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SOCIETY
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IECON '89 Keynote Speaker



Emerson W. Pugh

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Contributions Welcome

Material for Feature Articles, Opinions, Chapter News, Professional Activities, and Abstracts of Reports should be mailed directly to any associate editor. Other material and correspondence should be mailed to the editor.

Short interesting articles are more likely to be read by members than long detailed articles; the recommended maximum length is 1,000 words. In order to save column space in the *Newsletter*, the editor may shorten articles which exceed the recommended length. All material must be received at the editor's office by the deadlines listed below.

Charges for listings in the IES Newsletter are: \$25/Business Card, \$75/Eighth Page, \$125/Quarter Page, \$225/Half Page, and \$325/Full Page. Checks should be made payable to IEEE and should accompany the advertisement. The editor retains the right to reject (with the return of payment) any material submitted.

Newsletter Deadlines

Announcements and letters to the editor are solicited from the membership. Please submit materials for consideration by the editor according to the schedule below:

Due Date	Issue
December 30	March
March 31	June
June 30	September
September 30	December

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A Note from the IES Standards Liaison

With this note, I would like to introduce myself. My name is Juan R. Pimentel, the new IES Standards liaison to the IEEE. I am an associate professor at GMI Engineering & Management Institute and in my liaison capacity I am succeeding Victor Huang.

The purpose of this article is to provide IES readers information on the following items:

- my role as the IES standards liaison to the IEEE
- the standards process
- advantages of standards
- some standards which may be of interest to IES members
- how to get standards
- initiating standards activities, encouraging the participation in or the sponsorship of standards, identifying in strategic areas for the IES to become involved in with standards

The IES Standards Liaison Role

The role of the IES standards liaison to the IEEE involves the following activities:

- a. Filter the information on standards received from the IEEE and pass along only information which is relevant to the majority of IES members. Currently, the IEEE is sponsoring thousands of standards and the information could be overwhelming. I will select appropriate standards and provide information through the newsletter or the IES AdCom meetings.
- b. Explain the standards process to IES members
- c. Encourage the IES Society in the sponsoring of standards in strategic areas
- d. Monitor the proposals for new standards
- e. Clarify and respond to specific standards questions or issues brought up by IES members

The Standards Process

A standard is defined as that which is established by an established authority as a rule for the measure of quality, weight, extent, value, or quantity. There are basically two types of standards: de jure and de facto. De jure standards are developed by institutions formally chartered to develop standards. De facto standards are conventions which are widely established as a result of acceptance by the users community. For example, the IEEE is a formal organization which participates in the development of standards within its technical areas. Thus, standards developed by the IEEE are de jure standards.

The IEEE sponsors the development of standards through its constituent societies. Within each society, the standards are sponsored by a technical committee or the entire society. To sponsor a standard is simply the official endorsement of the standard with the development process subject to IEEE rules. The actual work in the standards process is done by

the members of the standards committee with all the costs bore by the employers of the individuals participating in the standards development. Thus, the IEEE does not incur any costs involved with the actual development of standards with the exception of some management work which makes up a small portion of the overall cost involved in developing the entire standard. Typically, a standard takes a few years to be developed.

There are literally thousands of IEEE standards. Many other IEEE societies (e.g., Circuits and Systems, Consumer Electronics, Communications, Computer, Industry Applications, and others) sponsor standards which could be of interest to IES members. However, the IEEE does not handle all the standards which could be of interest. Other standards of interest are handled by the Instrument Society of America (ISA), the International Electrotechnical Committee (IEC), and other national and international bodies. Although IEEE interfaces well with some national standards bodies, e.g., ANSI, it does not interface with all relevant standards bodies.

The IES society does not currently sponsor any IEEE standards project. As a society, we must ask, are we interested in one specific area which would benefit from standardization?

Advantages of Standards

From the viewpoint of vendors and end users, standards offer the following advantages:

- Reduce development time. The standards contain detailed specifications regarding techniques, methods, rules, etc. Thus, the time to develop a certain product is reduced since the specifications need not be developed by every manufacturer making the same product.
- Shorten system debut time. Since the standards are well known, certain tests could be developed and shared among the standards users thus shortening the time to test and debug a system. Furthermore, the tests associated with a certain standard could also become standards.
- Ease product procurement. If several vendors manufacture products using the same standard or standards, users have the flexibility of choosing a vendor that better meets the user requirements.
- Ease maintainability of products. If users buy products using only a few standards rather than having products which use many techniques and procedures which are not standardized, the maintenance of the products using standards may become simpler.
- Increase marketability of products built to standards. Users may require that they only buy products which meet certain industry standards.
- Increase cost effectiveness. The cost of developing the standards is shared by several institutions rather than just one institution. This generally translates into a

reduced cost of the products using the standards.

- Multivendor support. Generally several vendors incorporate the standards in their products.
- Coexistence with dissimilar equipment. Generally the equipment of several manufacturers does not work together. However, if the various manufacturers use the same standards then they are guaranteed to work together. Thus the coexistence of equipment from different vendors (i.e., dissimilar) in the working environment is possible.

Some Standards of Interest to IES

As already noted, there is a large number of IEEE standards that have been developed or are under active development. Many of these standards are of no interest to IES members while others are no longer in use. Appendix A provides a partial list of IEEE standards which might be of interest to IES members. The project number is the official number assigned by the IEEE.

How to Get Standards

If IES members are interested in a particular standard or have questions about standardization in a certain area they should contact me by phone (313) 762-7992, mail, or fax (313) 762-9807. I will provide general information and guidance so that all general inquiries are clarified. More

detailed information about a particular standard or the request of available standards should be directed to the IEEE Standards Office, 345 East 47th Street, New York, N.Y. 10017-2394.

Initiating Standards Activities

Initiating the work of an IEEE standard is easier than most people think. It requires the submission of a project authorization request (PAR) to the IEEE using a special form. The IEEE standards committee meets to decide whether the IEEE should sponsor the project.

The real challenge in the development of successful standards is the identification of areas that could benefit from standardization, the availability of the knowhow to be standardized, and the commitment of people and institutions to develop the standards.

Before finishing, I offer the following thought-provoking questions to the IES readers. You are encouraged to write to the newsletter editor or contact me regarding these issues.

- What are the benefits to the IES society in sponsoring standards?
- Should the IES society be involved in sponsoring standards?
- What is a good plan to get the IES society involved in standards development?

APPENDIX A

Standards of Potential Interest to IES Members

The following is a partial list of IEEE standards that might be of interest to IES members. Standards sponsored by other organizations are not listed here.

PROJECT	TITLE
114	Single-phase Induction Motors
115	Synchronous Machines
251	Test Procedures for Tachometer Generators
295	Electronics Power Transformers
595	Serial Highway Interface System (CAMAC)
610	Computer Applications Terminology
610.3	Glossary of Modeling & Simulation Terminology
610.7	Glossary of Computer Networking Terminology
696	696 Interface Devices (S100)
726	Real Time Basic for CAMAC
796	Microcomputer System Bus (Multibus)
802.4	Local Area Networks: Token-Passing Bus Access Method
802.4A	Fiber Optics Token Bus
804A	EIIS/Hydro Plants
812	Definition of Terms Relating to Fiber Optics
903	Energy Monitoring & Control Systems
936	Self-Commutated Converters
958	Adjustable Speed Drives
960	FASTBUS Data Acquisition System
995	Adjustable Speed Drives Efficiency Determination
1003.1	Portable Operating System Interface for Computer Environments (POSIX)
1003.4	Real-Time POSIX Extensions
1009	Performance Evaluation of Speech Recognizers/Guidelines
1010	Control of Hydroelectric Power Plants/Guide for
1046	Distributed Control in PGS
1050	Control & Instrumentation Equipment Groundings in Generating Stations/Guide for
1073.1	Medical Information Bus: Architecture & Application Communication Specification
1118	Microcontrol System Serial Control Bus
1129	Turbine Generators, Monitoring and Instrumentation Requirements
1152	Object Oriented Programming Language & Environment/Standard for
1157	Medical Data Interchange Standard
1174	Interface Independent Codes, Formats, Protocols, & Common Commands for Programmable Instrumentation
1199	Analog Hardware Descriptive Language

IECON '89

November 6-10, 1989

Adams Mark Hotel, Philadelphia

IECON '89, the Fifteenth Annual Conference of the IEEE Industrial Electronics Society, will be held this year from Nov. 6 to Nov. 10 in the Adams Mark Hotel in Philadelphia with an emphasis on promoting international professional interaction for the advancement of science, technology, and fellowship. IECON '89 will have a comprehensive and informative program with participants from all over the world. It is organized into four tracks: (1) Factory Automation, (2) Signal Processing and System Control, (3) Power Electronics, and (4) Emerging Technologies.

In addition to regular technical sessions for paper presentation, the program for each track also includes a topical keynote speech by a distinguished author and speaker on topics pertinent to the track, and a tutorial on new or interesting areas of the track. Some tracks organize panel discussions for exploring advanced topics interactively among a panel of experts and the audiences.

IECON '89 will be an important event not only for professional activities, but for social activities as well. IECON '89 will include, as part of the conference activities, a banquet for participants to meet new people and renew old friendships. More important, IECON '89 will provide an opportunity for attendees to meet one of the great leaders of our profession and to let him share with us his vision and views on important issues affecting us. The IECON '89 program committee has the great honor to announce that Dr. Emerson W. Pugh, IEEE President, has accepted our invitation to be the IECON '89 Keynote Speaker at the IECON '89 banquet. Dr. Pugh will speak on the current issues facing the electrical engineering profession.

Following are the highlights of the individual tracks.

1. Factory Automation Track:

"Factory Automation"—a broad term—inclusive of multiple disciplines, all of which are rich with state-of-the-art technology. Our authors would like to detail before you their work and the benefit of their experience in areas such as AI-based troubleshooting systems, vision-based inspection systems and techniques, flexible automated assembly workcells, robot manipulators and sensors, as well as Computer Integrated Manufacturing architectures.

In addition to many high-quality and exciting papers, this track also has a distinguished topical keynote speaker who will layout before you a global view of the direction, advances, and technology undertaken in the implementation of automated manufacturing for electronic assembly. A panel of industry experts will explore, debate among themselves and with the audience, the topics pertinent to this track.

Automated factories are finally becoming a reality and a way of producing product in an efficient manner. It is an important area no winner can afford to ignore in a competitive environment as we are today. Join us to find out how theory has been put into practice in the factory automation arena.

2. Signal Processing and System Control Track:

The Signal Processing and System Control track concentrates on intelligent applications of signal processing and system control theories on practical industrial electronics problems. Among the applications are robotics, industrial process control, computer, system simulation, data acquisition and conditioning, and automated identification. The track activity will start with a topical keynote speech on the recent development in this field by Professor Warner Leonhard of Technical University of Braunschweig, West Germany.

3. Power Electronics Track:

Power electronics track, now representing a major technology in the Industrial Electronics Society, promises to have another outstanding program and success at IECON '89. As demonstrated at IECON '88 in Singapore, Power Electronics track is expected to have again many outstanding papers. Among the special features of power electronics track of IECON '89, the technical committee is proud to announce that Dr. R. G. Hoft of the University of Missouri-Columbia will be our distinguished speaker of the track and will talk on Power Electronics — Present Status and Future Directions. Then, Dr. T. M. Jahns of General Electric R&D Center, Schenectady, will give a tutorial on Designing Intelligent Muscle into Industrial Power Electronics. In addition, Dr. A. B. Plunkett will organize a panel discussion on Power Electronics in Motion Control.

4. Emerging Technology Track:

This track explores emerging technologies which hold promises to have significant impact to our life in the years ahead. These technologies include neural network, concurrent engineering, optical communication, and superconductivity.

IECON '89 will no doubt to be informative and pertinent to your role in shaping the industrial electronics of the future. Please plan to participate and make it a successful and enjoyable event for our society. The IECON '89 Preliminary Program with details on all IECON '89 activities and schedule is expected to be available later on this summer. For more information, please contact:

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CALL FOR PAPERS

1990 American Control Conference

May 23-25, 1990

The Sheraton Harbor Island Hotel
San Diego, California

The American Automatic Control Council will hold the ninth American Control Conference (ACC) Wednesday through Friday, May 23-25, 1990, at the Sheraton Harbor Island Hotel, San Diego, California. This conference will bring together people working in the fields of control, automation, and related areas from the American Institute of Aeronautics and Astronautics (AIAA), American Institute of Chemical Engineers (AIChE), American Society of Mechanical Engineers (ASME), Association of Iron and Steel Engineers (AISE), Institute of Electrical and Electronics Engineers (IEEE), Instrument Society of America (ISA), and the Society for Computer Simulation (SCS).

Both contributed and invited papers will be included in the program. The ACC will cover a range of topics relevant to theory and practical implementation of control and industrial automation and to university education in controls. Topics of interest include but are not limited to linear and nonlinear systems, identification and estimation, signal processing, multivariable systems, large scale systems, robotics and manufacturing systems, guidance and control, sensors, simulation, adaptive control, optimal control, expert systems, and control applications.

Schedule Summary

Sept. 15, 1989: Deadline for contributed papers and requests for invited session forms

Nov. 1, 1989: Deadline for completed invited session forms

Jan. 15, 1990: Announcement of final selection of contributed papers and invited sessions.

Mar. 1, 1990: Deadline for typed mats for Proceedings.

Call for Contributed Papers

The 1990 ACC Program Committee is soliciting two types of papers in all areas of control and automation: (a) regular papers describing work in some detail, and (b) short papers which present recent results. All papers accepted for presentation will appear in the Conference Proceedings. Prospective authors of regular papers should submit six (6) copies of the complete manuscript. Regular papers should be marked "1990 ACC" and should be submitted by September 15, 1989, to one of the SOCIETY REVIEW CHAIRMEN. At the author's request, the regular papers will be considered for journal publication provided the rules of the society's journal for submission of prospective manuscripts are followed. Short papers should consist of a 700-word (2-3 page) summary. Short papers, which will not be considered for journal publication, should be submitted by September 15, 1989, to the PROGRAM VICE-CHAIRMAN FOR CONTRIBUTED SESSIONS. All regular and short papers should clearly describe the problem being addressed, the analytical or experimental techniques employed, and the new results obtained, and should contain relevant references.

Call for Invited Sessions

The Program Committee is also soliciting proposals for invited sessions for the conference. Prospective organizers should contact the PROGRAM VICE-CHAIRMAN FOR INVITED SESSIONS before September 15, 1989, to obtain the forms on which invited session proposals are to be submitted. Each invited session may include a panel discussion following the presentations. Subsequent submission of reports on the panel discussion for publication under the sponsorship of the ACC in one of the participating societies' journals will be encouraged. Sessions organizers must submit by November 1, 1989, the completed invited session forms, including a session summary and abstracts for the invited papers.

Author Notification

The final selection of contributed and invited sessions will be announced by January 15, 1990, at which time the authors' kits will be mailed to the corresponding authors with the mats on which papers are to be typed. For inclusion in the Proceedings, the deadline for typed mats will be March 1, 1990. Authors will be requested to limit their manuscripts to six proceedings pages. Short papers will be limited to two proceedings pages. There will be an extra page charge for papers exceeding the above lengths.

ACC Workshops

The Organizing Committee intends to arrange workshops to be held in conjunction with the 1990 ACC. Suggestions are solicited for appropriate subjects. Potential organizers should contact the Workshop Chairman or the General Chairman.

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IPEC - TOKYO '90 CALL FOR PAPERS

The Institute of Electrical Engineers of Japan is pleased to announce International Power Electronics Conference, IPEC-Tokyo to be held from April 2 through April 6, 1990 at the Keio Plaza Inter-Continental Hotel in Shinjuku, Tokyo, Japan. This is the second IPEC-Tokyo since 1983. The IPEC-Tokyo will provide a unique opportunity for engineers, researchers and academia to meet in the oriental city and to exchange the up-to-date information on power electronics, motor drives and related subjects.

Contributions of technical papers in the following areas are invited.

1. Power Semiconductor Devices, including GTO, Power transistor, Power MOSFET, IGBT, BIMOS, MCT, SiTh, Power IC etc.
2. Static Power Converters and the Systems (AC/DC, DC/DC, DC/AC, AC/AC), including PWM and resonant converters, chopper control, various kinds of inverter technology, UPS, cycloconverter, motor drive related power converters, etc.
3. Control Strategies for AC and/or DC Motors, including vector or field oriented control, brushless servo motor control, application of modern control theory to servo drives, switched reluctance motor control, linear motor control, etc.
4. Modeling, Analysis and Simulation of Power Electronics Circuits and Systems
5. High Voltage DC Transmission Systems
6. Design of Machinery, including linear motors and new actuators
7. Reactive Power (Var) Compensation and Active Filter Control
8. Superconductive Magnetic Energy Storage, Battery Energy System, Solar and Wind Energy Systems
9. Microprocessor Applications of Power Electronics
10. Industrial, Aerospace, Traction, Automobile and Home Applications of Power Electronics
11. Other Related Topics

DEADLINE FOR SUBMISSION OF SUMMARY : August 31, 1989

Five copies of a summary, describing the work not previously published or presented, should be sent to the following Technical Program Chairperson by August 31, 1989.

Professor T. Fukao
 Technical Program Chairperson
 Department of Electrical and Electronics Engineering
 Tokyo Institute of Technology
 Ookayama, Meguro-ku, Tokyo 152
 Japan
 Fax: +81-3-729-1399 Phone: +81-3-726-1111 Ext. 2188

Each summary should be about 500-600 word-long, double spaced on standard letter size paper (or A 4) including figures and tables if necessary, headed by title of paper, author's name(s), affiliation, mailing address, phone number, and Fax number if available, and the most applicable topic category mentioned above.

The submitted summary will be used for paper selection, session assignment and program development, and thus should clearly define the salient concepts and NOVEL features of the work.

DEADLINE FOR SUBMISSION OF COMPLETED PAPER: January 31, 1990

The notification of acceptance will be sent by October 30, 1989.

The Author's kit will be sent to the authors by December 1, 1989, which includes model papers for original manuscript, guide for the final paper and presentations and so on.

Authors of accepted papers will be required to submit maximum 8 page-long manuscript, for publication in the Conference proceedings, by January 31, 1990.

PRESENTATION AT THE CONFERENCE

Authors must present their papers at the Conference. Each speaker will be allotted 20-30 minutes including discussion. Detailed instructions for presentation will be included in the Author's kit.

LANGUAGE

The official language of the Conference is English. All submissions and presentations must be made in English.

EXHIBITION

Interested organizations may stage a small table-top exhibition of their products and catalogues for the period of the Conference. Note that the lobbies of the session floors cannot be used for this purpose.

Those who wish to have facilities arranged should contact the general chairperson Professor E. Masada, as shown at the bottom of this paper.

The Conference is not officially involved in this matter.

REGISTRATION

Those who wish to participate in the Conference will be required to register by sending a registration form and registration fee to the

general chairperson. Registration form will be included in the Final Announcement with detailed registration procedures.

SOCIAL ACTIVITIES AND SPOUSE PROGRAM

A social program of various events will be arranged for participants and those accompanying them, to have an opportunity to know each other.

Also, a full program of daytime activities is being planned for accompanying members of participants.

TECHNICAL VISITS

As part of the Conference program, there will be technical visits to modern facilities of power electronics in greater Tokyo area.

For participation in the Technical Visit, an extra fee will be required.

ADJUNCTIVE CONFERENCES

2nd International Symposium on Power Semiconductor Devices (ISPSD '90) will be held at the same location and period with IPEC-Tokyo '90. Contact Mr. H. Ohashi, Toshiba R & D Center, Fax: +81-44-555-2074.

IEEE International Workshop on Advanced Motion Control sponsored by IEEE Industrial Electronics Society will be held in Keio University, Yokohama, Japan through March 29-31, 1990. Contact Professor K. Ohnishi, Department of Electrical Engineering, Keio University, 3-14-1 Hiyoshi, Kohoku-ku, Yokohama 223, JAPAN. Fax: +81-44-63-3421, Phone: +81-44-63-1141.

FURTHER INFORMATION

Final Announcement showing the Conference program in full detail and including registration form, hotel/tour reservation form, and so on will be sent to those offering papers by the end of 1989. Others expecting to participate in the Conference are invited to complete the request card, the tear-off portion of this announcement, and mail it to:

Professor E. Masada
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 University of Tokyo
 7-3-1 Hongo, Bunkyo-ku, Tokyo 113
 Japan
 Fax: +81-3-818-5706 Phone: +81-3-812-2111 Ext. 6660

OUTLINE OF TENTATIVE SCHEDULE

Date	Morning	Afternoon	Evening
April 2 (Mon)			Welcome Party
April 3 (Tue)	Opening Session Special Lecture	Technical Sessions	
April 4 (Wed)	Technical Sessions	Technical Sessions	Banquet
April 5 (Thu)	Technical Sessions	Technical Sessions	
April 6 (Fri)	(Technical Sessions)	Technical Visits	

IPEC-Tokyo
 IEE of Japan/1990 INTERNATIONAL POWER ELECTRONICS CONFERENCE
 April 2-6, 1990
 REQUEST CARD

Please mark the appropriate box.
 I intend to submit a paper for 1990 International Power Electronics Conference.
 I am unable to submit a paper but would like to attend. Please send the Final Announcement with necessary forms.
 My organization is interested in the exhibition. Please send the Final Announcement.
 Please type or write in block letters.

Name: _____ (Mr./Ms.)
 last name first name middle initial
 Affiliation: _____
 Mailing Address: _____
 zip code country

Date: _____ Signature: _____
 HAVE YOU THOUGHT OF SOMEONE ELSE WHO SHOULD RECEIVE THIS ANNOUNCEMENT? If so, please send him a copy.

CALL FOR PAPERS
IEEE INTERNATIONAL WORKSHOP
ON
ADVANCED MOTION CONTROL

29-31 March, 1990, Keio University, Yokohama, Japan

IEEE International Workshop on Advanced Motion Control sponsored by IEEE Industrial Electronics Society, in cooperation with the Institute of Electrical Engineers of Japan and the Robotic Society of Japan, and hosted by Keio University will be held in Yokohama, March 29-31, 1990. This workshop will precede 1990 International Power Electronics Conference (IPEC-Tokyo) which will be held in Tokyo, April 2-6, 1990. The aim of the workshop is to provide a round table for the researchers to discuss not only the up-to-date topics but also the future perspectives about motion control technology. Papers including following topics are welcome.

Topics

- Intelligent Servo Systems · Interfaces in Motion system · Sub- μm Control
- Mobile Control · Force Control · Network Motion Control
- Motion Control in Micromechanics and Micromechatronics
- Motion Control in Factory Automation and Office Automation
- Sensor Signal Processing in Motion Control Systems
- Other Related Advanced Motion Controls in Robotics, Machine Tools and Industrial Drives

Prospective authors are invited to submit *four* (4) copies of a 300-500 English word summary, including names, affiliations, addresses, telephone and telefax numbers to following Technical Chairpersons.

in Japan, Asia and other countries except following areas:

To Professor Hiroyuki Fujita
 Institute of Industrial Science, University of Tokyo
 7-22-1 Roppongi, Minatoku, Tokyo, 106 Japan
 phone: 81-3-402-6231 fax: 81-3-402-5078

in U.S.A., Canada and other American countries:

To Professor Jeffrey H. Lang
 Department of Electrical Engineering and Computer Science
 Laboratory for Electromagnetic and Electronic Systems
 Room 10-174
 Massachusetts Institute of Technology
 Cambridge, Massachusetts 02139 U.S.A.
 phone: (617)253-4687

in Europe and Africa:

To Professor Giuseppe Buja
 Department of Electrical, Electronic and Computer Engineering
 University of Trieste
 Via Valerio 10
 34127 Trieste, Italy
 phone: 39-40-574044 telex: I-460865 UNIVTS

Authors' schedule is as follows.

Deadline for submission of summaries	October 10, 1989
Notification of acceptance	November 20, 1989
Deadline for final manuscripts	January 15, 1990

For further information please contact:

Professor Kouhei Ohnishi
 Department of Electrical Engineering
 Keio University
 3-14-1 Hiyoshi, Kohoku, Yokohama, 223 Japan
 phone: 81-44-63-1141 fax: 81-44-63-3421

The First International Conference on
Applications of Industrial Electronics Systems

Jerusalem, May 13 - 17, 1990

First Announcement and Call for Papers

The International Conference on Applications of Industrial Electronics Systems is cosponsored by the IEEE Industry Applications Society, the IEEE Industrial Electronics Society and the IEEE Israel Section. It reflects the renewed emphasis of IEEE on stimulating technical conferences that involve cooperative efforts between Societies and Sections. The conference is to be held on May 13-17, 1990 at the Laromme Hotel in Jerusalem, Israel. The purpose of the conference is to provide an international forum for scientists, academics and engineers for the presentation of technical papers and the exchange of ideas and experience.

Topics of Interest include:

- * Industrial Applications with Programmable Controllers.
- * Computerized Control of Industrial Processes.
- * Industrial Electronics Applications in Agricultural Industry, Control of Irrigation and Water-Supply Systems and Networks.
- * Planning, Operation and Control of Energy Systems.
- * Applications of Automatic Manufacturing.
- * Industrial Application of Drives.

All presentations will be in English. Papers accepted for presentation will appear in the Conference Proceedings and will be considered for publication in the IEEE Transactions on Industry Applications or the IEEE Transactions on Industrial Electronics.

Deadlines : Summaries - 5 copies of 600-1000 word summaries for review by August 15, 1989.

Acceptance Notification -By December 15, 1989.

Final Paper due - February 20, 1990.

Each author should state on each submission which single topic from the above list best describes the subject of the paper.

Submissions and proposals should be addressed to the Conference Secretariat or to one of:

Programm Co- Chairman:

E.G.Kiener
 Solar Turbines, Inc. ,
 2200 Pacific Hwy,
 San Diego, CA. 92138, U.S.A.
 Phone: (1)-(619)-544-5656.
 Fax : (1)-(619)-544-5328.

Programm Co-Chairman:

Prof. Fernando Aldana
 Universidad Politecnica de Madrid
 Avda. Ramiro de Maeztu. S/N,
 E-28040 Madrid, Spain.
 Phone: (34)-1-234-3709.
 Fax : (34)-1-234-5468.

Further information can be obtained from :

Conference Chairman Moshe Harpaz Kibbutz Ein-Carmel D.N.Hof Carmel 30 860, Israel Phone: (972)-4-844410 Fax: (972)-4-844250	Program Co-Chairman Prof. Abraham Alexandrovich Faculty of Electrical Engineering Technion-Israel Institute of Technology 32 000 Haifa, Israel Phone: (972)-4-293368	Conference Secretariat ORTRA 2 Kaufman St. P.O. Box 50432 Tel-Aviv 61 500, Israel Phone: (972)-3-664825 Fax: (972)-3-660952	Program Committee Prof. Fumio Harashima Institute of Industrial Science 7-22-1 Roppongi Minatoku Tokyo 106, Japan Phone: (81)-3-402-6231 Fax: (81)-3-423-1484
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News from Washington

Senate Moving To Correct Waivers Forced On Older Workers

A bi-partisan group of senators has moved one age discrimination issue—that of waiving one's rights under earlier legislation—to the front burner and is pressing for an express provision that forbids unsupervised waivers in the future. Legislation to ensure that older workers are not "coerced or manipulated" into waiving their rights under Federal law was introduced (by 16 senators) and examined at Senate hearings.

And IEEE continues to push for enactment of such a law. USAB Chairman Edward Bertnolli has emphasized that older workers often find themselves in the pool of employees being pushed out of their jobs on the unsubstantiated charge that their technical knowledge is outdated. He has communicated IEEE views to both Senate and House members and has urged House members to promote a bill similar to the one moving through the Senate (S. 54). And USAB has also filed a statement seeking clarification of conditions under which waivers may be issued with the regulatory agency. Such a letter went out to the Equal Employment Opportunity Commission (EEOC).

The lead sponsors of S. 54 are Senators Howard Metzenbaum (D-OH) and John Heinz (R-PA), who both pointed out (in floor statements) that older workers in increasing numbers are being asked to sign away their rights under the landmark Age Discrimination in Employment Act of 1967. Some companies even condition offers of early retirement on having the employee sign the waiver rather than "taking the steps needed to ensure that the early retirement or exit incentive program is not discriminatory." They noted that the situation under ADEA changed when responsibility for enforcement was transferred from the Labor Department to the EEOC in 1979. Congress has been hammering at EEOC ever since the agency issued the rule that permits unsupervised waivers.

S. 54, according to Metzenbaum, has two main thrusts: 1) it provides that unsupervised waivers are valid under ADEA only when they are obtained in certain precisely defined circumstances, and 2) unsupervised waivers are not valid as a precondition to accepting an early retirement incentive or other employment termination program that features an offer of enhanced benefits to a group of employees.

USAB's correspondence with House and Senate members made the following points:

Since technology moves at such a rapid pace, older engineers are often victims of the stereotype that their knowledge is outdated and their experience is not relevant to state-of-the-art research. Thus, engineers have always been particularly hard hit by age discrimination in employment.

These same engineers are hardest hit when American industry embarks on layoffs and reductions-in-force progress. They are called into corporate offices, hit with disastrous news and then given only a few days to make decisions that will affect the rest of their lives. They must waive rights at a time when they have little or no idea what those rights might be. How can they know at that point in time whether or not only older workers are being fired or if there is some pattern of discrimination in the actions of the company from which they have recourse.

Concerning the larger issue of blanket unsupervised waivers, we must ask why companies require such waivers if they have dealt with employees in a fair and legal manner. We believe that waivers should be utilized only in special instances where the procedures of the Fair Labor Standards Act are followed, as the ADEA specifically mandates, and that they be thoroughly supervised by the EEOC.

Senators Push Immigration Law Changes

The aggrieved citizen always says "there ought to be a law." Well, in 1986 there was a law, a thorough overhaul of the immigration code that took the form of a 86 page statute. Soon after enactment, a group of senators proposed further changes in immigration policy aimed at increasing numbers of "legal" immigrants (mostly from European countries), especially those with skills or other characteristics that would promote "the national interest."

Legislation with this purpose was adopted by the Senate in 1988 but failed in the House. Now, once again, a bi-partisan group (Senators Alan Simpson, Ted Kennedy, Alphonse D'Amato and others) are sponsoring an identical bill (S. 358). Sponsors point out that the 1986 reforms addressed illegal immigrants, in the main, and that changes are needed to open the immigration system to entrants from nations that are now "short-changed" by the current law.

S. 358 creates two separate immigrant-visa preference systems: one for family members and another for independent immigrants. By placing more emphasis on the skills and qualities that independent immigrants possess, Kennedy said, "immigration policy will be more closely coordinated with the national interest."

Under the "independent immigrant" category (according to GAO testimony), there would be a new class of "selected immigrants," who would qualify on the basis of criteria such as education, English language ability, and occupation. There would be an initial 120,000 annual limitation for independent immigrants, of whom at least 45% (54,000) would be selected immigrants. The overall annual limit of 590,000 visas would include both independent immigrant and family connection visas.

The Department of Labor and other executive agencies emphasize the difficulties of administering a law that calls for admission of persons with special characteristics. The State Department points out that culling through the visa applications for qualified entrants will be burdensome and costly. "Receiving and archiving millions of applications, tallying the points claimed, conducting a random selection, eliminating fraudulent claims, evaluating English language ability, assessing education equivalents—all these activities will be labor-intensive and logically challenging," a State Department witness said. This testimony was given to the Senate Judiciary subcommittee.

Labor Department officials testifying at the same hearing continue to stress the policy objectives of the Department, which are to develop fully and use the domestic workforce effectively. The Deputy Under Secretary (Eugene Lawson) cautioned that "great care" should be given to any model by which future independent immigrants would be chosen. "For instance, we need a better understanding of labor 'shortfalls' and 'mismatches' before we can advance an informed opinion on the feasibility and most appropriate configuration of such a mechanism." The Department, in pursuing this, has made a technical analysis of the Canadian system, a study that "reinforces the view that the issue of defining and measuring labor 'shortages' and the approach to selecting labor-market-bound immigrants, requires thoughtful treatment."

A similar bill on independent immigration (S. 448) creates a three-year pilot program for approximately 55,000 independent immigrant visas per year distributed on a point system basis. Points are granted based on age, education, work experience, skills, and prearranged employment in areas with low unemployment. The sponsor is Senator Paul Simon (D-IL).

Congress Passes Law Protecting Whistleblowers

Congress moved with speed this term to pass a bill that protects Federal employees from reprisals when they blow the whistle on what they see as fraud and corruption in the government. Legislation with this same purpose was approved unanimously by both houses in the 100th Congress but was pocket-vetoed by President Reagan. The legislation this

year has been modified to meet some of the executive branch objections and is expected to be approved by the White House.

IEEE has a history of encouraging engineers to adhere to high standards of ethical conduct and to speak out against practices that may affect the health, safety, or welfare of the public. This activity is carried out through the IEEE Code of Ethics and related procedures. In letters to congressmen and senators, IEEE-USA has voiced support for the Whistleblower Protection Act and urged leaders to stand firm against efforts by the Office of Management & Budget to dilute reforms in the legislation.

Enactment of the new bill (S. 20) came easily this year as a result of changes accepted by the bill's sponsors and the Department of Justice. The agreement deletes the 1988 provision giving the Office of Special Counsel (OSC) independent litigating authority, an issue that motivated the pocket veto. The new bill sets up OSC as an independent agency rather than a branch of the Merit Systems Protection Board. The Office "must protect employees, especially whistleblowers, from prohibited personnel practices and must act in the interests of employees who seek assistance from the Office." S. 20, sponsored mainly by Senator Carl Levin (D-MI), was unanimously adopted (by 97 votes) in the Senate, it was adopted by voice vote in the House.

The Act, which applies only to Federal employees, makes the following changes in current law:

1. It reduces the burden of proof on Federal employees seeking to demonstrate that they were punished (demoted, transferred, rified, etc.) by their employer for blowing the whistle on fraud, waste, or mismanagement. It also increases the evidentiary burden on Federal agencies required to prove that they had legitimate reasons for disciplining alleged whistleblowers.
2. It gives whistleblowers the right, for the first time, to appeal their own cases directly to the Merit Systems Protection Board if the Office of Special Counsel fails or refuses to do so.
3. It increases the independence of the Office of Special Counsel and specifically requires that office to serve as an advocate for whistleblowers.
4. It gives whistleblowers increased procedural protections and additional guarantees of confidentiality.

Please reply to:
Charles W. Einolf, Jr.
IES Secretary
Westinghouse Electric Corporation
1310 Beulah Road
Pittsburgh, PA 15235-5098 USA

Administrative Committee

Minutes of the Meeting of February 26, 1989

The meeting was held at the Clarion Hotel in New Orleans, LA and was called to order at 10:00 A.M. by President Aldana.

1. Attendance. Those present were Abe Abramovich, Fernando Aldana, Guy Beale, Robert Begun, Richard Born, Gerald Cook, Marc Courvoisier, Phil Gold, Joachim Holtz, Victor Huang, Gaston Lefranc, Paul Lewis, Russ Niederjohn, Juan Pimental, Robert Roman, Fred Stich, Alfred Weaver, and Hubert Wo.

2. Minutes. Weaver made a motion to approve the minutes of the meeting of October 24, 1988 with the addition that Victor Huang was in attendance. Pimental seconded the motion which passed unanimously.

3. President's Report. President Aldana included a congratulatory message to Troy Nagle, Vice-President of Technical Activities, and Harry Mergler, Vice-President of Education. They were recently elected to these IEEE national offices against regular candidates. President Aldana also noted that Dave Irwin is the current president of the Education Society. President Aldana voiced recognition and wishes of good luck for their successful activities.

President Aldana discussed the TAB meeting of November 17-18, 1988 in San Diego. The AdCom was asked to advise President Aldana of any items to be brought before the next TAB meeting. President Aldana also reported on the "Summary of Action" taken at the TAB and TAB OPCOM meetings on February 20, 1989 in Washington, D.C. with special emphasis on the motions regarding international activities.

The Acoustics and Signal Processing Society wants to change its name to the Signal Processing Society. The IES AdCom gave its approval but stated that the IES plans to continue in the area of signal processing and, if applicable, to our technical areas in the field of acoustics.

President Aldana reported on the discussions with Siemens and their potential involvement with the IEEE. The AdCom discussed ways to best involve Siemens.

4. Vice-President for Administration Report.

4.1 Awards and Honors Committee: Gerald Cook reported for Dave Irwin. The AdCom is requested to nominate candidates for the Mittelman and Hornfeck

Awards and submit the nominations to Irwin before the next AdCom meeting.

4.2 Fellows Committee: Dave Irwin has agreed to chair this committee as well as the Awards and Honors Committee and the Nominations Committee. The deadline for nominating IEEE Fellows is April 30, 1989. Ask Dolores Wright of the IEEE, Gerald Cook, or David Irwin for a nomination kit. More nominations from the IES are urged.

4.3 Membership and Publicity Committee: A report from Tak Hori was given by Begun. The free half-year memberships given last year to encourage prospective members to join the IES were very successful. Of those rejoining the IEEE, more than half rejoined the IES. This year the IES will want to do the same with all members of the Robotics and

Automation Society and the Power Electronics Society except for those that are already members of the IES. In addition, Joachim Holtz will furnish Begun with a list of potential IAS members. Begun will write a letter to Bidstrup at IEEE to initiate the membership drive.

An AdHoc committee consisting of Alf Weaver, Gerry Cook, Russ Niederjohn, and Pat Fasang was formed to rewrite the IES fields of interest. The committee will report the results by April 15, 1989 to the AdCom for a mail vote in order to determine whether President Aldana should present the revised fields of interest at the next TAB meeting.

4.4 Education Committee: Russ Niederjohn reported on the Education Committee. The AdCom discussed at length as to whether to videotape some of the IES tutorials. Niederjohn was charged with obtaining additional information for the next AdCom meeting. Russ agreed to select the appropriate HVT tapes for the chapter meetings to the extent of the \$400.00 budget. The possibility of choosing the Neural Network HVT tapes at IECON '89 was discussed. Niederjohn will discuss this further with Hubert Wo.

4.5 Finance Committee: Hubert Wo reported that the IES is in good financial condition.

4.6 Sections and Chapters: Begun reported for LeRoy Bushart on the chapters. LeRoy has contacted both Tak Hori

and Marc Courvoisier and has met with Marc in Paris. The Adcom discussed how to coordinate its activities with existing European societies. Professor Orbic of Sweden may have names of those who can help start IES chapters. President Aldana may also bring up this subject at the Region 8 meeting in Budapest. Begun will obtain the Region 8 IES listing. Courvoisier and Bushart will let President Aldana know of any needs by the June 1-2, 1989 TAB meeting.

Gaston Lefranc reported on the activities of the IES chapter in Chile. This is a joint IES and Control Systems chapter founded in 1974. The chapter has sponsored two conferences in Spanish with about 100 participants. They co-sponsored the "Automatica Conference" in October 1988. Over 200 papers were submitted for this conference with 138 accepted from several countries.

4.7 Standards Committee: Juan Pimental reported on the standards committee. Pimental was assigned three action items by the AdCom:

1. Write a tutorial for the IES Newsletter regarding the standards process.
2. Report on the ramifications of becoming involved in particular standards if the IES adopts a policy to support standards adoption.
3. Make a one hour presentation on how standards work at the Friday evening session of the next AdCom meeting.

5. Vice-President for Technical Activities Report. Guy Beale reported that the reorganization of the technical committees is proceeding well. One subcommittee on Mechatronics has been added and will be chaired by C. C. Chan. A person is needed to chair the Data Acquisition subcommittee.

6. Vice-President for Conferences Report.

6.1 IECON '88: Victor Huang gave the final report on IECON '88 held in Singapore. The only remaining item is the issue of the IEEE payment for publication of the proceedings. Huang made a motion that an AdHoc committee be established for one regional conference in 1990 in the Singapore region. Begun seconded the motion which passed unanimously.

6.2 IECON '89: Hubert Wo submitted the IECON '89 budget. Begun made a motion to approve the budget. Beale seconded the motion which passed unanimously. Abe Abramovich suggested promoting "Emerging Technologies" and to include this subject material in the local area mailing (i.e., within one-hour flight time of Philadelphia). Bob Roman suggested a backup plan in case only 200 to 225 attendees instead of the 300 proposed in the budget (i.e., a plan to reduce the deficit in case of reduced attendance). Suggested keynote speakers were: Mr. Tracy O'Rourke, CEO, Allen-Bradley; Dr. Wadhawani, President and CEO, American Cimplex; Dr. Jean Marie Cadiou, Director of Esprit Program. The need is for a broad topic speaker as there are distinguished speakers for each of the four tracks.

Atlantic City is the proposed site for the program committee meeting on Tuesday, April 25.

6.3 IECON '90: Begun reported that Weaver has accepted the position of Technical Program Chairman, Roman has accepted the position of Treasurer and Haneda has accepted the position as Japanese liaison. A motion was made by Begun to hold IECON '90 in Asilomar, CA. Weaver seconded the motion which passed unanimously. The AdCom suggested that details be added to each track topic in the Call for Papers. A conference proposal will be submitted to the AdCom at the June meeting.

6.4 IECON '91: Weaver made a motion that the IES be made 50/50 partners with SICE including the finances for IECON '91. Begun seconded the motion which passed unanimously.

6.5 International Workshop on Intelligent Robots and Systems (IROS '90): Weaver made a motion that the IES be a co-sponsor of the third IROS on June 21-22, 1990, in Tsuchiura, Japan, with the understanding that the IES will incur no financial liability. Roman seconded the motion which passed unanimously.

6.6 Workshop on Intelligent Motion Control: Weaver made a motion that the IES be a co-sponsor of the Workshop on Intelligent Motion Control on August 21-22, 1990, in Istanbul, Turkey, with the understanding that the IES will incur no financial liability. Roman seconded the motion which passed unanimously.

7. Vice-President for Publications Report.

7.1 Newsletter: Dick Born reported that the IES Newsletter editor is to be replaced and he will find a replacement. Weaver made a motion that Born send a letter to Tony Pietrzykoski stating the AdCom's appreciation for his past services. Beale seconded the motion which passed unanimously. Phil Gold will check with his management at Coors regarding their potential support of Phil as the Newsletter editor starting with the September 1989 issue. The IECON '89 keynote speaker information is needed for the June 1989 issue. Information of the full IECON '89 program is needed for the September 1989 issue.

7.2 Transactions: Cook reported that the transactions has been increased from 400 to 600 pages. Born made a motion that the allocation for secretarial services be increased from \$350.00 per month to \$525.00 per month due to the increased page count effective on March 1, 1989. Stich seconded the motion which passed unanimously. The AdCom discussed the possibility of issuing six transactions per year rather than four with the same total number of pages. Roman will investigate the financial impact and report at the June AdCom meeting.

Changes to the publication policy for the transactions were proposed by Dick Born. The AdCom discussed the changes in detail but was not able to reach an agreement on the policy. The issue is whether to allow papers presented

at the IES Conferences to be submitted to the Transactions "as is" and follow normal Transactions acceptance policy, or to require that "the content has been refined or extended to include additional results, or in some way goes beyond the scope of the original paper." Born is to contact Troy Nagle concerning the IEEE policy on conference papers versus transaction papers.

8. Treasurer's Report. Roman submitted his report dated February 25, 1989 to the AdCom.

9. Representative's Report.

9.1 Neural Network Committee: Begun made a motion that Fernando Aldana be the representative to the Neural Network Committee for the remainder of 1989. Beale seconded the motion which passed unanimously. A search by the AdCom must be made for a new representative during 1990. President Aldana reported that there will now be one major neural network conference and predicts that there

will be a neural network transactions and eventually a society.

9.2 Aerospace R&D Committee: Gerald Cook requested that the AdCom find a replacement for him on the Aerospace R&D Committee.

9.3 PACE and USAB: Fred Stich reported on the activities of PACE and USAB. Stich made the suggestion that regular articles be placed in the IES Newsletter which publicize the USAB and PACE activities of interest to the IES members.

10. Next AdCom Meeting. June 23-24, 1989, Friday and Saturday, Chicago, Illinois. Dinner with Chicago Chapter (Friday, June 23rd evening).

11. Adjournment. A motion was made by Beale to adjourn. Weaver seconded the motion which passed unanimously. The meeting adjourned at 4:10 P.M.

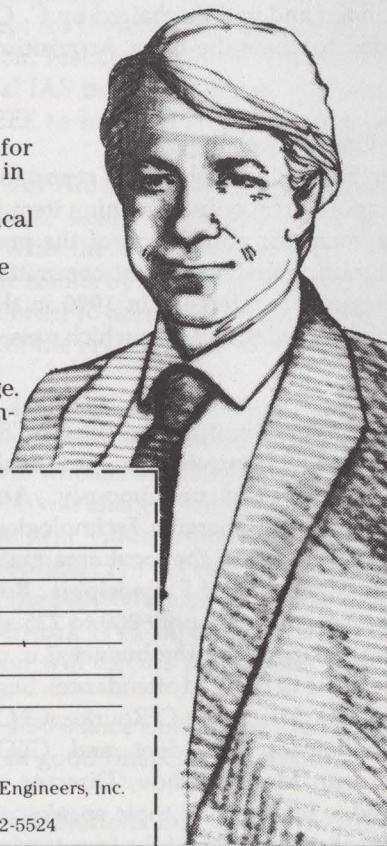
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IECON '89

ADVANCE PROGRAM

15th Annual Conference
 of the IEEE
 Industrial Electronics Society

November 6-10, 1989
 Adams Mark Hotel
 Philadelphia, Pennsylvania, USA

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University of Tennessee

Emerging Technologies
Fumio Harashima
University of Tokyo

Victor K. L. Huang
AT&T Bell Laboratories

GENERAL INFORMATION

The 15th Annual Industrial Electronics Conference (IECON) sponsored by the IEEE Industrial Electronics Society (IES) will be held at the Adams Mark Hotel, Philadelphia, Pennsylvania on November 6-10, 1989.

REGISTRATION

The registration fee for IECON '89 includes a set of conference proceedings, admission to all of the technical sessions, admission to the conference reception and conference banquet. Additional conference proceedings will be available for sale during the conference. Guest tickets for the conference banquet can be purchased in advance or during the conference.

The registration fees are:

	On or Before October 6	At The Meeting
Author/Session Chair.	US\$265.00	US\$290.00
IEEE/SICE Member	US\$300.00	US\$325.00
Non Member	US\$375.00	US\$400.00

Registration fee for each Tutorial Session is US\$200.00

Additional Banquet Tickets are US\$35.00 each.

Advance registration must be received by October 6, 1989. After October 6, 1989 please register at the conference. Registration without conference banquet is not available. No adjustment for registration will be made for late arrival or early departure from the conference.

Payment may be made by Money Order or US Personal Check payable in US Dollars to IECON '89. Mail registration form(s) with full payment to: IECON '89 - Registration, Mr. G. J. Qua, AT&T Bell Laboratories, P. O. Box 400, Room HOH R-222, Holmdel, New Jersey 07733-1988, USA. Telephone: (201) 888-7264, Fax: (201) 888-7074.

Registration will be open on the Grand Ballroom - Foyer of the Adams Mark Hotel during the following hours:

Sunday, November 5	4:00 pm	-	8:00 pm
Monday, November 6	7:30 am	-	4:00 pm
Tuesday, November 7	7:00 am	-	4:00 pm
Wednesday, November 8	8:00 am	-	4:00 pm
Thursday, November 9	8:00 am	-	4:00 pm
Friday, November 10	8:00 am	-	1:00 pm

REFUND POLICY FOR PREREGISTRATION

There will be a US\$50.00 service charge for processing a refund. A letter requesting the refund should state the pre-registrant's name and to whom the check should be made payable. Request for pre-registration refunds that are received no later than September 30, 1989 will be honored.

NO REFUND WILL BE ISSUED AFTER
SEPTEMBER 30, 1989.

MESSAGE

A message and information center will be provided in the registration area. The phone number for the message center is (205) 581-5000 extension IECON Registration Desk.

HOTEL ACCOMMODATION

A block of rooms have been reserved for those attending IECON '89 at the Adams Mark Hotel. In order to reserve a room, you can either use the enclosed Hotel Reservation Form or call the hotel before October 6, 1989. Confirmation will be sent to you by the hotel.

TRAVEL ARRANGEMENTS

You can receive savings when making your Domestic and International reservation with Far Eastern Travel International. You can either use the Toll Free number for reservations or simply return the enclosed travel arrangement form to: Ms. Jessie Tang or Vivian Yen, Far Eastern Travel International, 45 West 34th Street, Room 1200, New York, New York 10118, USA. Telephone: (212) 268-6666, Toll Free: 1-800-221-4703, Fax: (212) 594-6075.

AUTHOR BREAKFAST

To ensure that the program runs smoothly, all speakers and session chairpersons of the day are requested to report to the Author Breakfast Area located at The Marker Restaurant for breakfast at 7:30am. Session number and title will be posted on the table.

CONFERENCE RECEPTION

The IECON '89 conference reception will be held on Tuesday, November 7, 1989, from 6:00pm - 7:30pm in Adams Ballroom.

CONFERENCE BANQUET

The Conference Banquet will be held on Wednesday, November 8, 1989 from 7:00pm - 11:30pm in Grand Ballroom DEF. **Mr. Emerson Pugh, IEEE President will be our Keynote Speaker.** Guest tickets can be purchased in advance or during the conference.

SLIDE PREVIEW AREA

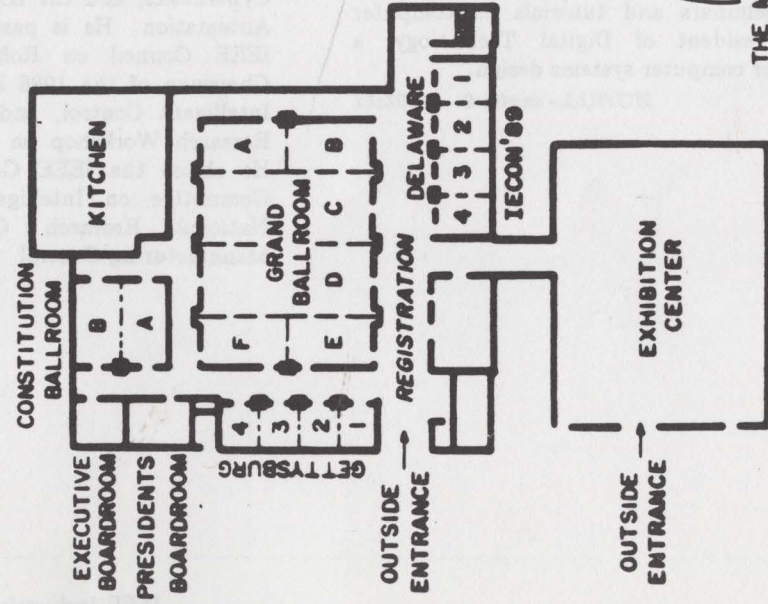
Authors are requested to preview and preload slides before their session begins. Universal slide trays will be available for each author at the Grand Ballroom - Foyer.

DATES	MORNING SESSION 8:30am - 10:30am 11:30am - 12:30pm	AFTERNOON SESSION 2:00pm - 4:00pm 4:30pm - 6:00pm	CONFERENCE LOCATION	EVENING
MONDAY 11-6-89	Tutorial A: Local Area Networks by Alfred C. Weaver, University of Virginia Tutorial B: Sensor Data Fusion by Harry E. Stephanou, George Mason University		Delaware 1 Delaware 2	IES Officer Meeting 6:00pm - 8:00pm Delaware 3 Dinner 8:15pm-10:00pm The Marker Restaurant
TUESDAY 11-7-89	PE1: Plenary Session SP1: Adaptive & Self Tuning Control FA1: Manufacturing System & Architectures ET1: Concurrent Engineering	PE2: Panel Discussion SP2: Control Techniques FA2: Vision & Inspection Applications ET2: Artificial Intelligence & Expert Systems PE3: Resonant & PWM Converters SP5: Computer Control FA4: Plenary Session ET4: Neural Networks	Delaware 1 Delaware 2 Delaware 3 Delaware 4	Conference Reception Adams Ballroom 6:30pm - 8:00pm
WEDNESDAY 11-8-89	PE3: High Frequency Link Converters SP4: Plenary Session FA3: Computer Integrated Manufacturing (CIM) ET3: Neural Networks	PE4: Resonant & PWM Converters SP6: Modeling & Simulation FA5: Plenary Session ET5: Neural Networks	Delaware 1 Delaware 2 Delaware 3 Delaware 4	Conference Banquet Grand Ballroom DEF 7:00pm - 11:30pm
THURSDAY 11-9-89	PE5: PWM Control of Converters SP7: Robotics Control FA5: Robotics Theory & Application ET5: Superconductivity	PE6: Control & Application of Converters SP8: System Analysis FA6: Factory Monitoring & Control ET6: Computer, Communications & Petri Nets	Delaware 1 Delaware 2 Delaware 3 Delaware 4	Ad Com Dinner 6:00pm - 8:00pm The Marker Restaurant Meeting 8:30pm-10:00pm President Bordroom
FRIDAY 11-10-89	PE7: Control of DC & AC Drives PE8: Control & Simulation of AC Drives SP9: Signal Generation & Processing	Tutorial C: Nonlinear Dynamics: Chaos for Engineering by Tom T. Hartley, University of Akron Tutorial D: The Manufacturing Message Specification (MMS) by Juan R. Pimenlit, GMI Engineering & Man. Ins	Delaware 1 Delaware 2 Delaware 3 Delaware 4 Grand Ballroom B	

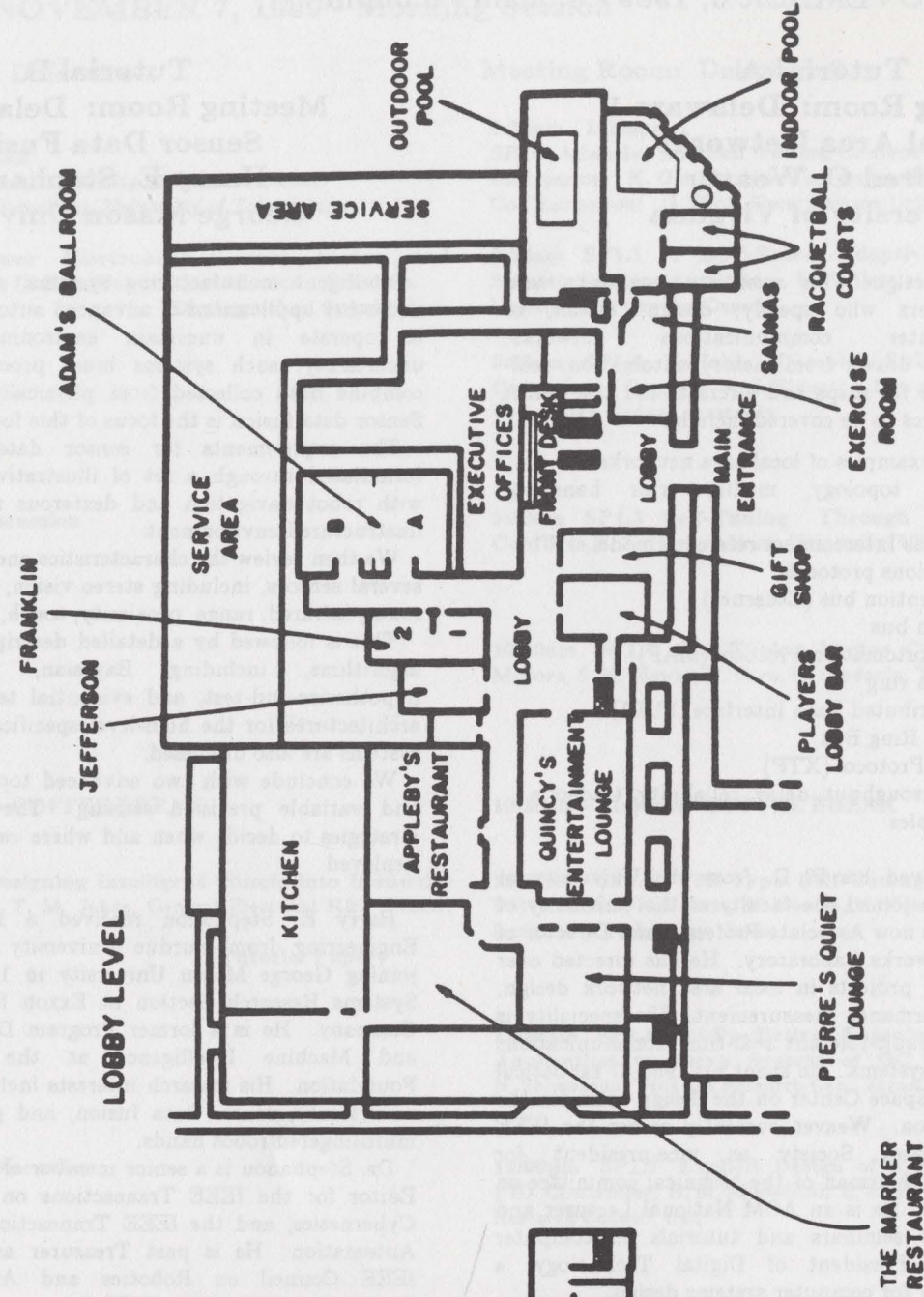
ABBREVIATIONS:

- PE - Power Electronics
- SP - Signal Processing and System Control
- FA - Factory Automation
- ET - Emerging Technologies

MEETING/EXHIBIT LEVEL



LOBBY LEVEL



HOTEL FLOOR PLAN

Tutorial A
Meeting Room: Delaware 1
Local Area Networks
Alfred C. Weaver
University of Virginia

This course is designed for scientists, engineers, and engineering managers who specify, design, install, or supervise computer communications networks. Applications will be drawn from factory automation, real-time control systems for ships and aircraft, and the NASA Space Station. Topics to be covered include:

- advantages and examples of local area networks
- design choices: topology, media, error handling, reliability
- ISO Open Systems Interconnect reference model
- ISO communications protocols
- IEEE 802.3 contention bus (Ethernet)
- IEEE 802.4 token bus
- Manufacturing Automation Protocol (MAP)
- IEEE 802.5 token ring
- ANSI Fiber Distributed Data Interface (FDDI)
- SAE High Speed Ring Bus
- Xpress Transfer Protocol (XTP)
- performance - throughput, delay, reliability, tradeoffs
- real-world examples

Alf Weaver received his Ph.D. from the University of Illinois in 1976. He joined the faculty of the University of Virginia where he is now Associate Professor and Director of the Computer Networks Laboratory. He has directed over 45 funded research projects in local area network design, analysis, and performance measurement. His speciality is high-performance, fault-tolerant real-time communications to support control systems. He spent his 1986-87 sabbatical at NASA Johnson Space Center on the design team for the NASA Space Station. Weaver currently serves the IEEE Industrial Electronics Society as vice-president for conferences and as chairman of the technical committee on factory automation. He is an ACM National Lecturer and has given over 50 seminars and tutorials on computer networks, and is President of Digital Technology, a consulting company for computer systems design.

Tutorial B
Meeting Room: Delaware 2
Sensor Data Fusion
Harry E. Stephanou
George Mason University

Intelligent manufacturing systems, autonomous robots, and other applications of advanced automation are required to operate in uncertain environments. To reduce uncertainty, such systems must process, interpret, and combine data collected from physically different sensors. Sensor data fusion is the focus of this four-part tutorial.

The requirements for sensor data fusion are first formulated through a set of illustrative examples dealing with robot navigation and dexterous manipulation in an unstructured environment.

We then review the characteristics and operating limits of several sensors, including stereo vision, structured lighting, sonar, infrared, range, proximity, touch, and force sensing.

This is followed by a detailed description of data fusion algorithms, including Bayesian, Kalman filtering, hypothesize-and-test, and evidential techniques. Software architectures for the high-level specification of multisensor systems are also discussed.

We conclude with two advanced topics: active sensing, and variable precision sensing. The main focus is on strategies to decide when and where each sensor should be deployed.

Harry E. Stephanou received a Ph.D. in Electrical Engineering from Purdue University in 1976. Prior to joining George Mason University in 1985, he headed the Systems Research Section at Exxon Production Research Company. He is a former Program Director for Robotics and Machine Intelligence at the National Science Foundation. His research interests include reasoning under uncertainty, sensor data fusion, and grasp planning with multifingered robot hands.

Dr. Stephanou is a senior member of the IEEE, Associate Editor for the IEEE Transactions on Systems, Man and Cybernetics, and the IEEE Transactions on Robotics and Automation. He is past Treasurer and Secretary of the IEEE Council on Robotics and Automation, General Chairman of the 1988 IEEE International Symposium on Intelligent Control, and Director of a NATO Advanced Research Workshop on Knowledge Based Robot Control. He chairs the IEEE Control Systems Society Technical Committee on Intelligent Control, and serves on the National Research Council Panel for Intelligent Manufacturing Control.

Meeting Room: Delaware 1

8:30am - 12:30pm
PE1: Plenary Session
 Chairperson: B. K. Bose, University of Tennessee, USA
 Co-Chairperson: F. Harashima, University of Tokyo, Japan

8:30am PE1.1 Power Electronics: Present Status and Future Direction, R. G. Hoft, University of Missouri - Columbia (Distinguished Speaker)

9:30am PE1.2 Discussion

10:30am - 11:00am - COFFEE BREAK

11:00am PE1.3 Designing Intelligent Muscle into Industrial Power Electronics, T. M. Jahns, General Electrical R&D Center, Schenectady (Tutorial Paper)

12:00pm PE1.4 Discussion

12:30pm - 2:00pm - LUNCH

Meeting Room: Delaware 2

8:30am - 12:30pm
SP1: Adaptive and Self Tuning Control
 Chairperson: K. Ohnishi, Keio University, Japan
 Co-Chairperson: G. Cook, George Mason University, USA

8:30am SP1.1 A DSP-Based Adaptive Controller for a Smooth Positioning System, L. A. Desaint, B. Hebert, H. Le-Huy, University du Quebec, Canada

9:00am SP1.2 Variably Damped Swing Control of the Overhead Crane, A. J. Ridout, I. E. Aust., University of Technology, Sydney, Australia

9:30am SP1.3 Self-Tuning Through Use of Inherent Conflicts, S. T. Hung, Auburn University, USA

10:00am SP1.4 Self Tuning Vector Control for Induction Motors, S. K. Biswas, T. Caro, H. Sendaula, Temple University, USA

10:30am - 11:00am - COFFEE BREAK

11:00am SP1.5 VSS-Type Self-Tuning Control of Direct-Drive Motor, K. Furuta, K. Kosuge, K. Kobayashi, N. Seiko, Tokyo Institute of Technology, Japan

11:30am SP1.6 A Predictive Learning Control and Its Application to Servo System of DC Motor, H. Nakamura, N. Shimozone, Tsukuba Research Lab., Japan

12:00pm SP1.7 Explicit Design of a Predictive Self-tuned PID Controller, B. M. Al-Hadithi, Z. Meki, R. Sh. Habib, Scientific Research Council, Iraq

12:30pm - 2:00pm - LUNCH

TUESDAY, NOVEMBER 7, 1989 - Morning Session

Meeting Room: Delaware 3

8:30am - 12:30pm

FA1: Manufacturing Systems Architectures

Chairperson: TBA

Co-Chairperson: TBA

8:30am FA1.1 A Flexible Manufacturing Cell Design and Evaluation Package, F. Vallejo, M. Luisa, P. Bustos, G. deCastro, R. PinedaLa Poveda, Arganda del Rey, Spain

9:00am FA1.2 A Multilevel/Multilayer Control Architecture for Computer Integrated Manufacturing System, A. Jones, A. Saleh, NIST, USA

9:30am FA1.3 The Field Bus Application Layer Service, J. P. Thomesse, Center de Recherches en Informatique de Nancy, France

10:00am FA1.4 Multicycle Operation in a Field Bus: Application Layer Implications, S. Kumaran, J. D. Decotignie, Swiss Federal Institute of Technology, Switzerland

10:30am - 11:00am - COFFEE BREAK

11:00am FA1.5 Meshnet: A New Fault-Tolerant Lan for Industrial Environments, Y. K. Malaiya, A. P. Jayasumana, Colorado State University, USA

11:30am FA1.6 Efficient Tools for Analysis and Implementation of Manufacturing System Modeled by Petri Nets with Objects a Production Rules Compilation Based Approach, H. E. Harnousset, J. M. A. Farines, E. Cantir, Universidae Federal DeSanta Catarina, Brazil

12:30pm - 2:00pm - LUNCH

Meeting Room: Delaware 4

11:00am - 12:30pm

ET1: Concurrent Engineering

Chairperson: V. K. L. Huang, AT&T Bell Laboratories, USA

10:30am - 11:00am - COFFEE BREAK

11:00am ET1.1 Concurrent Engineering, G. Robertso, American Cimflex, USA
(Tutorial Paper)

12:30pm - 2:00pm - LUNCH

TUESDAY, NOVEMBER 7, 1989 - Afternoon Session

Meeting Room: Delaware 1

2:00pm - 6:00pm

PE2: Panel Discussion

Moderator: A. Plunkett, AC Drives Technology, USA

2:00pm PE2.1 Power Electronics in Motion Control
Panelists: D. Divan, University of Wisconsin, USA
R. Lorenz, University of Wisconsin, USA
L. Rinehart, N. Zommer, IXYS Corporation, USA
E. Sweo, Sweo Control, USA

4:00pm - 4:30pm - COFFEE BREAK

Meeting Room: Delaware 2

2:00pm - 4:00pm

SP2: Control Techniques

Chairperson: C. C. Chan, University of Hong Kong, Hong Kong

Co-Chairperson: M. Torfeh, GMI Engineering & Management Institute, USA

2:00pm SP2.1 Robust Tracking Control Based on Long Range Prediction, O. Kaynak, H. Hashimoto, H. Kuroyanagi, F. Harashima, Bogazici University, Turkey

2:30pm SP2.2 Robust Controller Design for Actuators under Load Variation Condition, K. W. Lee, S. J. Lee, K. K. Choi, Seoul National University, Korea

3:00pm SP2.3 The Design of a Control System for Maintaining Constant Braking Torque on a Brake Disk Dynamometer, G. P. Hancke, R. E. Zietsman, University of Pretoria, South Africa

3:30pm SP2.4 Robust DC Servosystem Design Based on the Parameterization of Two Degrees of Freedom Control Systems, T. Umeno, Y. Hori, University of Tokyo, Japan

4:00pm - 4:30pm - COFFEE BREAK

4:30pm - 6:30pm

SP3: Nonlinear Control

Chairperson: Y. Dote, Muroran Institute of Technology, Japan

Co-Chairperson: G. B. Xiang, Fuzhou University, China

4:30pm SP3.1 Design for a Kind of Nonlinearized System, X. G. Bo, X. L. Ji, Fuzhou University, Peoples Republic of China

5:00pm SP3.2 Control of Induction Motors for High Dynamic Performance and Maximal Power Efficiency via Feedback Linearization with Input-Output Decoupling, D. I. Kim, I. J. Ha, M. S. Ko, J. W. Park, Seoul National University, Korea

5:30pm SP3.3 A Model Following Variable Structure Controller, K. W. Lee, S. J. Lee, K. K. Choi, Seoul National University, Korea

6:00pm SP3.4 Finite Time Settling Compensation Using Hysteresis Element, M. Nakano, T. Koga, H. Nagai, Tokyo Institute of Technology, Japan

TUESDAY, NOVEMBER 7, 1989 - Afternoon Session

Meeting Room: Delaware 3

2:00pm - 6:00pm

FA2: Vision and Inspection Application

Chairperson: R. C. Luo, North Carolina State University, USA
Co-Chairperson: A. Roy, ETSIZ, Spain

2:00pm FA2.1 Large Area Electron Beam Direct Imaging Technology for Printed Wiring Boards, T. Iwami, M. Sakamoto, H. Murakami, S. Sasaki, S. Hoshinouchi, Mitsubishi Electric Corp., Japan

2:30pm FA2.2 Image Based Operation: A Human-Robot Interaction Architecture for Intelligent Manufacturing, T. Hamada, K. Jamejima, I. Takeuchi, Hitachi, Ltd., Japan

3:00pm FA2.3 Three Dimensional Sensor for Automatic Visual Inspection of Soldered Parts, K. Youshimura, S. Okamoto, Matsushita Electric Work, Ltd., Japan

3:30pm FA2.4 Integrated Robotic System Development for Arc-Welding Application with Artificial Vision, V. Gutierrez-Diez, J. Perez-Turel, Universidad de Valladolid, Spain

4:00pm - 4:30pm - COFFEE BREAK

4:30pm FA2.5 Assembled PCB Visual Inspection Machine Using Image Processor with DSP, S. Hata, K. Hagimae, H. Susumu, G. Takeo, Hitachi, Ltd., Japan

5:00pm FA2.6 Automatic Placement of a Mobile 3-D Laser Range Sensor for Scene Understanding, R. C. Luo, R. Scherp, North Carolina State University, USA

5:30pm FA2.7 Automated Optical Inspection of Solder Fillets Using 2D Machine Vision, Y. Watanabe, Cimflex Teknowledge Corporation, USA

Meeting Room: Delaware 4

2:00pm - 6:00pm

ET2: Artificial Intelligence and Expert Systems

Chairperson: M. Sakauchi, IIS, University of Tokyo, Japan
Co-Chairperson: C. J. Chen, AT&T Bell Laboratories, USA

2:00pm ET2.1 Fuzzy Expert CAD for Variable Structure PID Controller, B. K. Bose, Y. Dote, University of Tennessee, USA

2:30pm ET2.2 Fuzzy Control of the Roof Crane, S. I. Yamada, H. Fujikawa, Y. Wakasugi, Musashi Institute of Technology, Japan

3:00pm ET2.3 Display Monitor Intelligent Adjusting System: DIAS, A. Nakamura, H. Hashimoto, M. Sato, F. Harashima, University of Tokyo, Japan

3:30pm ET2.4 Robust Temperature Control of Thermostatic Oven Based on Adaptive and Fuzzy Theory, K. Ohishi, Osaka Institute, Japan

4:00pm - 4:30pm - COFFEE BREAK

4:30pm ET2.5 3-D Image Processing and Grasping Planning Expert System for Distorted Objects, T. Fukuda, O. Hasegawa, Science University of Tokyo, Japan

5:00pm ET2.6 Expert System for the Authorization of Deficits, J. M. Munoz, E. Zalama, J. Lopez, Universidad de Valladolid, Spain

5:30pm ET2.7 Expert Control of a Slowly Time-Varying System Using Segmentation by Simulated Annealing and Pattern Recognition Techniques, N. K. Loh, P. Kokate, M. Das, Oakland University, USA

WEDNESDAY, NOVEMBER 8, 1989 - Morning Session

Meeting Room: Delaware 1

8:30am - 12:30pm

PE3: High Frequency Link Converters

Chairperson: P. D. Ziogas, Concordia University, Canada
Co-Chairperson: J. Uceda, Universidad Politecnica de Madrid, Spain

8:30am PE3.1 A New Zero-Voltage Zero-Current Mixed Mode Switching DC/DC Converter with Low Device Stresses, E. C. Nho, G. H. Cho, Korea Advance Institute of Science and Technology, Korea

9:00am PE3.2 A Forward Pulse-Width Modulated Quasi-Resonant Converters: Analysis, Design and Experiment Results, I. Barbi, J. C. Bolacell, J. B. Vieira, Universidade Federal de Santa Catarina, Brazil

9:30am PE3.3 A Complete Normalized Analysis of a Current-Fed Series Resonant Converter, M. E. Elbuluk, M. E. Chavez, North Carolina State University, USA

10:00am PE3.4 A New Zero Current Switching Series Resonant Inverter Using GTO's, P. K. Jain, F. P. Dawson, S. B. Dewan, Canadian Astronautics Limited, Canada

10:30am - 11:00am - COFFEE BREAK

11:00am PE3.5 A Pulse-Width Modulated Zero-Voltage Zero-Current Switched Half-Bridge Quasi-Resonant Converter, I. Barbi, J. B. Vieira, H. L. Hey, Universidade Federal de Santa Catarina, Brazil

11:30am PE3.6 Three Phase Sine Wave Voltage Source Inverter Using the Soft Switched Resonant Poles, J. G. Cho, D. Y. Hu, G. H. Cho, Korea Advance Institute of Science and Technology, Korea

12:00pm PE3.7 Static Modelling of the Parallel Resonant Converter, J. Sebastian, M. Rico, J. Uceda, M. A. Perez, Universidade de Oviedo, Spain

12:30pm - 2:00pm - LUNCH

Meeting Room: Delaware 2

8:30am - 12:30pm

SP4: Plenary Session

Chairperson: J. Hung, University of Tennessee, USA

8:30am SP4.1 Signal Processing and System Control for Industrial Application, W. Leonhard, Technische Universitat, Braunschweig, West Germany
(Distinguished Speaker)

9:00am SP4.2 Advance Motion Control in Robotics, K. Ohnishi, Keio University, Japan
(Tutorial Paper)

10:30am - 11:00am - COFFEE BREAK

10:30am - 11:00am - COFFEE BREAK

11:00am SP4.2 Advance Motion Control in Robotics, K. Ohnishi, Keio University, Japan
(Tutorial Paper)

12:30pm - 2:00pm - LUNCH

WEDNESDAY, NOVEMBER 8, 1989 - Morning Session

Meeting Room: Delaware 3

8:30am - 12:30pm
FA3: Computer Integrated Manufacturing (CIM)
Chairperson: W. T. Chin, AT&T Bell Laboratories

8:30am FA3.1 A Top-Down Approach to CIM, W. T. Chin, AT&T Bell Laboratories, USA

9:00am FA3.2 Operation Bandit - CIM From a User Perspective, R. Strobel, Motorola Inc., USA

9:30am FA3.3 Truth, Manufacturing and the American Way, G. Brammer, AT&T Network System, USA

10:00am FA3.4 People and Technology: The Evolution of the Factory of the Future, S. Boyd, Tandem Computers Incorporated, USA

10:30am - 11:00am - COFFEE BREAK

11:00am FA3.5 Creating Competitive Products Through World Wide Integration, D. Rockwill, Digital Equipment Corporation, USA

11:30am FA3.6 Software Application Architecture for Manufacturing, B. Packett, Cincinnati Milacron Inc., USA

12:00pm FA3.7 The Challenge of Manufacturing Data Networking, H. Greenbaum, AT&T Corporate Engineering

12:30pm - 2:00pm - LUNCH

Meeting Room: Delaware 4

11:00am - 12:30pm
ET3: Tutorial on Neural Networks
Chairperson: F. Harashima, University of Tokyo, Japan

10:30am - 11:00am - COFFEE BREAK

11:00am ET3.1 Neural Networks, Y. Okabe, University of Tokyo, Japan

12:30pm - 2:00pm - LUNCH

WEDNESDAY, NOVEMBER 8, 1989 - Afternoon Session

Meeting Room: Delaware 1

2:00pm - 6:00pm
PE4: Resonant and PWM Converters
Chairperson: J. Holtz, University of Wuppertal, West Germany
Co-Chairperson: D. Divan, University of Wisconsin, USA

2:00pm PE4.1 A Half-Bridge Pulse-Width Modulated Zero-Current Switched Quasi-Resonant Converter, I. Barbi, M. de Oliverira, J. B. Vieira, Universidade Federal de Santa Catarina, Brazil

2:30pm PE4.2 A High Frequency Two-Switch Forward Converter with Optimized Performance, L. Salazar, P. D. Ziogas, Concordia University, Canada

3:00pm PE4.3 Instantaneous Value Control Using a Synchronous-Integrating Filter for PWM AC Voltage Regulator, J. Tsuchiya, M. Shioya, Tokyo Metropolitan University, Japan

3:30pm PE4.4 Prediction Current Injected Control Applied to DC-AC Parallel Resonant Converters, B. V. Borges, Aplicada da Universidade, Portugal

4:00pm - 4:30pm - COFFEE BREAK

4:30pm PE4.5 High Frequency Transmision by Lumped Circuit Replacing Distributed Constant Line, T. Kawahara, H. Smimizu, G. Kimura, M. Shioya, Tokyo Metropolitan University, Japan

5:00pm PE4.6 VSS Approach to a Full Bridge Buck Converter Used for AC Sine Voltage Generation, F. Boudjema, M. Boscardin, P. Bidan, J. C. Marpinard, M. Valentin, J. L. Abatut, Laboratoire d'Automatique et d'Analyse, France

5:30pm PE4.7 High Performance Control Strategy of Current Controlled PWM Inverter Fed Induction Motor Servo Drive System, C. Y. Won, T. H. Kim, M. H. Park, Y. R. Kim, H. D. Kim, Sung Kyun Kwan University, Korea

Meeting Room: Delaware 2

2:00pm - 4:00pm
SP5: Computer Control
Chairperson: B. W. Bomar, UT Space Institute
Co-Chairperson: S. T. Hung, Auburn University, USA

2:00pm SP5.1 A Multimicro System Design for High Performance Control Application, G. Ulivi, S. Battilotti, Dipartimento di Informatica e Sistemistica, Italy

2:30pm SP5.2 Digital Controller Algorithm Incorporating Pseudo-Acceleration Feedback, S. P. Chan, Hong Kong Polytechnic, Hong Kong

3:00pm SP5.3 A Microprocessor-Based Slope-Varied Digital Pumped Controller for Phase-Lock Servo System, G. C. Hsieh, Y. S. Lin, National Tawian Institute of Technology, ROC Taiwan

3:30pm SP5.4 Multiprocessor Trade-Off in Real-Time Industrial Systems, P. K. Chanda, A. K. Ramani, P. C. Sharma, S. G. S. Institute of Technology and Science, India

4:00pm - 4:30pm - COFFEE BREAK

4:30pm - 6:30pm
SP6: Modelling and Simulation
Chairperson: T. T. Hartley, University of Akron, USA
Co-Chairperson: G. Beale, George Mason University, USA

4:30pm SP6.1 Sampled Data Modeling and Reduced Order Observer Based Controller Design of a Current Source Inverter Fed Induction Motor Drive, N. S. Gehlot, Federal University of Paraiba, Brazil

5:00pm SP6.2 Reduced Order Models for Discrete Time Systems Using Remainder Matching Method, R. Unnikrishnan, A. Gupta, Rochester Institute of Technology, USA

5:30pm SP6.3 Utilization of the GAM Pyramid for Real-Time Simulation, G. O. Beale, George Mason University, USA

6:00pm SP6.4 A Qualitative Theory for Stimulating Distributed Parameter System, T. T. Hartley, University of Akron, USA

WEDNESDAY, NOVEMBER 8, 1989 - Afternoon Session

Meeting Room: Delaware 3

2:00pm - 5:30pm

FA4: Plenary Session

Chairperson: TBA

Co-Chairperson: TBA

2:00pm FA4.1 Building Upon Lessons Learned-Risks and Rewards in Factory Automation, R. Carper, Cimflex Teknowledge Corporation, USA

(Distinguished Speaker)

4:00pm - 4:30pm - COFFEE BREAK

4:30pm FA4.2 The Specsmanship Game - A Perspective from Vendor and User, T. Chmielewski, GE Advanced Technology Laboratory, USA

(Tutorial Paper)

Meeting Room: Delaware 4

2:00pm - 6:00pm

ET4: Neural Networks

Chairperson: Y. Okabe, University of Tokyo, Japan

Co-Chairperson: TBA

2:00pm ET4.1 Neuromorphs Path Generation in Real Time, S. Konyk, Jr., W. D. Cheung, Villanova University, USA

2:30pm ET4.2 Designing Multiple Layer Perception Networks Through Decison Tree Mapping, I. K. Sethi, Wayne State University, USA

3:00pm ET4.3 Application of Neural Networks to Incipient Fault Detection in Induction Motor, M. Y. Chow, P. M. Mangum, R. J. Thomas, North Carolina State University, USA

3:30pm ET4.4 Modeling of Fault-Tolerance in Neural Networks, B. Johnson, L. A. Belfore, II, J. H. Aylor, University of Virginia, USA

4:00pm - 4:30pm - COFFEE BREAK

4:30pm ET4.5 Dual Neuron Variable Structure Controller, S. Konyk, Jr., W. D. Cheung, Villanova University, USA

5:00pm ET4.6 Visual Servo Control of Robotic Manipulators Based on Artificial Neural Network, T. Kubota, H. Hashimoto, M. Sato, F. Harashima, University of Tokyo, Japan

5:30pm ET4.7 Neural Net Implementation on Single-Chip Digital Signal Processor, A. H. Mascia, R. Ishii, Yokohama National University, Japan

THURSDAY, NOVEMBER 9, 1989 - Morning Session

Meeting Room: Delaware 1

8:30am - 12:30pm

PE5: PWM Control of Converters

Chairperson: H. Akagi, Nagaoka University, USA

Co-Chairperson: A. Plunkett, AC Drives Technology, USA

8:30am PE5.1 A Novel Active Current Waveshaping Technique for Solid State Input Power Factor Conditions, G. Joos, M. Kazerani, P. D. Ziogas, Concordia University, Canada

9:00am PE5.2 Voltage Space Vector Based PWM Control of Forced Commutated Cycloconverters, H. Laslo, D. Borojevic, Institute of Power and Electronic Engineering, Yugoslavia

9:30am PE5.3 A Three Phase Pulse Width Controlled Semiconverter, S. K. Biswas, B. Basak, M. M. Swamy, Jadavpur University, India

10:00am PE5.4 New PWM Technique for Five-Stepped PWM Inverter Used in Photovoltaic System, M. Hoshino, T. Kudo, G. Kimura, M. Shioya, Tokyo Metropolitan College of Aeronautical Engineering, Japan

10:30am - 11:00am - COFFEE BREAK

11:00am PE5.5 A Novel Current Sourced Ultrasonic Carrier PWM Converter with SA-DMOS IGBT, T. H. Nishimura, P. Maranesi, Oita University, Japan

11:30pm PE5.6 Instantaneous Feedback Control of a Single-Phase PWM Inverter with Nonlinear Loads by Sine Wave Tracking, P. Maussion, M. Grandpierre, J. Faucher, Unive Politecnica de Madrid, Spain

12:30pm - 2:00pm - LUNCH

Meeting Room: Delaware 2

8:30am - 12:00pm

SP7: Robotics Control

Chairperson: R. Ishii, Yokohama National University, Japan

Co-Chairperson: N. K. Sinha, McMaster University, Canada

8:30am SP7.1 Digital Redesign of Robot Control, R. Yokoyama, K. Kosuge, K. Furuta, Toyoto Motors Corp., Japan

9:00am SP7.2 A Dexterity Measure for Trajectory Planning and Kinematic Design of Redundant Manipulators, S. Tadokoro, I. Kimura, T. Takamori, Kobe University, Japan

9:30am SP7.3 An Approach to Collision Detection and Recovery Motion in Industrial Robot, T. Murakami, K. Ohnishi, Keio University, Japan

10:00am SP7.4 Stable Control of Robotic Manipulator with Collision Phenomena, Y. Shoji, M. Inaba, Tokyo Engineering Corp., Japan

10:30am - 11:00am - COFFEE BREAK

11:00am SP7.5 On Compliant Motion Adaptive Control for Robotic Manipulators, L. Liu, R. Lingarkar, M. A. Elbestawi, N. K. Sinha, McMaster University, Canada

11:30am SP7.6 Intelligent-Based Controller Design and Application to Robotics, M. Torfeh, GMI Engineering and Management Institute, USA

12:30pm - 2:00pm - LUNCH

THURSDAY, NOVEMBER 9, 1989 - Morning Session

Meeting Room: Delaware 3

8:30am - 12:30pm
FA5: Robotics: Theory and Applications
Chairperson: TBA
Co-Chairperson: TBA

8:30am FA5.1 Collision Free Paths in Joint Space for Robotic Manipulator, G. Cook, X.H. Yang, George Mason University, USA

9:00am FA5.2 Development and Implementation of Navigation System for an Autonomous Mobile Robot Working in a Building and Electronics Environment with its Real Time Application, M. K. Habib, S. Yuta, University of Tsukuba, Japan

9:30am FA5.3 Control of Robotic Manipulators by Joint Acceleration Controller, S. Komada, K. Ohnishi, Mie University, Japan

10:00am FA5.4 High-Speed Force Controller for Scara Robots, Y. Yoshida, A. Yabuki, Y. Nakata, K. Nishimoto, Fujitsu Laboratories Ltd., Japan

10:30am - 11:00am - COFFEE BREAK

11:00am FA5.5 Communication System of Cellular Robot: CEBOT, T. Fukuda, M. Buss, Y. Kawauchi, Science University of Tokyo, Japan

11:30am FA5.6 Trajectory Control of Two Axis SCARA Robot by Sliding Mode Control with Observer, A. Kawamura, K. Miura, T. Ishizawa, Yokohama National University, Japan

12:00pm FA5.7 High-Resolution Range Finder with Wide Dynamic Range of 0.2m to 1m Using a Frequency-Modulated Laser Diode, S. Shinohara, M. Andou, M. Miyata, H. Yoshida, H. Ikeda, J. I. Yoshida, K. I. Nishide, T. Kondo, M. Sumi, Shizuoka University, Japan

12:30pm - 2:00pm - LUNCH

Meeting Room: Delaware 4

11:00am - 12:30pm
ET5: Superconductivity
Chairperson: V. K. L. Huang, AT&T Bell Laboratories, USA

10:30am - 11:00am - COFFEE BREAK

11:00am ET5.1 Superconductivity, G. Thomas, AT&T Bell Laboratories, USA
(Tutorial Paper)

12:30pm - 2:00pm - LUNCH

THURSDAY, NOVEMBER 9, 1989 - Afternoon Session

Meeting Room: Delaware 1

2:00pm - 6:00pm
PE6: Control and Application of Converters
Chairperson: T. Koga, Toyo Denki Seizo K. K. Japan
Co-Chairperson: T. M. Jahns, General Electric Company, USA

2:00pm PE6.1 A Novel Line Synchronization Scheme for Static Power Converters, G. Joos, J. Levasseur, Concordia University, Canada

2:30pm PE6.2 Development of a Pulse Power Converter with a DSP Instantaneous Current Control, A. Ujiie, S. Tanaka, E. Takahara, A. Miyazaki, Toshiba Corp., Japan

3:00pm PE6.3 High Frequency Transmission by Lumped Circuit Replacing Distributed Constant Line, K. H. Jee, E. C. Nho, G. H. Cho, Korea Advance Institute of Science and Technology, Korea

3:30pm PE6.4 An Economical Four-Quadrant GTO Converter and Its Application to DC Drive, B. H. Khan, G. K. Dubey, S. R. Doradla, India Institute of Technology, India

4:00pm - 4:30pm - COFFEE BREAK

4:30pm PE6.5 Modified Switched Mode Power Converter with Zero Ripple, P. Midya, F. H. Schlereth, Syracuse University, USA

5:00pm PE6.6 Multi-Unit UPS System with (N-1 out of N) Redundancy Using Redundant Microcomputers for Monitoring, D. I. Holtz, K. H. Werner, University of Wuppertal, West Germany

5:30pm PE6.7 A Single Chip Three-Phase Generator for Inverters, B. W. Williams, Heriot-Watt University, England

Meeting Room: Delaware 2

2:00pm - 6:00pm
SP8: System Analysis
Chairperson: J. C. Hung, University of Tennessee, USA
Co-Chairperson: M. Farooq, Royal Military College, Canada

2:00pm SP8.1 Finite Element Analysis and Computer-Aided Optimal Design of the Magnetic Field of Fluxgate Magnetometers, S. W. Liu, C. X. Liu, Z. Ding, University of Tennessee, USA

2:30pm SP8.2 A Simple Algorithm For Time Scale Separation, A. Ansary, J. A. de Abreu-Garcia, University of Akron, USA

3:00pm SP8.3 Minimal Systems, A. Berke, University of Akron, USA

3:30pm SP8.4 Estimation of the Dead Time Through the Analysis of the Sensitivity of the Variance of the Output in Processes Subjected to Important Stochastic Disturbances, E. Vidal, J. C. Fraile, Universidad de Valladolid, Spain

4:00pm - 4:30pm - COFFEE BREAK

4:30pm SP8.5 A Comparative Study of Decentralized Data Reconciliation Algorithms, M. Darouach, M. Zasadzinski, J. Y. Keller, M. Boutayeb, Recherche Appliquee de Longwy, France

5:00pm SP8.6 Hierarchical and Functional Architecture for Control Systems, C. Verlinde, E. Georgel, J. P. Thomesse, CRIN/ENSEM, France

5:30pm SP8.7 Identification of Linear Plants Using State Space Models, C. Maciag, G. Cook, George Mason University, USA

THURSDAY, NOVEMBER 9, 1989 - Afternoon Session

Meeting Room: Delaware 3

2:00pm - 6:00pm
FA6: Factory Monitoring and Control
 Chairperson: TBA
 Co-Chairperson: TBA

2:00pm FA6.1 Tool Condition Monitoring and Machining Process Control, I. G. D'errico, Institut Per la Lavorazione dei Metalli, Italy

2:30pm FA6.2 A New Approach to Data Logging and On-Line Quality Control for a Electrolytic Tin Production Line, D. Garcia, M. Tarrío, G. Ojea, Universidad de Olieo, Spain

3:00pm FA6.3 Implementation and Performance Evaluation of Composition Controllers for Distillation Columns, E. Yang, Enron Liquids Pipeline Company, USA

4:00pm - 4:30pm - COFFEE BREAK

4:30pm FA6.4 Performance Evaluation of a Programmable Controller, Y. Yamashita, Mitsubishi Electric Corp., Japan

5:00pm FA6.5 Integrating and Numerical Controller and the FMS, J. D. Decotignie, C. Gregoire, Ecole Polytechnique, Switzerland

5:30pm FA6.6 Development of An Intelligent Vision System, M. Torfeh-Isfahani, T. Ohashi, H. Ogi, Tokyo Electric Power Company, Japan

Meeting Room: Delaware 4

2:00pm - 6:00pm
ET6: Computers, Communications and Petri Nets
 Chairperson: A. Gupta, Massachusetts Institute of Technology, USA
 Co-Chairperson: TBA

2:00pm ET6.1 Design and Implementation of a Multiprocessor with Hypercube Interconnection Network, M. Nagata, S. Fukuda, K. I. Kihara, Osaka Electro-Communication University, Japan

2:30pm ET6.2 Application of Data-Flow Computer to Numerical Simulation, S. Kishi, National Research Center for Disaster Prevention Science and Technology Agency, Japan

3:00pm ET6.3 Design and Implementation of a Multiple-Processor-Based Real-Time Identification System, Y. Y. Tzoy, National Chaio-Tung University, ROC

3:30pm ET6.4 A Statistical Communication Approach to the Map Token Ring, S. Gruber, R. Wickman, Case Western Reserve University, USA

4:00pm - 4:30pm - COFFEE BREAK

4:30pm ET6.5 Design and Implementation of an Interactive Digital Controller Development System, Y. Y. Tzoy, National Chaio-Tung University, ROC

5:00pm ET6.6 A Multi-Tasking Environment Based on Petri Nets, M. Powell, N. Ould-Kaddour, M. Courvoisier, Universite Paul Sabatier, France

5:30pm ET6.7 A High Performance Programmable Controller for CIM Systems Based on Petri Net Theory, M. Kayama, H. Nagase, Y. Morooka, Hitachi Research Lab, Japan

FRIDAY, NOVEMBER 10, 1989

Meeting Room: Delaware 1

8:30am - 12:30pm
PE7: Control of DC and AC Drives
 Chairperson: B. Murty, General Motors, USA

Co-Chairperson: S. McMinn, General Electric Co., USA

8:30am PE7.1 Digital Implementation of Parallel Control Loops in Electrical Drives, G. Joos, J. Levasseur, Concordia University, Canada

9:00am PE7.2 A Microprocessor-Based Suboptimal Speed Controller for an SCR-DC Motor Drive, M. Farooq, J. B. Plant, Y. Plourde, Royal Military College, Canada

9:30am PE7.3 High Voltage for Electrical Traction Application Using Series Connection of Large GTO Thyristors, S. Saadate, R. LeDoeuff, R. Periot, Group de Recherches en Electrotechnique et Electronique de Nancy, France

10:00am PE7.4 Finite Time Settling Compensation Using Hysteresis Element, M. Nakano, T. Koga, H. Nagat, Tokyo Institute of Technology, Japan

10:30am - 11:00am - COFFEE BREAK

11:00am PE7.5 Parallel Operation of Active and Passive Filters for Variable Speed Cycloconverter Drive System, T. Shimamura, R. Kurosawa, M. Hirano, H. Uchino, Toshiba Corp., Japan

11:30am PE7.6 Torque Ripple Reduction Methods for Vector Controlled Induction Motor with Current Preview Control, T. Koga, I. Miyashita, Toyo Electric Mfg. Co. Ltd., Japan

12:00pm PE7.7 Implicit Design of a Predictive PID Controller with Computational Delay Effect, R. Sh. Habib, A. H. Sungoor, Electronics and Computers Research Center, Iraq

12:30pm - 2:00pm - LUNCH

Meeting Room: Delaware 2

8:30am - 12:30pm
PE8: Control & Simulation of AC Drives
 Chairperson: W. Leonhard, University of Braunschweig, W. Germany

Co-Chairperson: G. Buja, University of Trieste, Italy

8:30am PE8.1 Using Phase-Current Sensing Circuit As the Position Sensor for Brushless DC Motor Without Shaft Position Sensor, R. L. Lin, S. C. Chen, M. T. Hu, C. Y. Lee, Chung-Shan Institute of Science and Technology, Taiwan ROC

9:00am PE8.2 Sensorless Vector Control of Permanent Magnet Synchronous Motor Using Adaptive Identification, M. H. Park, H. H. Lee, Seoul National University, Korea

9:30am PE8.3 Variable-Reluctance Resolver Design Guidelines, D. C. Hanselman, R. E. Thibodeau, D. J. Smith, University of Maine, USA

10:00am PE8.4 Study of Main Flux Saturation Effects in Field-Oriented Induction Motor Drives, E. Levi, V. Vuckovic, S. Vukosavic, University of Novi Sad., Yugoslavia

10:30am - 11:00am - COFFEE BREAK

11:00am PE8.5 Simulation of PWM CSI Induction Motor Drive System, J. D. Laverd, H. Jin, B. Wu, S. B. Dewan, University of Toronto, Canada

11:30am PE8.6 Simulation of Inverter Fed Induction Motors Including Core Losses, M. R. Udayagiri, T. A. Lipo, Central Electronics Engineering Research Center, India

12:00pm PE8.7 VLSI Based Micromachines and Their Control, R. Krishnan, Virginia Polytechnic Institute and State University, USA

12:30pm - 2:00pm - LUNCH

Meeting Room: Delaware 3

8:30am - 12:30pm
SP9: Signal Generation and Processing
 Chairperson: R. C. Born, Milwaukee School of Engineering
 Co-Chairperson: S. W. Liu, University of Tennessee, USA

8:30am SP9.1 Magnetic Field Disturbance Signal Processing, G. R. Steber, A. Ghorbanpoor, T. E. Shew, University of Wisconsin-Milwaukee, USA

9:00am SP9.2 Design and Implementation of a Class of VLSI Systolic Arrays for Real-Time Digital Signal Processing in Industrial Control Applications, D. V. Poornalah, M. O. Ahmad, Concordia University, Canada

9:30am SP9.3 High Accuracy Camera Calibration for 3-D Computer Vision, Y. Nomura, M. Sagara, H. Naruse, A. Ide, Nippon Telegraph and Telephone Corp., Japan

10:00am SP9.4 Resolver Signal Requirements for High Accuracy Resolver-to-Digital Conversion, D. Hanselman, University of Maine, USA

10:30am - 11:00am - COFFEE BREAK

11:00am SP9.5 Optimal Configuration Design of Multi-DSP's for Digital Control Systems, H. Maki, Y. Ohta, H. Haneda, Kobe University, Japan

11:30am SP9.6 A PC-Based System for Evaluating Speed Intelligibility with the Diagnostic Rhyme Test (DRT), R. J. Conway, T. M. Sippel, R. J. Niederjohn, Marquett University, USA

12:00pm SP9.7 Voice Command Robot System by Using the Linguistic Knowledge of a Voice, S. Aramaki, I. Nagasawa, K. Osada, S. Kurono, University of Kinki, Japan

12:30pm - 2:00pm - LUNCH

Tutorial C

Meeting Room: Delaware 4
Nonlinear Dynamics: Chaos for Engineers
Tom T. Hartley
University of Akron

This tutorial is designed for anyone interested in learning more about the increasingly important area of nonlinear dynamics. The discussion will be based on a practical and intuitive understanding and will not be encumbered with highly mathematical theorems and proofs. The attendee will obtain basic useful knowledge about the dynamics of nonlinear systems that can be put into everyday use after the tutorial. Many examples of nonlinear and chaotic systems from engineering and elsewhere will be discussed and explained. The fundamental differences between nonlinear systems and our usual linear thinking will be stressed. The tutorial is based on the philosophy that if you ever hope to control a system, you must first understand its behavior. A basic understanding of Laplace transforms is suggested.

Dr. Hartley received his Ph.D. from Vanderbilt University in 1984 and is presently Associate Professor of Electrical Engineering at the University of Akron. He has done extensive research in the areas of system simulation, nonlinear dynamics, and modeling aerospace propulsion systems while at the University of Akron and in conjunction with the NASA Lewis Research Center.

Tutorial D

Meeting Room: Grand Ballroom B
The Manufacturing Message Specification
(MMS)
Juan R. Pimentel
GMI Engineering & Management Institute

MMS is a specific application layer protocol for industrial local area networks which enables communication among intelligent devices found in manufacturing applications. Examples of intelligent devices include vision systems, robots, programmable logic controllers (PLCs), numerically controlled (NC) machines, coordinate measurement machines and others.

MMS (an ISO International Standard) is part of the MAP (Manufacturing Automation Protocol) 3.0 specification and it is also being reviewed by the EIA (Electronics Industry Association) for release as the RS-511 standard. Previous MAP specifications (i.e., MAP 2.1, 2.2) referenced a predecessor of MMS known as the Manufacturing Message Format Standard (MMFS). MMS contains additional functionality as compared with MMFS. However, the major distinction between the two protocols is the way in which the PDUs (protocol data units) are described and encoded, with the MMS protocol being more generic and more powerful. In this tutorial we concentrate on MMS services and their semantics rather than syntax.

TUTORIAL OUTLINE

1. An overview of the MAP 3.0 architecture
2. The ISO application layer model
 - The ISO Association Control Service Element (ACSE) • MMS connection establishment
3. A multiple robot assembly system (MRAS)
4. MMS application layer functionality
 - Variable access • Message passing • Resource sharing
 - Program management • Event management • Other services
5. An object oriented view of MMS
6. Examples

Dr. Pimentel has a BS degree from the Universidad Nacional de Ingenieria, Lima, Peru, and the MS and PhD degrees from the University of Virginia. He worked at the Instituto Geofisico del Peru, and the National Radio Astronomy Observatory (NRAO). Currently he is an associate professor of Electrical and Computer Engineering at GMI Engineering & Management Institute, Flint, Michigan. Dr. Pimentel has participated in the development of the Manufacturing Automation Protocol (MAP) from its very beginning. During 1987-1988 he was a guest professor at the Fraunhofer Institute fuer Informations and Detenverarrbeitung, W. Germany. He wrote the textbook COMMUNICATION NETWORKS FOR MANUFACTURING, Prentice-Hall, and the chapter "Automated Manufacturing Networks" in PROGRESS IN MODELING AND INTELLIGENT SYSTEMS, Ablex Publ. Co. (both will appear in 1989).

1. Advance registration must be received by October 6, 1989.
2. After October 6, 1989 please register at the conference.
3. Refund requests will be honored only if received by September 30, 1989.
4. A US\$50.00 cancellation fee will be charged for processing refunds.
5. NO REFUND WILL BE ISSUED AFTER SEPTEMBER 30, 1989.
6. All registrants and guests are required to make an entree selection for the banquet.

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CONFERENCE REGISTRATION

	BEFORE OCTOBER 6	AT THE MEETING
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NON MEMBER	<input type="checkbox"/> US\$375.00	<input type="checkbox"/> US\$400.00

TUTORIAL REGISTRATION

- Registration fee for each session is US\$200.00
- A. Local Area Networks - A. C. Weaver, University of Virginia - November 6, 1989
 - B. Sensor Data Fusion - H. E. Stephanou, George Mason University - November 6, 1989
 - C. Nonlinear Dynamics: Chaos for Engineers - T. T. Hartley, University of Akron - November 10, 1989
 - D. The Manufacturing Message Specification (MMS) - J. R. Pimentel, GMI Eng & Man. Inst. - November 10, 1989

BANQUET REGISTRATION

Additional Banquet Ticket(s) _____ x \$35.00 = _____

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NOVEMBER 6-10, 1989, PHILADELPHIA, PENNSYLVANIA, USA
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2nd International Symposium on the PHYSICAL AND FAILURE ANALYSIS OF INTEGRATED CIRCUITS

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CALL FOR PAPERS

The Second International Symposium on the Physical and Failure Analysis of Integrated Circuits (IPFA Symposium) will be held in Singapore on 7-10 November 1989. This Symposium is organised by IEEE Singapore Section in co-operation with the National University of Singapore, Department of Electrical Engineering.

An earlier Symposium held in 1987 drew 300 participants from Asia Pacific, Europe and USA with a programme comprising 30 technical papers and 2 full-day tutorials. The success of that meeting is indicative of the growing interest in integrated circuit reliability physics and failure analysis in Asia. The organisers have reason to believe that the 1989 Symposium will build on the success of previous gathering.

The Programme Committee is now inviting submission of papers for presentation at the Symposium. Papers should deal with work on:

- Mechanism Study
Quantitative models and mechanisms of component failure eg. contact degradation, oxide breakdown, EOS/ESD effects.
- Physical and Chemical Techniques
Analysis techniques, as they are applied to specific problems, eg. surface analysis, thermal analysis, chemical analysis.
- Failure Analysis Techniques
eg. on-chip self testing techniques, fault identification and location, hot spot diagnostics using liquid crystal, voltage contrast techniques.
- Reliability Testing
Emphasizing the physical mechanisms which validate testing and screening techniques, difficulties associated with adhering to various specifications and standards.
- Design and Process Control for Reliability
In the following or related areas:
 - LSI/VLSI (Microprocessors, Memory, Interface chips, etc.) — MOS, Bipolar, CMOS etc.
 - Semiconductor-insulator interfaces, contacts and metallisation
 - Packaging, bonding, die attach and encapsulation
 - Opto-electronic devices
 - Power devices

WORKING LANGUAGE

English will be the working language of the Symposium and will be used for all printed materials, presentations and discussions. A Symposium proceedings comprising all accepted papers will be published and distributed to all participants.

SUBMISSION GUIDELINES

Authors are requested to submit six (6) copies of a 500 word summary to the Programme Chairman and a 50 word abstract on or before **1 March 1989**. The summary should be prepared on A4 size paper, on single-sided, double-spaced typewritten form with 25mm margins on all sides, and must be accompanied by the attached Paper Submission Form duly completed.

Authors of papers that have been accepted for presentation will be notified by **1 May 1989**.

Full papers must be submitted by **1 August 1989**. Upon notification of acceptance, authors will be supplied with mats and guidelines for presentation. Authors are reminded to submit manuscript with original photographs for direct reproduction in the Symposium Proceedings.

IMPORTANT DATES

- 1 March 1989** — Submission of summary and abstract
- 1 May 1989** — Notification to authors whose papers have been provisionally accepted
- 1 June 1989** — Mailing of Advance Programme
- 1 August 1989** — Submission of full papers

EXHIBITION

A four-day exhibition on FA equipment and services will be held concurrently with the Symposium on 7-10 November 1989. Exhibitors' enquiries should be directed to the Symposium Secretariat.

For further information, please contact:

The Secretariat
IPFA SYMPOSIUM
Communication International Associates Pte Ltd
450, Alexandra Road # 10-00 Inchange House Singapore 0511 Tel: 4750220 Fax: 4758586

IX ACCA CONFERENCE AND WORKSHOP ON ROBOTICS, CAD/CAM, FMS
II IEEE INTERNATIONAL CONFERENCE AND WORKSHOP ON ROBOTICS, CAD/CAM, FMS
November 27-29, 1989. O'Higgins Hotel. Vina de Mar, Chile

CALL FOR PAPERS

The International Conference is co-sponsored by the Automatic Control Chilean Association ACCA, the IEEE Control Systems and Industrial Electronics Chapter of the Chile Section, and the Electrical Engineering Dept. of the Universidad Catolica de Valparaiso, Chile; with the collaboration of the IEEE Industrial Electronics Society. Papers are solicited in all areas of Robotics, CAD/CAM, FMS, and Automation, with special emphasis on broader aspect of them. Specific topics include, but are not limited to, the following:

- Robotic and automation systems. Design, planning, modelling, evaluation and integration.
- CAD/CAM, planning and scheduling in automated systems.
- FMS and flexible automation.
- Robotic analysis, modelling, kinematics, dynamics and control.
- Expert systems in robotics and manufacturing.
- Robot applications in industry, space, underwater, hostile environments.
- Ergonomics, human-machine interface, social-technical factors.

The objectives of the Conference are to attract quality papers from representatives of industry, academia, and research institutions, and promote professional interaction for the advancement of science, technology, and fellowship.

Submit a full paper (six pages) or short paper (two pages) in Standard IEEE Conference Proceedings form at (one original in camera ready form and four reduced 8 1/2 x 11" copies) to:

Gaston Lefranc, Chapter Chairman
Universidad Catolica de Valparaiso
P. O. Box 4059, Valparaiso, Chile
FAX (56) (32) 212205
PHONE (56) (32) 257331

Deadline for submission of papers: September 21, 1989.

The Editorial Committee will select the papers for technical or poster sessions. The accepted papers will be included in the Proceeding.

It is expected that all authors will pay Conference registration fees and their travel expenses. There will be reduced fees for pre-registration before November 1.

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June 1, 1989

International Workshop on Microcomputer Control of Electric Drives, July 3-4, 1989, Trieste, Italy. Contact: Professor Giuseppe Buja, Department of Electrical, Electronic, and Computer Engineering, University of Trieste, Via Valerio 10, 34127 Trieste, Italy. Telephone: 39-40-574044.

SICE '89, July 25-27, 1989, Matsuyama, Japan. Contact: Dr. Hiro Yamasaki, SICE President, Hongo 1-35-28-303, Tokyo 113, Japan. Telephone: (03) 814-4121. FAX: (03) 814-4699.

IEEE International Workshop on Intelligent Robotics and Systems '89 (IROS '89) - The Autonomous Mobile Robot and Its Application, September 4-6, 1989, Tsukuba, Japan. Contact: Professor Shin'ichi Yuta, University of Tsukuba, Institute of Information Science and Electronics, Tsukuba, 305 Japan. Telephone: 81-298-53-5509. FAX: 81-298-53-5206.

1989 Korean Automatic Control Conference, October 27-28, 1989, Korea. Contact: Dr. Chang-Koo Yun, P. O. Box 131 (KAIST), Seoul, Korea 136-791. Telephone: 82-2-967-8901 ext. 4411. FAX: 82-2-963-4013.

IECON '89, November 6-10, 1989, Philadelphia, Pennsylvania. Contact: Dr. Hubert Wo, AT&T Bell Labs, MS 1N267, 307 Middletown Road, Lincroft, NJ 07738-1526 USA. Telephone: (201) 576-3429.

International Symposium on the Physical and Failure Analysis of Integrated Circuits, November 7-10, 1989, Singapore. Contact: IPFA Symposium, Communication International Associate Pte Ltd, 450 Alexandra Road #10-00, Inchcape House, Singapore 0511. Telephone: 475 0220. FAX: 475 8586.

Tencon '89 - IEEE Region 10 Conference on Information Technologies in the '90s, November 22-24, 1989, Bombay, India. Contact: Kirit J. Sheth, c/o Hakotronics Pvt. Ltd., 20 Sussex Road, Victoria Garden, Bombay 400 027, India. Telephone: 872-2888. USA Contact: Professor Tom Kailath, Stanford University, Durand 117, Stanford, CA 94305-4055.

International Workshop on Sensorial Integration for Industrial Robots, November 22-24, 1989, Zaragoza, Spain. Contact: Dr. Armando Roy, Dpto. Ingenieria Electrica e Informatica, E.T.S.I.I.Z., C/ Maria de Luna, 3, E-55015 Zaragoza, Spain. Telephone: 34-76-519278.

International Workshop on Industrial Automation Systems, March 26-28, 1990, Yokohama, Japan. Contact: Mr. Tatsuhiro Hasegawa, Toshiba Corporation Fuchu Works, 1, Toshibacho, Fuchu, Tokyo 183, Japan. Telephone: (0423)33-3003.

IEEE International Workshop on Advanced Motion Control, March 29-31, 1990, Yokohama, Japan. Contact: Professor Kouhei Ohnishi, Department of Electrical Engineering, Keio University, 3-14-1 Hiyoshi, Kohoku, Yokohama, 223 Japan. Telephone: 81-44-63-1141. FAX: 81-44-63-3421.

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1990 IEEE International Conference on Applications of Industrial Electronics Systems, May 13-17, 1990, Jerusalem, Israel. Contact: Dr. Moshe Harpaz, Kibbutz Ein-Carmel, D.N. Hof-Carmel 30 860, Israel. Telephone: (972)-4-844410. FAX: (972)-4-844250.

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IEEE International Workshop on Intelligent Motion Control, August 20-22, 1990, Istanbul, Turkey. Contact: Prof. Dr. M. Okyay Kaynak, Dept. of Electronic and Electrical Engineering, Bogazici University, P.K.2, Bebek, 80815 Istanbul, Turkey.

IECON '90, Fall 1990, California, USA. Contact: Mr. Robert Begun, FMC Corporation, Mailstop 070, P. O. Box 58123, Santa Clara, CA 95052, USA. Telephone: (408) 289-2728. FAX: (408) 289-3420.

IECON '91, Fall 1991, Kobe City, Japan. Contact: Professor Hiro Haneda, Department of Electronics Engineering, Kobe University, Rokko-dai, Nada-ku, Kobe City, Hyogo 657, Japan. Telephone: 81-798-881-1212. FAX: 81-78-861-7679.