italy
IEEE/MBS/IFAC Conference 14th Annual Intl. Conf. of the IEEE Engg. in Medicine and Biology Society	Oct. 29 Nov. 1	Paris France	*	Dr. Swami Laxminarayan Academic Computing Center, IST Univ. of Medicine and Dentistry, 185 S. Orange Ave Newark, NJ 07103, USA
IFAC Conference SAFECOMP '92	Oct. 28-30	Baden Switzerland	27 Jan. 1992	Dr. H. Frey, ABB Transportation Syst. Ltd Affolternstr. 52, CH-8050 Zurich, Switzerland
IFAC Workshop CIM in Process and Manufacturing	Nov. 23-25	Helsinki Finland	*	Prof. K. Leiviskä, Univ. of Oulu, Dept. of Process Engg., SF-90470 Oulu, Finland
Title	1993	Place	Deadlines	Further Information
IFAC Workshop Production Control in the Process Industry	March 29-31	Germany	*	H. Wiefels, VDI/VDE-GMA PF 101139, Graf Recke Str. 84 D-W 4000 Düsseldorf, Germany
IEEE/IPJS/SICE/IFAC Symposium Autonomous Decentralized Systems-ISADS	March 30 April 1	Kawasaki Japan	*	Prof. A. Ichikawa, Nat. Inst. f. Env. Studies 16-2 Onogawa, Tsukuba, Ibaragi 305, Japan
IEEE/IFAC Workshop Intelligent Autonomous Vehicles	April 18-21	Southampton UK	25 Sept. 1992	Prof. C. J. Harris, Lucas Prof. of Aerospace Systems Engg. Dept. of Aero & Astro, Univ. of Southampton Southampton SO9 5NH, UK
IFAC WORLD CONGRESS	July 19-23	Sydney Australia	31 July 1992	IFAC Congress Secretariat '93 c/o Dept. of Electrical + Computer Engg. Univ. of Newcastle, University Drive Callaghan NSW 2308, Australia
IFAC Workshop AI in Economics and Management	August 25-27	Portland, OR USA	*	Prof. Kuan-Pin Lim, Dept. of Ec., Portland State Univ POB 751, Portland, OR 97292, USA

* not yet known - deadline past