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CALL FOR PAPERS
Journal of Real-Time Systems
Special Issue on Wireless Real-Time Communications

The advent of wireless computer communication facilities creates increasing interest in utilizing this technology for real-time computer communication. Among the promising prospects are seamless support of mobile nodes, e.g., in factory automation systems, increased fault-tolerance based upon multiple radio channels, and superior scalability. However, particular challenges are created if wireless communication is to be used in a real-time system.

The above mentioned special issue of Real-Time Systems focuses on this problem domain. You are invited to submit original theoretical and applied/practical papers that deal with wireless Algorithms and services
Protocols
Robust communications
Hardware architectures
Physical layer advances
Applications and case studies related to Real-time communication
Reliability and fault-tolerance
Advanced security issues

Please email your contributions (in postscript format) before December 1, 1999.

Prospective authors may download a PostScript version of the complete call for papers from http://www.cs.ucsd.edu/~cfetzer/ifpsr99.ps

14th IFAC World Congress
Beijing, China, P.R.
Report of the IPC Chair

1. Summary
The 14th IFAC World Congress was held in the International Convention Center, Beijing, P.R. of China, July 5-9, 1999. It had 1466 registered participants, including 1080 from outside the Chinese Mainland, and 300 accompanying persons. Control scientists and engineers from 59 countries and regions demonstrated their achievements and shared their experience in research and applications in the broad areas of automatic control.

In the course of five Congress days, 1366 papers were presented in 215 lecture sessions and 46 poster sessions. Each Congress day started with a plenary talk given by control experts of international reputation. Seven Panel Discussions were organized on topics such as Perspectives on Control, Control Challenge in the 21st Century and others. Before the Congress, on July 4, 1999, seven tutorial workshops were organized. IFAC'99 being the first IFAC World Congress taking place in a developing country, was considered to be a great success by the international control community.

2. Paper Submission and Acceptance
The IPC Secretariat received 2169 submissions from 68 countries and regions including 6 survey papers, 1842 contributed papers, 3 case studies and 318 papers divided over 53 invited session proposals. There were proposals for 8 panel discussion.

By the end of June 1998 all submitted papers were packaged according to their subject areas and sent to the 45 IFAC TC Chairs for review. Each paper required at least two reviews. For several TChs, the numbers of submitted papers were more than 150, for example, 201 papers for the TC on Nonlinear Systems, 169 papers for the TC on Robust Control and 162 papers for the TC on Modelling, Identification and Signal Processing. To organize the review for so many papers was a big burden for TC Chairs. I feel very much indebted to all reviewers, TC Chairs and CC Chairs for their hard work.

Based on the reviews, the TC Chairs arranged the accepted papers in sessions and sent their reports to the corresponding CC Chairs, who took the final decision on acceptance/rejection of papers and reported the session arrangements of their CC to the IPC Secretariat. The paper review was thus carried out in a decentralized way and the IPC Secretariat including the IPC Chair made no change in the decisions of CC Chairs.

As a result of the review process 1556 papers from 59 countries and regions were accepted for presentation at the Congress. About 20% of the accepted papers came from the Chinese Mainland. The number of papers included in the Final Program of IFAC'99 was less than the accepted papers by 13, i.e. 1543.

The following statistics show the distribution of accepted papers in decreasing order over subject areas. There were 482 papers on "Design Methods", 309 on "Systems and Signals", 239 on "Industrial Applications", 174 on "Manufacturing and Instrumentation", 105 on "Systems Engineering and Management", 99 on "Transportation and Vehicles", 56 on "Computer Control", 50 on "Life Support Systems" and 42 papers on "Global and Educational Issues of Automation". All these papers were scheduled in 46 Poster Sessions and 215 Lecture Sessions arranged in 17 parallel tracks.

There were eight countries with more than 50 accepted papers. The statistics are listed in Section 5.

3. Some Observations
At the Congress there were many successful sessions including 6 sessions on industrial applications and process control, 3 sessions on robust and nonlinear control. Each of these sessions had more than 60 attendees. The Session "Systems with Delay" attracted more than 80 attendees.

The Panel Discussions "Perspectives on Control" and "Control Challenge to the 21st Century" were very successful with more than 250 and 150 attendees respectively.

The poster type of presenting papers provides an even better opportunity to communicate with the audience and hence it has its own advantage over the oral presentation. This explains why the poster sessions of the Congress attracted so many people involved them in animated discussions.

At the Congress about 51% of the presented papers fell into the theory-oriented CC on Design Methods and CC on Systems and Signals. Automatic control is a science of engineering and technology, and hence the vitality of control theory consists in its applications. Thus, narrowing the gap between theory and practice is a challenge to control scientists in the coming new century.

The real-world problems are often very complicated; they may be not only nonlinear, but also with random disturbances and with model uncertainties, sometimes even infinite-dimensional. Therefore, the second challenge to control scientists is to develop not too complicated theories that can deal with complex control systems.

4. Congress Paper Prizes
There are three Congress paper prizes: the Application Paper Prize and the Young Author Prize are funded by IFAC, while the Poster Paper Prize was funded by the Chinese NMO.
For the Poster Paper Prize there were 13 papers as Finalists and the winners were the following two papers:

“A Novel Qualitative Control Method to Inverted Pendulum System” by Deli Li, Hui CHEN, Jianhua FAN and C. Z. SHEN and

“Robust and Optimal Fuzzy Control: A Linear Matrix Inequality Approach” by KAZUO ANAKA, Tadamitsu TANIGUCHI and H. O. WANG.

5. No-Show Author Problem

1543 papers (1266 lecture papers and 277 poster papers) have been included in the Final Program, but only 1366 papers (1143 lecture papers and 223 poster papers) were presented at the Congress. The difference is 177 papers. For simplicity we can say that not all of these papers fall into the category of no-show author papers, as the authors of about 10 of them apologized in advance for not being able to present their papers at IFAC’99. The ratio of no-show author papers accepted papers is 11.47% for the whole Congress. To be precise, 9.72% for lecture papers and 19.49% for poster papers. The following statistics show the no-show author paper rates for those countries, which have more than 50 accepted papers each.

<table>
<thead>
<tr>
<th>Country or Region</th>
<th>number of accepted papers</th>
<th>number of no-show author papers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinese Mainland</td>
<td>312</td>
<td>29</td>
</tr>
<tr>
<td>U.S.</td>
<td>173</td>
<td>29</td>
</tr>
<tr>
<td>Japan</td>
<td>146</td>
<td>4</td>
</tr>
<tr>
<td>France</td>
<td>94</td>
<td>8</td>
</tr>
<tr>
<td>UK</td>
<td>90</td>
<td>13</td>
</tr>
<tr>
<td>Germany</td>
<td>82</td>
<td>0</td>
</tr>
<tr>
<td>Sweden</td>
<td>52</td>
<td>0</td>
</tr>
<tr>
<td>Italy</td>
<td>51</td>
<td>5</td>
</tr>
</tbody>
</table>

The distributions of accepted papers and no-show author papers over other countries and regions with more than 4 accepted papers are as follows.

<table>
<thead>
<tr>
<th>Country or Region</th>
<th>no of acc. papers</th>
<th>no of no-show author papers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>46</td>
<td>8</td>
</tr>
<tr>
<td>Australia</td>
<td>43</td>
<td>5</td>
</tr>
<tr>
<td>Spain</td>
<td>40</td>
<td>0</td>
</tr>
<tr>
<td>Hong Kong, China</td>
<td>38</td>
<td>6</td>
</tr>
<tr>
<td>Singapore</td>
<td>36</td>
<td>2</td>
</tr>
<tr>
<td>Korea</td>
<td>35</td>
<td>16</td>
</tr>
<tr>
<td>Russia</td>
<td>35</td>
<td>15</td>
</tr>
<tr>
<td>Brazil</td>
<td>22</td>
<td>4</td>
</tr>
<tr>
<td>Taiwan, China</td>
<td>18</td>
<td>1</td>
</tr>
<tr>
<td>Finland</td>
<td>17</td>
<td>0</td>
</tr>
<tr>
<td>The Netherlands</td>
<td>16</td>
<td>0</td>
</tr>
<tr>
<td>Finland</td>
<td>16</td>
<td>0</td>
</tr>
<tr>
<td>Mexico</td>
<td>16</td>
<td>1</td>
</tr>
<tr>
<td>Czech</td>
<td>15</td>
<td>1</td>
</tr>
</tbody>
</table>

The number of accepted papers that are not counted in the above tables is 46, which are distributed over 23 countries. Among them 13 papers were not presented at the Congress.

The no-show author problem perplexes the organizers of all kinds of conferences. It is usually assumed that this problem is connected with economy, and it is believed that with the development of the global economy, in which automatic control may play an important role, the no-show author problem will gradually become solved. However, from the above statistics it is seen that the system with the no-show author paper rate as its output is complicated, and the economy is not the unique input. Maybe, it is of interest for IFAC NMOs to consider the system of no-show author rate in order to decrease its output. This is a challenge to IFAC NMOs. I fell embarrassed to recognize that the no-show author rate is 9.29% for the Chinese Mainland. The Chinese NMO, i.e. the Chinese Association of Automation, will seriously consider the problem.

6. Acknowledgment

The Final Program of the 14th IFAC World Congress is the result of collective work of hundreds of reviewers, 45 IFAC TC Chairs, 9 IFAC CC Chairs and all IFAC Members. It is also the result of hard work of the IPC Secretariat during almost 3 years and the close cooperation between both Secretariats of IFAC and NOC in coordination with the China International Conference Center for Science and Technology. Their contribution to the Congress is highly appreciated.

Finally, I would like to thank all our colleagues and friends from different parts of the world who have given support, help and useful suggestions without which the success of the Congress would have been unimaginable.

H.F. Chen, IPC Chair
14th IFAC World Congress

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Control Engineering Practice
A Journal of IFAC the International Federation of Automatic Control

Papers from the September 1999 Issue

Control of Jet Engines (H. Austin Spang III, H. Brown)
Identification and Idle Speed Control of Internal Combustion Engines (G. de Nicolao, C. Rossi, R. Scattolini, M. Saffiotti)
Integrated Centering Control of Inertially Actuated Systems (H. G. Chace, M. Yin, A. A. Berlin)
A G2-based Hybrid Modelling and Simulation Methodology and its Application to a Rolling Mill (D. A. Linkins, B. E. Tany)
From Robust Control to Adaptive Control (I. D. Landau)
Special Section on Automatic Control in Aerospace Preface on the Special Section on Automatic Control in Aerospace (J. G. Lee)
Analysis of a Station-keeping Maneuver Strategy for Collocation of Three Geostationary Satellites (B. S. Lee, J. S. Lee, K. H. Choi)
Control System Design of Flexible-body Launch Vehicles (H. Mori)
IFAC Meeting Papers - Keyword Listing Distributed Computer Control Systems, Como, Italy, September 1998

Papers from the October 1999 Issue

Experimental Testing of Flexible Recipe Control Based on a Hybrid Model (D. Sel, N. Hvala, S. Strmcln, S. Milanic, B. Sukljan)
Self-Learning Neurofuzzy Control of a Liquid Helium Cryostat (W. C. Le, A. L. Dexter)
A Simple Method for Detection of Stiction in Control Valves (A. Horch)
Multi-sensor Fusion for Steerable Four-wheeled Industrial Vehicles (Y. Keong Tham, H. Wang, E. Khawng Teoh)
Robotic Force/Velocity Control for Following Unknown Contours of Granular Materials (K. Yu, J. Kieffer)
Special Section on Intelligent Components and Vehicles Preface to the Special Section on Intelligent Components and Vehicles (A. Olivo)
External Model and SyncCharts Description of an Automobile Cruise Control System (M. Bayart, E. Lemaire, M.-A. Peraldi, C. Andre)
Fuzzy Modelling and Control of an Engine Air Inlet with Exhaust Gas Recirculation (R. Bortolet, E. Merlet, S. Boverie)
Multiple-observer Scheme for Safe Navigation (R. Schultze)
IFAC Meeting Papers - Keyword Listing Conference on Information Control in Manufacturing, Nancy, July 1998
Major Medals Awarded

Brian D.O. Anderson
Winner of the Giorgio Quazza Medal 1999

Brian D.O. Anderson, Yong-Zai Lu

Gunter Stein
Winner of the Nathaniel Nichols Medal 1999

Gunter Stein

Dr. Stein is chief scientist of Honeywell's Technology Center in Minneapolis, MN. This center conducts research and development activities in sensors, navigation and control systems, computer systems and software, information processing and displays, and crew interfaces.

Dr. Stein's own technical specialization is in systems and control. He has managed R&D programs and served as an individual contributor in this technology area since joining Honeywell as a research engineer in 1989. He has extensive experience in aircraft flight controls (fighters, transports and experimental vehicles), in spacecraft attitude and orbit controls, and in navigation systems for strategic, tactical and commercial applications. He has also conducted control design and technology studies for large space structures, launch boosters, maneuvering reentry vehicles, ship positioning systems, torpedo engines and autopilots, and for precision guided weapons.

From 1977 to 1997, Dr. Stein also served as Adjunct Professor in Electrical Engineering and Computer Science at the Massachusetts Institute of Technology, Cambridge, MA, teaching control system theory and design.

Dr. Stein's research interests include multivariable control, estimation, filtering, and adaptation, with emphasis on applications to complex aerospace problems. He has been instrumental in bridging the considerable gap between the modern space state control theory of the 60's and the earlier classical frequency domain concepts of the 40's, culminating in a synthesis now generally known as robust multivariable control. Dr. Stein is also active in the development of computer aids for control system design.

Dr. Stein is a member of the IEEE, the AIAA, and Sigma Xi. He received Honeywell's H.W. Sweatt Award for engineering excellence in 1972, was named Minnesota's "Young Aerospace Engineer of the Year" in 1975, was elected fellow of the IEEE in 1985, was awarded the IEEE Control Systems Society's first Herrick W. Bode Prize in 1989, and was elected to the National Academy of Engineering in 1994.
Congestion Control as a Stochastic Control Problem with Action Delays
(E. Altman, T. Basar, R. Srikant)
Class-specific Quality of Service Guarantees in Multimedia Communication Networks
(I-Ch Paschalidis)
Resource Pricing and the Evolution of Congestion Control
(R.J. Gibbens, F.P. Kelly)
Power Control and Capacity of Spread Spectrum Wireless Networks
(S.V. Hanly, D.N. Tse)
Information Delivery Through Broadcasting in Satellite Communication Networks
(L. Tassiulas, Chi Jian Su)

Real Time Programming
24th IFAC/IFIP Workshop
Schloss Dagstuhl, Germany
31 May – 2 June 1999

With its long tradition dating back to 1971, this year the IFAC/IFIP Workshop on Real Time Programming (WRTP) joined forces with the International Workshop on Active and Real-Time Database Systems (ARTDB). Both series of workshops have established themselves as excellent platforms for the exchange of information on recent technological advances and practices in real time computing, a field that is becoming an essential enabling discipline of both control engineering and computer science and engineering as there is an accelerated growth of demands for functionality and dependability of real-time and embedded control systems.

The Joint Workshop provided an opportunity to assess the state of the art, to present new results, and to discuss possible lines of future developments. Primarily, it was based on software development for real time systems, various aspects of real time operating systems and active and real time database systems. The 1999 workshop on Real Time Programming and the biannual Workshop on Active and Real-Time Database Systems will co-operate again in two years.

The technical program of this 1999 Joint Workshop maintained the outstanding quality of both series. It covered latest research and developments in requirements engineering, software engineering for active and real time database systems, communication and clock synchronisation, embedded systems, formal methods and specification. There were 58 paper submissions from 19 countries. The contributions came from Europe, North America, Australia, and the Far East. Each paper was reviewed by at least three referees, who gave marks. The highest scoring 26 papers were selected for acceptance and assigned to be presented in 8 sessions, further 8 submissions where selected as reserve papers to be presented in case there were no-show authors. Of these 34 papers accepted for publication 29 were from academia, 4 from industry, and 1 from a government research agency. In addition to these high quality technical papers, the program also featured a keynote address delivered by Prof. J. Zwirek, and a panel discussion on the state of the art in the field of active real time database systems.

The Workshop was jointly organised by the Technical Committee on Real Time Systems of the German IFAC and IFIP NMOs, the University of Skovde, FernUniversitaet Hagen and Schloss Dagstuhl.

The generous support of the Workshop by grants of the University of Skovde in Sweden and by Deutsche Forschungsgemeinschaft enabling the participation of overseas and Central European scientists is highly appreciated.

Alceu Heinek Frigeri, Wolfgang A. Halang and Sang H. Son.
Conference and IPC Chairman of WRTP'99 and ARTDB-99

WHO IS WHO IN IFAC

Prof. Mituhiko Araki received the B.E., M.E., and Ph.D. degrees, all in electronic engineering, from Kyoto University, Kyoto, Japan, in 1966, 1968, and 1971, respectively. Since 1971 he has been with the Department of Electrical Engineering, Kyoto University, where he is currently a Professor. He visited Imperial College, London from 1973 to 1975, Santa Clara University, California in 1979, and Waterloo University, Ontario in 1982.

He started his research career by joining a medical electronics group, where he was engaged in a simulation study of a neural network model (Perceptron) as well as an experimental study of a real neural system of cats. As a topic of Master Thesis, he chose analysis of a certain class of stochastic systems which appeared in medical applications. Then, he was inclined towards theoretical worlds and was mainly engaged in studies of systems and control theory for 25 years.

The topic of his interests in the systems and control theory were stability of composite systems, M-matrices, Nyquist array method for design of multivariable controllers, state predictive controllers for plants with pure delays, multirate digital control systems, two-degree-of-freedom optimal controllers, frequency responses of sampled-data systems, etc. In parallel to the theoretical researches, he was also engaged in industrial applications such as proposal of two-degree-of-freedom PID controllers and their optimal parameter tuning, control of synchronous generators, control and scheduling of steel producing systems, scheduling of elevators, introduction of the ‘static’ state concept to scheduling problems, etc.

Since 1991, he has been engaged in cooperative researches with medical doctors; such as control of blood pressure of patients under surgery, control of blood sugar after surgery, control of intracranial pressure during eye surgery, clinical stage classification, etc. Currently, he is placing more time and efforts on these medical applications, while he is still much interested in industrial applications of control theory and scheduling techniques.

He is a member of IEEE and many Japanese academic societies. He was an associate editor of the IEEE Transactions of Automatic Control and the editor-in-chief of Systems, Control and Information (a Japanese Journal). He is currently the editor-in-chief of the Transactions of the Society of Instrument and Control Engineers in Japan.

At the General Assembly held in the framework of the 1999 IFAC World Congress in Beijing, he was elected member of the IFAC Council. He was also appointed Editor of the IFAC Journal Automatica to succeed Prof. Katsumasa Furuta.