



1989
No. 6
Dec.

Newsletter

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Who is Who in IFAC

Nathan Cohn

2 Jan, 1907 - 16 November, 1989

Nathan Cohn, one of IFAC's most outstanding personalities, died in Scottsdale, Arizona on November 16, 1989 at the age of 82.

Nat, as he was called by all those who knew him well, was born in Hartford CT on January 2, 1907. Following graduation from the Massachusetts Institute of Technology in 1927, he joined the Leeds and Northrup Company of Philadelphia and was with the firm for 48 years. He retired from his position of Executive Vice-President in 1972 and as a Corporate Director in 1975.

Mr. Cohn was a world renowned authority and pioneer in the field of control of interconnected electric power systems. Many of the fundamental concepts and techniques he devised helped make possible the geographically wide-ranging networks currently in operation in the US, Canada and elsewhere. He authored ninety technical papers, a textbook and held fifteen patents.

For his inventions, creative contributions and leadership in electric power system control and the instrument industry, Mr. Cohn was elected to the National Academy of Engineering in 1969. In addition he was awarded the Institute of Electrical and



Nathan Cohn

Electronics Engineers Edison and Lamme Medals, the Franklin Institute's Wetherill Medal, the Instrument Society of America's Sperry Medal and the Scientific Apparatus Makers Award. He was Engineer of the Year in the Delaware Valley in 1968 and in the State of Pennsylvania in 1969 and received a Honorary Doctor of Engineering Degree from RPI.

Nat's biography contains a long list of affiliations and memberships.

In IFAC he has served as Chairman of the Applications Committee, as Vice-Chairman of the Advisory Committee and as Chairman of the National Organizing Committee of the Sixth Triennial World Congress in Boston/Cambridge, USA in 1975. He was member of the Technical Committees on Applications, Systems Engineering, Computers and Social Effects of Automation. His profound knowledge in the field of automatic control and of IFAC, whose development he co-determined from its beginnings, were made available to IFAC throughout his life, first in his various committee functions and then as an Advisor to IFAC.

We shall always remember Nat as one with great insight, perspective and also that sense of humour that makes a really great man. Thank you for all you did for us.

Advertisements in Announcements and Preprints

At the recent Council- and Related Meetings in Buenos Aires there was some discussion on how to keep the registration fee for IFAC sponsored events as low as possible. To assist organizers of IFAC events in this task it was decided that suitable advertisements, preferably from the automatic control field or travel agencies, may be placed in all announcements and the preprints of the event. The advertisements should not distract from or interfere with the legibility of the information concerning the event; they should, moreover, be in good taste and not unfavourable to IFAC's image. The IFAC Secretariat is always ready to assist should there be any questions.

The History of IFAC

At the Council- and Related Meetings in Buenos Aires this year, the President of IFAC stressed the necessity of having a history of IFAC compiled for future reference. Dr. H. Chestnut is collecting all relevant material.

Anybody having information or photographs on IFAC's early history is asked to send it to Dr. H. Chestnut at the following address

Dr. H. Chestnut
1226 Waverley Place
Schenectady, NY 12308
USA

To all our readers

Merry Christmas

and a

Happy New Year



System Structure and Control State-Space and Polynomial Methods

IFAC Workshop

Prague, CSSR, 25 - 27 September, 1989

The Workshop was sponsored by the Committee on Theory and co-sponsored by the Committee on Mathematics of Control. It was organized by the Institute of Information Theory and Automation of the Czechoslovak Academy of Sciences under the auspices of J. Kempny, Chairman of the Czech National Council. It was held in the Forum Hotel, Prague, Czechoslovakia.

The Workshop was attended by 93 participants from 18 countries. V. Kucera, Chairman of the IPC, welcomed the delegates on behalf of B. Tamm, President of IFAC, and presented the highlights of the Technical Program.

The aim of the workshop was to bring together researchers on algebraic and geometric methods in system theory and control, to compare and discuss the two approaches. The attention focussed on linear systems, for the nonlinear system techniques had been discussed at the NOLCOS '89 held in Capri this June. The topics included system foundations, decoupling by state

feedback, stability and stabilization, and linear control. Special attention was given to singular systems and 2-D systems. Algebraic and geometric tools were discussed, in particular polynomial equations and sub-space recursions.

The technical program was composed of 24 invited, 44 contributed and 5 tutorial/survey papers, presented in 4 invited, 5 regular and 3 poster sessions. The papers were selected from 128 abstracts submitted to and reviewed by the members of the IPC. The social program included an informal evening meeting in a traditional Czech restaurant.

The Workshop was the first within IFAC devoted to the discussion and comparison of the algebraic and the geometric methods in linear systems. The two approaches were presented as related, not isolated alternatives. The Workshop preprints volume was published by the organizers and includes 58 high quality papers.

V. Kucera, IPC Chairman

Automatic Control in Aerospace

11th IFAC Symposium

Tsukuba, Japan, 17 - 21 July, 1989

The 11th Symposium in this series was held at the Tsukuba Center for Institutes, Tsukuba, Japan. The number of participants was about 140 with 105 from Japan. The total number of papers presented was 48, with 25 from Japan. The Symposium covered almost every field, from navigation, satellite attitude and orbital control, flexible systems, instruments, aeronautical systems to space robotics and future vehicles. The highlight of the symposium was the plenary paper "The NASA Telerobotics Research Program" by Dr. Stephenson of JPL in conjunction with another JPL presentation "Autonomous Navigation and Control of a Mars Rover". They gave an impression of the importance of combining "control" with "intelligence". A round table was held in the evening starting with free discussion but then finally concentrating on the autonomy issue. Technical visits were offered from the Tsukuba Space Center, the Electrotechnical Laboratory and the Mechanical Engineering Laboratory, all in the Tsukuba area. At the banquet, Japanese traditional music and dance called "Ishioka Hayashi" were performed.

Toru Tanabe
NOC Chairman



Participants at the System Structure Workshop

Impressum:

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

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

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

Editor: Gusztáv Hencsey

Layout: Ernestine Rudas

published bimonthly

Newly Approved Events

Title	Date	Place	Deadlines	Further Information
4th International Symposium Differential Games and Applications	Aug.9-10 1990	Helsinki Finland	1 Feb.,1990	Harri Ehtamo, Systems Analysis Lab, Helsinki University of Technology, Otakaara 1 M SF-02150 Espoo, SF
IFAC/ISHS Workshop Mathematical and Control Applications in Agriculture and Horticulture	Sept.30 - Oct. 3 1991	Matsuyama Japan	15 Oct, 1990	Prof. H. Nonami, Dept. of Bio- mechanical Systems, Ehime University, Tarumi, Matsuyama 790, Japan
IFAC Symposium (3rd) Low Cost Automation Techniques, Components&Instruments, Application	Sept. 1992	Vienna Austria		Prof. P. Kopacek c/o OePWZ Rockgasse 6, 1010 Vienna, A

* not yet known

IFAC PUBLICATIONS

The 1989 Supplement to the 1988 IFAC Catalogue is now available from the address given below. It contains titles published in 1988 & 1989 and an updated price list of previous publications.

New Publications

Proceedings of the IFAC Workshop Industrial Process Control Systems

Bruges, B
28-30 September, 1988

Editors: L. Boullart, University of Ghent,
B. E. van Ravenzwaaij, Kema, NL
J.P. Jansen, NL

With the much publicized industrial disasters which have occurred recently - Chernobyl and Piper Alpha - the importance of reliability and safety within industry has come to the forefront. These Proceedings are divided into three sessions as follows: industrial process control systems for safety applications, expert systems and diagnostics, and reliability procedures and guidelines. Papers were presented on the basics of reliability and availability theory, aiding techniques for example, expert systems, and software developments in a variety of areas, ranging from mathematics to engineering. These Proceedings will be a useful reference source for all those involved in the safety and maintenance of industrial systems.

Proceedings of the IFAC Symposium Power Systems: Modelling and Control Applications

Brussels, B
5-8 September, 1988

Editor: A.J. Calvaer, Institut d'Electricité
Montefiore, Université de Liège, B

The control of power systems and power plants is a subject of worldwide interest which continues to sustain a high level of research, development and application. Papers pertaining to areas directly related to power systems and representing the state of the art methods are included in this volume. The topics covered include security analysis, dynamic state estimation, voltage control, power plant control, stability analysis, data communication, expert systems and training simulators for power plants. This interchange between those involved in the research and those involved in the practical applications of new ideas and developments provide a comprehensive reference source for all involved in the power industry.

Proceedings of the IFAC Workshop Robust Adaptive Control

Newcastle, Australia
22-24 August, 1988

Editor: G.C. Goodwin, Department of Electrical and Computer Engineering, University of Newcastle, NSW, Australia

The Workshop brought together international experts in the field of robust adaptive control to present recent developments in the area. These indicated that the theory of adaptive control is moving closer to applications and is beginning to give realistic guidelines use-

ful in practical situations. The proceedings also focussed on the value of such practical features as filtering normalization, dead-zones and unification of robust control and adaptation.

Proceedings of the 4th IFAC Symposium Systems Analysis Applied to Management of Water Resources

Rabat, Morocco
11-13 October, 1988

Editor: M. Jellali, Administration de l'Hydraulique, The Hassan, Benchekroun, Agdal, Rabat, Morocco

Water plays a vital and strategic role in the social and economic development throughout the world, and systems analysis is now a valuable tool for use in decision making with regard to the evaluation and management of water resources. However, the social and economic importance of water, availability and distribution problems, and the complexity of natural water resource systems all make an integrated, global approach to water resource management and development essential. Many of the papers presented at this international meeting use examples of experiences and problems from specific national projects to illustrate aspects of the application of systems analysis to water resource management. In addition to practical problems, there are also more theoretical discussions on mathematical modelling and the potential role of expert systems.

Proceedings of the 8th IFAC Workshop Distributed Computer Control Systems 1988

Vitznau, CH
13-15 September, 1988

Editors: M.G. Rodd, Institute for Industrial Information Technology, University of Wales, UK
Th. Lalive d'Épinay, ABB Asea Brown, Boveri AG, Mannheim, FRG

Continuing the forward thinking of previously held distributed computer control systems meetings, this volume discusses both the positive and negative views on trends in OSI-based communications; the development of the fieldbus; the importance of the incorporation into basic real time operating systems to be used for distributed systems of concepts such as time-stamping and access to global time bases; and the influence of artificial-intelligence-based technologies on the distributed computer control side.

For further details and pricing information on the above publications please contact:

Marketing Department
Pergamon Press plc
Headington Hill Hall
Oxford OX3 0BW
UK

Power Systems and Power Plant Control

IFAC Symposium

Seoul, Korea

22 - 25 August, 1989

The Seoul Symposium, sponsored by the IFAC Technical Committee on Applications, the IFAC Technical Committee on Components and Instruments and the Korea Association of Automatic Control, and hosted by the Korean Institute of Electrical Engineers and the Korea Electric Power Corporation, was held at the Ramada Renaissance Hotel in Seoul. The symposium was one in a series that IFAC sponsors on the subject. The previous one was held in 1987 in Brussels, Belgium, where I, in agreement with the IPC Chairman, Dr. Tomas DyLiacco, officially proposed the Seoul Symposium.

The symposium was widely recognized and well received; it attracted 363 participants; 248 from Korea and 115 from 26 countries. 133 technical papers including 4 invited papers were presented in 34 different sessions which meant 75 % presentation out of 174 papers included in the final program which had been selected out of 355 originally submitted papers.

The Symposium was opened with welcoming addresses by Dr. Bong Seo Lee, the Minister of Energy and Resources, Mr. Byong Wha Ahn, the President of the Korea Electric Power Corporation, and keynote addresses by Dr. Myoung Sam Ko, the President of the Korea Association of Automatic Control, Dr. Kun Mo Chung, the President of the Korea Science and Engineering Foundation, and Dr. Yasuji Sekine, the President of the Institute of Electrical Engineers of Japan. They all stressed a need of active research and development activities in the area of power systems and power plant control in Korea whose industry and power consumption are rapidly expanding.

The Symposium provided a forum for educators, planners and engineers of power systems gathered from all around the world. Presentations of recent research and development activities and hot debates demonstrating the liveliness of the symposium took place in 34 sessions under the following topics: Security analysis techniques; normal and emergency generation control; reactive power and voltage scheduling; substation design and automation; network modelling and analysis; stability analysis; reliability and production costing; modelling and control of power plants; generation and integrated expansion planning; EMS control centers; power system stabilizers; system operator training; system protection and digital relays; state estimation; superconducting magnetic energy storage; voltage stability; real power dispatch; electrical machines and equipment; expert system applications; power system simulators; generation scheduling and unit commitment; control center man-machine interface; distribution system control; load forecasting & maintenance scheduling; transmission expansion planning; network power flows; analysis of system oscillation.

The Symposium covered a wide range of topics related to power systems and power plant control. And yet it was concluded in the post-symposium IPC meeting that the presented papers were of extremely high quality. No conclusive date has yet been set for the next Symposium in this series as it must not coincide with the 1990 World Congress or the 1991 Power System Workshop, scheduled in Zurich, Switzerland.

Young Moon Park
NOC Chairman

Papers from the Next Issue - Jan. 1990

Survey Papers

Adaptation and Tracking in System Identification: A Survey
(L. Ljung)
Continuous-Time Approaches to System Identification: A Survey
(H. Unbehauen)

Papers

Generalized Binary Noise Test-Signal Concept for Improved Identification-Experiment Design
(H.J.A.F. Tulleken)
Consistent Parameter Estimation and Order Selection for Noncausal Autoregressive Models Via Higher-Order Statistics
(J.K. Tugnait)
Numerical Integration Approach to On-Line Identification of Continuous Systems in the Presence of Measurement Noise
(S. Sagara, U.Y. Zhao)
A Review of k-Step-Ahead Predictors
(G. Favier, D. Dubois, C. Rougerie)
ESPION: An Expert System for System Identification
(M. Haest, G. Bastin, M. Gevers, V. Wertz)
Qualitative Aspects for the Distribution of Errors in Least Squares Estimation
(M.E. Salgado, C.E. de Souza, G.C. Goodwin)
A General Hankel-Norm Approximation Scheme for Linear Recursive Filtering
(A. Gombani, M. Pavon)
Parameter Identification in the Presence of Nonparametric Uncertainty
(J.M. Krause, P.P. Khargonekar)
On Covariance Function Tests Used in System Identification
(T. Soderstrom, P. Stoica)
Identification and Validation of Turbogenerator Models
(D.J.G. Morrell, B.W. Hogg)
Wave Estimation: A Model-Based Identification Approach
(J.V. Candy, E.J. Sullivan)

Brief Papers

The Effect of Rapid Sampling in System Identification
(B. Wahlberg)
The Frisch Scheme in Dynamic System Identification
(S. Beghelli)
Identifiability of the Deconvolution Problem
(A. Ahlen)

Book Reviews

Control and Dynamic Systems: Advances in Theory and Application by C.T. Leondes
(R. Kulhavy)
Modelisation et Identification en Traitement du Signal by M. Najim
(R.A. Vingerhoeds)
Lessons in Digital Estimation Theory by J.M. Mendel
(G. Giannakis)

Industrial Problem Session at the World Congress in Tallinn

The project was initiated in Budapest in 1984 with the basic idea to highlight our problems in a number of different industries - hence we had ten separate sessions there. During the Budapest Panel Sessions it became clear that all industries have similar problems. Steel, pulp & paper, chemical food, etc. industries use the same "unit operations", i.e. they move, heat, mix, cool and so on, the field of industry does not really matter.

Now our field has boiled down to really true industrial problems and can be defined with the following keywords:

- user/supplier/academic relations
- automation/organization/human resources
- theory/operation/plant/performance
- complexity/human perception
- industrialist & automation

These "bricks" at hand, a new type of Industrial Problem Session was created and it took the following shape after much correspondence and discussions:

1. Technology Transfer

- The chain from academia to industry, does it work
- How to convert research results from universities and research laboratories to marketable products
- How to help the small and medium sized industries which are generally rather reluctant to do their own research

Chairman: Prof. V. Haase, Joanneum, Graz, Austria

2. Solving the Problems Caused by Complexity

- Complexity and safety of highly automated industry
- Failure detection and isolation
- Reliability, maintainability and diagnosis

Chairman: Prof. J. Gertler, George Mason University, Fairfax, VA, USA
'Industrial' Co-Chairman: Dr. E. Nisenfeld, Applied Synaptics, Riderwood, MD, USA

3. Industrialist & Automation

- The role of man in highly organized industry
- Automation/organization/performance
- The views of various managerial levels concerning the production process/automation supplier/R&D
- The general industrial attitude/opinions

U. Luoto
Sub-IPC Chairman

WHO IS WHO IN IFAC



Prof. T. Tanabe
Chairman of the TC on Aerospace

Professor Toru Tanabe was born in Dairen now in China. He studied at the University of Tokyo and received Bachelor's- and Master's degrees and finally a Doctor's degree in Engineering in 1967, all in aeronautics. Meanwhile from 1963 - 65 he studied at the Massachusetts Institute of Technology under the graduate student exchange program. He was promoted to associate professor in 1969 and has been professor at the University of Tokyo since 1982, where he teaches courses in astrodynamics, navigation, guidance and control of aerospace vehicles and aerospace vehicle instrumentation.

He is the past chairman of the astronautics committee and is currently chairman of the IFAC aerospace liaison committee both in the Japan Society for Aeronautical and Space Sciences. He also serves as executive director of the Japanese Rocket Society and is associate editor of the International Academy of Astronautics and a member of the Space Systems Committee of the International Astronautical Federation. Professor Tanabe has been chairman of the TC on Aerospace of IFAC since 1987 and has served as NOC Chairman of the 11th IFAC Symposium on Automatic Control in Aerospace held in Tsukuba, Japan in July 1989.

His current research interests are autonomous system design methodologies and technologies which are applicable to space systems and operations. He has developed ideas related to autonomous multiple swingly trajectory generation, autonomous network systems, autonomous controller design systems and autonomous space navigation systems. He is an author and co-author of more than 100 papers and also works on governmental and industrial projects such as HOPE orbital plane and Earth-Moon transportation system projects.

SWIIS Report

The IFAC Working Group on Supplemental Ways for Improving International Stability (SWIIS) has prepared a report on "Control Engineering and International Conflict Resolution" which is now available at the IFAC Secretariat, free of charge.

Please direct your request to the

IFAC Secretariat
Schlossplatz 12
A-2361 Laxenburg
Austria

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Acknowledgement to IFAC would be appreciated.