IFAC International Federation of Automatic Control
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Newsletter

Contents:

New President's Closing Address

Brian D.O. Anderson speaks at the closing ceremony of the Tallinn Congress

I would like to begin by paying tribute to Boris Tamm, who has led IFAC for three years. In addition, he has been rector of a university, and played a major role in Estonian politics where he was a legislator in the Estonian Parliament. He never neglected his IFAC duties and in fact IFAC has benefited greatly by his wisdom and decisiveness. I have valued his tolerance and personal counsel, but most of all, I value the fact that he is passing to me an operation in good shape. My goal, and with it a challenge, is to be handing over in three years to my successor IFAC in as good as shape as now. Tänan vaga Boris.

IFAC is a provider of services and products - principally publications and meetings. As such, we are like a corporation, and like any corporation, we must rest on adequate financial foundations. We do so at the moment. Again like any successful company, we must have dedicated staff. That we have also, in the form of the Secretariat and hundreds of volunteers. What of our products? Our journal Automatica is a market leader now. The IFAC Proceedings are becoming established and appear to be growing well. The IFAC Newsletter has developed remarkably. In all this, we have been crucially dependent on our editors.

As for our meetings, we have approximately one meeting somewhere in the world every two weeks. The breadth of our meetings and the extent to which we enter applied areas are, I believe, unequalled. We do have variable quality, but quality control measures which we have put into place are having an effect. Our meeting pattern needs to show response to new developments. We have had problems with fees in the past, and a year or so ago we said no to a series of proposed meetings in a country on the grounds of excessive fees. I am very happy that individuals have started to respond to the challenge to keep fees under control.

A major meeting issue to face us is the extent of our involvement in regional meetings such as the European Control Conference or the American Control Conference. Also, at present, we have approximately one-third of a general meeting per year and between our general meetings, we have perhaps 20 or 30 meetings in specific areas of control. We need to ask, is the balance right? But once these administrative issues have been resolved, it becomes vital to concentrate on technical issues.

The basis of IFAC's reputation surely rests in the technical quality of its activities. Sound finances, an effective Secretariat and reasonable fee levels are necessary, but if some things can be more necessary than others, technical quality is the most necessary of all.

We must meet our customers' needs, and in a technically excellent manner.

In considering technical areas, we must be conscious of new developments and meet the demand, for example, in areas such as discrete event systems, expert and intelligent systems, neural networks, robots and at least in the future pollution control and environmentally friendly control.

We have recently made moves to increase the involvement of individuals within IFAC, so that they can feel a greater sense of belonging than has taken place in the past. The IFAC Affiliates Program, coupled with the use of the Newsletter and databases, have been designed towards this end.

There are many people to thank on an occasion such as this. But I am going to be very selective and name just one group, our Estonian hosts, and just one person, Ants Work.

The organization of the Congress in the face of the administrative and supply bottle-necks presented a Herculean task which was executed superbly and exceptionally gracefully. I leave Estonia, as I imagine all of us do, full of admiration for Ants Work and his team, and with a feeling of longing that their dreams for the future will soon be realized.

I became an Associate Editor of Automatica something like 20 years ago, and then was editor for a number of years, but my contact with IFAC administration was peripheral. In 1982-83, some Australians drafted me as a nominee vice-president, in conjunction with a proposal to host the 1993 IFAC Congress in Sydney. Rather bravely, because I was not of the standard IFAC mould, the IFAC Council agreed to the proposal. I can honestly say that my involvement with IFAC has been one of the richest people experience in my life, and certainly the richest of the last decade. Having been honoured by the General Assembly election on Monday, I approach my task with enthusiasm, hope, dedication and assurance that there are many others working for IFAC with equal enthusiasm, commitment and great competence. I hope that the automatic control community will be reached by the products we deliver, and that the consumers will give us constructive criticism when it is called for. In particular, I hope that the Sydney Congress in three years time will be the technical highlight of my term as IFAC President.

To all our readers we wish a Merry Christmas and a Healthy, Happy and Successful 1991

NEWLY APPROVED EVENTS

Title	Date	Place	Deadlines	Further Information
IMACS/IFAC Intl WS Decisions Support Systems and Qualitative Reasoning	March 13-15 1991	Toulouse France	*	Mme M.T. Ippolito DSSOR-IMACS WS, LAAS/CNRS 7, Ave. du Colonel Roche F-31077 Toulouse Cedex, France
LAK/IFSR/IFAC Intl. WS Computer Aided Systems Theory - EUROCAST 91	April 15-19 1991	Krems Austria	Jan. 20, 1991	Prof. Franz Pichler Institute of Systems Science Kepler University, A-4040 Linz, Austria
IMACS/IFAC Symposium Modelling and Control of Technological Systems	May 7-10 1991	Casablanca Morocco	-	Prof. A.El Moudni, LAIC Univ. Hassan II, Faculté des Sciences I B.P. 5366 MAARIF, Casablanca, Morocco
IMACS/IFAC Symposium Parallel and Distributed Computing in Engineering Systems	June 23-28 1991	Corfu Greece	Feb.15, 1991	Prof. S. Tzafestas, IMACS, P.C.COM '91 IRCU, Computer Science Division NTU Athens, Zografou 15773, Athens, Greece
IFIP/IFAC Conference Computer Applications in Production and Engineering CAPE '91	Sept.10-12 1991	Bordeaux France	-	CAPE '91 Conference Secretariat Lab. GRAI, 351, Cours de la Libération F-33405 Talence, France
IMEKO/IFAC Symposium Artificial Intelligence Based Measurement and Control	Sept.12-14 1991	Kyoto Japan	-	Prof. K. Kariya, Dept. of El. Engg. Fac. of Science and Engineering Ritsumeikan University, 56-1, Tojiin-kita, Kita-ku, Kyoto 603, Japan
IFAC/IFIP Symposium Safety, Security, Reliability SAFECOMP '91	Oct.30 - Nov. 1 1991	Trondheim Norway	*	Mr. N.P. Sundby, NFA POB 2312 Sollin, N-0201 Oslo, Norway
IFAC Conference Modelling and Control of Biotechnical Processes	April 5-8 1992	Monterey, CA USA	*	Prof. M. Karim, Dept. of Agri/Chem. Engg. Colorado State Univ., Fort Collins CO 80523, USA
IFAC Symposium Advanced Control in Chemical Processes, DYCORD '92	April 27-29 1992	College Park, MD USA	*	Dr.T.McAvoy, Dept. of Chem. & Nucl. Engg. University of MD, College Park, MD 20742-2111, USA
IFAC Workshop Automatic Control for Quality and Productivity	June 3-5 1992	Istanbul Turkey	*	Prof. A.H. Dinibütün, Istanbul TU Inst. of Science and Technology Ayazaga 80626, Maslak, Istanbul, Turkey
IFAC Workshop Real-Time Programming	June 23-25 1992	Bruges Belgium	*	Prof. L. Boullart State Univ. of Ghent, Automatic Control Lab., Grote Steenweg Noord 2 B-9710 Gent-Zwijnaarde, Belgium
IFAC Workshop Distributed Computer Control Systems, DCCS '92	Aug. 23-25 1992	Beijing China, P.R.	Dec. 1990	Prof. Bing Zhong Gong, POB 927 Beijing 10080, China, P.R.
IFAC/(IAF) Symposium Automatic Control in Aerospace	Sept.8-11 1992	Munich FRG	Sept. 1991	Dr. Ing. E. Gottzein, c/o MBB GmbH POB 801169, D-W-8000 München 80 FRG
IFAC/(ESA) Workshop Spacecraft Automation and On-Board Autonomy for Control of Missions in Space	Sept.14-16 1992	Darmstadt FRG	Jan. 1, 1992	Dr. W. Wimmer, c/o ESOC Robert Bosch Str. 5, D-W-6100 Darmstadt FRG
IFAC Workshop Intelligent Manufacturing Systems	Oct.1-2 1992	Dearbron MI USA	Oct.15, 1991	Prof. N.A. Kheir, Electrical & Systems Oakland University Rochester, MI 48309-4401, USA

* note yet known
- deadline past

New Publications

Proceedings of the IFAC/IEEE Symposium Nonlinear Control Systems Design

Capri, Italy 14-16 June, 1989

Editor: A. Isidori
Universitá di Roma, La Sapienza, Rome, Italy

In the last two decades, the development of specific methodologies for the control of systems described by nonlinear mathematical models has attracted an ever increasing interest. New breakthroughs have occurred which have aided the design of nonlinear control systems. However, there are still limitations which must be understood, some of which were addressed at the IFAC Symposium in Capri. The emphasis was on the methodological developments, although a number of the papers were concerned with the presentation of applications of nonlinear design philosophies to actual problems in chemical, electrical and mechanical engineering.

Proceedings of the IFAC Workshop Distributed Databases in Real-Time Control

Budapest, Hungary 16-18 October, 1989

Editor: E. Knuth
Computer and Automation Institute, Hungarian Academy of Sciences, Budapest, Hungary

The problems surrounding the subject of distributed databases in real-time control were addressed at the workshop. The difficulties included finding new, high-level conceptual models as conventional solutions are rendered useless in distributed databases. The other problems covered include the difficulties faced due to huge transaction fluxes and time constraints. The papers cover these theoretical issues plus an applications section which provides case studies of efficient applied systems which will be important for the development of this essential field.

Proceedings of the IFAC/IFIP Workshop Safety of Computer Control Systems - SAFECOMP '89

Vienna, Austria 5-7 December 1989

Editors: R. Genser
Österreichische Bundesbahnen, Vienna, Austria
E. Schoitsch
Österreichisches Forschungszentrum Seibersdorf, Austria
P. Kopacek
Johannes Kepler Universität Linz
Austria

These Proceedings deal with safety-related applications of industrial computer systems which are used in transportation, production industry, power plants, medical and emergency systems, their objective being to protect the workforce, property and the environment. The SAFECOMP Workshop considered new aspects which were created from the extension of applications to electronic data interchange for trade and transport (EDI) and to computer integrated manufacturing using distributed systems and a wide area telecommunications network. The papers include standardization aspects, specification, verification, validation, testing and modelling in safety related systems, and provide essential information for safety in the growing field of information technology.

Proceedings of the IFAC/UNESCO Workshop International Conflict Resolution Using System Engineering - SWIIS

Budapest, Hungary 5-8 June, 1989

Editors: H. Chestnut
SWIIS Foundation Inc., New York, USA
P. Kopacek
Johannes Kepler Universität Linz
Austria
T. Vamos
Computer and Automation Institute, Budapest, Hungary

Finding an alternative to supplement military ways of resolving international conflicts has been taken up by many people skilled in various areas such as political science, econ omics, social studies, modelling and simulation, artificial intelligence and expert systems, military strategy and weaponry as well as private business and industry. The Workshop will therefore be of use as it looks at various control methods which would create a conciliatory social and political environment or climate for seeking and obtaining non-military solutions to national conflicts which may lead to international conflicts.

Proceedings of the IFAC/EFCE Symposium Dynamics and Control of Chemical Reactors, Distillation Columns and Batch Processes - DYCORD '89

Maastricht, The Netherlands 21-23 August, 1989

Editors: J.E. Rijnsdorp
University of Twente, Enschede, The Netherlands
J.F. MacGregor
McMaster University, Hamilton, Canada
B.D. Tyreus
E.I. du Pont et Nemours&Co, Newark, USA
T. Takamatsu
Kansai University, Osaka, Japan

This volume represents important developments in the control, modelling and dynamics of the three main areas of chemical engineering: chemical reactors, distillation columns and batch processes. All three topics are covered by a plenary survey paper, reflecting the diversity of information available and its relevance to process designers, who need to keep up to date with opportunities and limitations of modern process control, and control scientists who need to obtain realistic cases for research in methods and techniques.

Chairmen of IFAC Technical Committes

In conjunction with the recent IFAC World Congress in Tallinn, August 13-17, 1990, the IFAC General Assembly was held. In the framework of this General Assembly, the IFAC Officers who are to serve IFAC in different capacities for the forthcoming triennium are elected and appointed.
Among the most important functions within IFAC are the ones of the chairmen of IFAC's Technical Committees.
Below now follows a list of IFAC Technical Committees and their Chairmen. A separate list of Working Groups and their Chairmen will be listed in one of the next issues of the IFAC Newsletter. Addresses of the Chairmen can be obtained from the IFAC Secretariat.

AEROSPACE	W. Wimmer	FRG
APCOM	M. Kümmel	DK
BIOMED	C. Cobelli	I
COMP. & INSTR.	P. Albertos	E
COMPUT	L. Motus	SU
DECOM	A. Kaya	USA
EMSCOM	M. Deistler	A
EDCOM	M. Rabins	USA
MAN.TECH.	L. Nemes	H
MOC	R. Bitmead	AUS
SOC.EFF.	F. Butera	I
SECOM	G. Johannsen	FRG
TERMINOLOGY	H.A. Prime	UK

Evaluation of Adaptive Control - Strategies in Industrial Applications

IFAC Workshop 16-20 October, 1989, Tbilisi, USSR

Adaptive Control is one of the main growth points in control theory and attracts the attention of the scientific and industrial community. The Workshop held in Tbilisi was a further proof of this. It was attended by almost 100 scientists and engineers from 13 countries. 105 papers were selected from 195 orginally submitted abstracts.
4 plenary sessions, 34 special sessions and 40 poster contributions took place dealing with contributions on the comparison of adaptive control and identification algorithms, synthesis and estimation of adaptive algoritms and process identification and control. The versatility and abundance of adaptive algorithms developed so far made their comparison in real situations and identification of the domains of their most reasonable application really urgent. The workshop opened up new possibilities for a wide exchange of ideas in this field and provided better insights into practical aspects of adaptive control.
The various practical applications discussed in the papers presented at the workshop reflect the state of the art in adaptive control: metallurgy, chemistry, machine-building, biotechnology, robotics, nuclear and hydropower utilities, image processing, etc.
Summarizing the workshop results we may state that it has been a success. The IPC, nominated by the main sponsor APCOM and the co-sponsor SECOM secured a high scientific standard of the presentations. The organizers, the Georgian Polytechnical Institute, the Institute of Control Systems in Tbilisi and the Institute of Control Sciences in Moscow did everything necessary to make the stay of the participants both fruitful and enjoyable.
It was a unanimous view of the participants that the significant problems discussed make it highly desirable to hold such workshops regularly.

Y.Z. Tsypkin
IPC Chairman
V.A. Lototsky
Workshop Editor

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Papers From the Next Issue – January 1991

Survey Paper

A Survey of Some Aspects of Parallel and Distributed Iterative Algorithms
(D.P. Bertsekas, J.N. Tsitsiklis)

Papers

A Frequency-Domain Estimator for Use in Adaptive Control Systems
(R.O. LaMaire, L. Valavani, M. Athans, G. Stein)
Enhancement of Fixed Controllers via Adaptive-Q Disturbance Estimate Feedback
(T.T. May, J.B. Moore)
Continuous-Time Generalised Predictive Control (CGPC)
(H. Demircioglu, P.J. Gawthrop)
Robust Gamma-Stability Analysis in a Plant Parameter Space
(J. Ackermann, D. Kaesbauer, R. Muench)
On the Attitude Stabilization of Rigid Spacecraft
(C.I. Byrnes, A. Isidori)
Knowledge Engineering for Industrial Expert Systems
(G. Johannsen, J.L. Alty)
Decision Trees and Transient Stability of Electric Power Systems
(L. Wehenkel, M. Pavella)

Brief Papers

One-Step Optimal Saturation Correction
(N.L. Segall, J.F.MacGregor, J.D. Wright)
Modeling of Uncertain Dynamics for Robust Controller Design in State Space
(A. Iftar, U. Ozguner)
Robust Absolute Stability of Lur´e Control Systems in Parameter Space
(A. Vicino, A. Tasi)
On the Robustness of Discrete-Time Indirect Adaptive Linear Controllers
(F. Giri, M. M'Saad, J.M. Dion, L. Dugard)
Quadratic Stabilizability of Uncertain Systems: A Two Level Optimization Setup
(G. Gu, Y.H. Chen, M.A. Zohdy, N.K. Loh)
Some Majorant Robustness Results for Discrete-Time Systems
(D.C. Hyland, E.G. Collins, Jr.)
Discrete Tracking of Complex Trajectories in Short-Duration Processes
(C.C.H. Ma)
Optimal Hold Functions for Sampled Data Regulation
(Y.-C. Juan, P.T. Kabamba)
An Indirect Prediction Error Method for System Identification
(T. Söderström, P. Stoica, B. Friedlander)
Comments on 2-D Descriptor Systems
(S.L. Campbell)
Solutions to the H∞ General Distance Problem which Minimize an Entropy Integral
(D. Mustafa, K. Glover, D.J.N. Linebeer)
On Slowly Time-Varying Systems
(M. Dahleh, M.A. Dahleh)

Book Reviews

Adaptive Control, by K.J. Åström and B. Wittenmark
(D.W. Clarke)
Introduction to Signals and Systems, by E. Kamen
(J.F. Böhme)
State Variable Methods in Automatic Control, by K. Furuta and A. Sano
(J.L. Willems)
Binäre Steuerungstechnik - Eine Einführung, by K.H. Fasol
(R. Johannson)
Statistical Analysis and Control of Dynamic Systems, by H. Akaike and T. Nakagawa
(R. Kulhavy)
Engineering Appplications of Stochastic Processes: Theory, Problems and Solutions, by A. Zayezdny, D. Tabak, & D. Wuliem
(J. Michálek)

AUTOMATICA

Special Issue on Robust Control

Call for Papers

In the 1980s robustness has become one of the most popular subjects in control theory research. Robustness is a fundamental issue in feedback control, and indeed one of the main reasons for using feedback. Because of this central importance, AUTOMATICA plans to publish a special issue on Robust Control, covering the following themes:

Robustness analysis: Structured and unstructured perturbations, stability and performance robustness.

Robustness design: Methods and algorithms for the design of robust control systems.

Case studies: State-of-the-art design studies of practical robust feedback systems.

Although adaptive control is much concerned with robustness it is a subject by itself that is excluded from the scope of this special issue. Optimization papers, such as on Hp-optimization will be selected on the basis of their relevance for robustness design.

Well-known authors are being invited to prepare tutorial papers surveying special areas, but there will be ample space for contributed papers, both in the form of regular and brief papers.

The special issue will be prepared by a team consisting of

Guest editors:
J. Ackermann, German Aerospace Establishment
P. Dorsto, University of New Mexico
B.A. Francis, University of Toronto

Automatica
Editorial Staff:
R.F. Curtain, University of Groningen
H. Kimura, Osaka University
H. Kwakernaak, University of Twente

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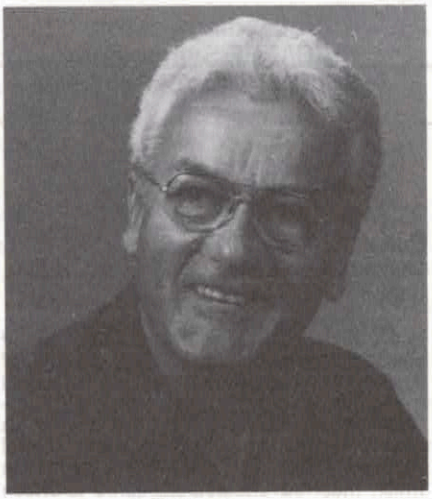
according to the following time schedule

Submission deadline: September 1, 1991
Final selection of papers: March 1, 1992
Special Issue: January, 1993

Authors are encouraged to submit papers early or to announce their intention of submitting a paper well before the deadline.

WHO IS WHO IN IFAC



Petar Kokotovic
Winner of the 1990
Giorgio Quazza Medal

Petar Kokotovic has been active for thirty years as researcher, educator and control engineer, first at the Pupin Institute in his native Belgrade, Yugoslavia, and since 1966 at the University of Illinois in Urbana, where he presently holds the prestigious Grainger Chair. During his graduate education 1961-1965, he studied under the guidance of Professor Mitrovic in Belgrade and Professors Tsypkin and Feldbaum in Moscow, USSR.

With his twenty-six doctoral students and other colleagues he co-authored eight research monographs and numerous journal articles. He is best known for his contributions to sensitivity analysis, singular perturbation methods and robust adaptive control. These contributions include important classes of nonlinear and large-scale systems.

Professor Kokotovic also has a strong interest in industrial applications of control theory. As a consultant to Ford since 1970, he was involved in the design and testing of the first series of automotive computer controls. At General Electric he participated in the development of an aggregation method for large scale power systems. Professor Kokotovic is a Fellow of the IEEE and was chairman of the IFAC Theory Committee. At the IFAC World Congress in Tallinn, Professor Kokotovic was awarded the Giorgio Quazza Medal.

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