

IAPR



International Association for Pattern Recognition, Inc.

An affiliate member of the International Federation for Information Processing

NEWSLETTER

Editor

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EDITORIAL COMMENTS

YOU CAN TELL THE PLAYERS WITHOUT A PROGRAM

There are conferences on image processing, others on pattern recognition, and still others on artificial intelligence which include sessions on computer vision. The people who attend meetings related to computer vision are usually not the same ones that attend those dedicated to the other two, and vice versa. There even seems to be a dichotomy in the sphere of journal publications. The question arises regarding the difference between image processing and computer vision. Is it the issue of low level versus high level processing, FORTRAN versus LISP, applications versus theory? All indications point to a negative answer on all these counts. Indeed it would seem at this time that habit might dictate the reply, prejudice on both sides having more or less withered away.

Interested readers who would like to enjoy

in a correspondence on this topic are encouraged to send their submissions to the editor.

I would like to thank Peter Sander for his assistance in preparing and publishing the Newsletter during my Sabbatical and Frank Ferrie for his work on this issue. Both are now doctoral students in the Computer Vision Laboratory at McGill.

Martin D. Levine

Martin D. Levine
Editor

NITPIC

..... The IEEE has constituted a new technical committee on Computer Graphics and Applications..... An Austrian national organization within IAPR is presently being organized by Dr. Gustav Bernroider at the University of Salzburg H. Kazmierczak of Karlsruhe has recently been appointed as Industrial Cooperation Chairman for the sixth IJCPR to be held in Zuerich in October 1982 Y.T. Chien of the University of Connecticut has been appointed the new chairman of the Machine Intelligence and Pattern Analysis (MIPA) technical committee of the IEEE Prof. K. Chidananda Gowda of the S.J. College of Engineering in Mysore, India and Prof. Y.V. Venkatesh of the Indian Institute of Science in Bangalore, India have both been recently approved by the Membership Committee of the IAPR as individual members of IAPR The IAPR now has 13 national members and 12 individual members Profs. L.G. Shapiro and R.W. Ehrich are the new co-editors of the Newsletter for the IEEE Technical Committee on Machine Intelligence and Pattern Analysis Prof. Bruce Batchelor has moved from the University of Southampton to the University of Wales Institute of Science and Technology in Cardiff Requests for copies of the IAPR Newsletter should be addressed to the local representative on the IAPR Governing Board

CONFERENCE REPORTS

IEEE COMPUTER SOCIETY CONFERENCE ON PATTERN RECOGNITION AND IMAGE PROCESSING

The annual Pattern Recognition and Image Processing (PRIP) Conference, held on August 6-8, at the Hyatt Regency O'Hare, Chicago, IL, had a record attendance of over 500. Conference chairman was Prof. R.M. Haralick of Virginia Polytechnic Institute.

Sessions at the Conference were devoted to image processing, edge processing, curve and shape description, scene analysis, shape description and matching, scene segmentation and interpretation, image coding and curve approximation, pattern recognition theory, structural pattern recognition and clustering, texture and mathematical foundations, industrial applications (two sessions), and remote sensing and time-varying imagery. Panel discussions dealt with transportable image processing software and with the roles of pattern recognition and artificial intelligence in image understanding. There was also a joint session with the annual ACM Computer Graphics Conference (SIGGRAPH 79), which was held on August 8-10.

In addition to the 100 or more papers presented at these sessions, a tutorial was held on Sunday, August 5, covering statistical and structural pattern recognition, as well as image processing. The lecturers were Dr. H.C. Andrews (Comtal Corp.), Prof. K.S. Fu (Purdue University), Prof. R.M. Haralick (Virginia Polytechnic Institute), and Prof. L.N. Kanal (University of Maryland). A workshop on Image Modelling, sponsored by the

National Science Foundation and the Office of Naval Research, was held on August 6-7; it was organized by Prof. A. Rosenfeld of the University of Maryland.

PATTERN RECOGNITION IN PRACTICE-A WORKSHOP REPORT

One hundred practitioners of the art and science of pattern recognition met on May 21-23 to review recent progress at Amsterdam's Sheraton Schiphol Inn. This agreeable and useful exchange of experimental results, theoretical demonstrations, conjectures and aspirations was organized by the Department of Medical Informatics of the Free University of Amsterdam under the leadership of Professor E.S. Gelsema, with the financial and moral support of the Commission of the European Communities, the Dutch Health Organization, The Ministry of Education and Research of the Netherlands, the Free University of Amsterdam, the IEEE and NSF. The conference was firmly co-chaired by Dr. Gelsema and Professor Laveen Kanal of the University of Maryland, aided by an organizing committee consisting of J.H. Van Bommel, G.H. Landeweerd, E. Backer, and W.H. Schoendorf, and a program committee including H. Freeman and C.J.D.M. Verhagen.

The format of the conference consisted of 50 presentations interspersed with discussions stimulated and guided by the session chairmen. The discussions were taped, transcribed, and edited by the participants on the spot, and will be included in the conference record.

About one half of the presentations dealt with various aspects of medical image and signal processing. A very interesting sequence of presentations traced the progress of the interactive ISPAHAN system, which combines several features found on earlier systems such as OLPARS and MIPACS with powerful new analytic techniques organized in 300 subroutines.

Unlike earlier workshops on the subject (in Puerto Rico, Delft, Hot Springs, Albuquerque, and Monterey) only two papers were explicitly devoted to optical character recognition. A paper which evoked considerable interest presented a registration scheme based on enclosing polygons of silhouettes of tactical targets. Another presentation which evoked much discussion was a prospectus on a reconfigurable geographic database. There were also new results on the estimation of probabilities for classification, much empirical data on feature selection, and interesting presentations on shape analysis, texture, syntactic image analysis, boundary extraction, and three-dimensional applications. Useful surveys were given on image manipulation languages, on decision-making paradigms in cell classification, on decision trees, and on parallel algorithms and special purpose processors.

The relative isolation of the conference site, the amplitude of the breakfasts and lunches, and the festivities organized at a royal cottage promoted spirited interchanges and integration of the more recent arrivals to the field with the seasoned and scarred veterans. The technical

PATTERN RECOGNITION IN PRACTICE-A WORKSHOP REPORT (CONT'D)

contributions of the workshop will be available to all interested parties through the proceedings edited by Drs. Gelsema and Kanal, which are scheduled to be published by North Holland before the end of 1980.

George Nagy
Department of Computer Science
University of Nebraska Lincoln

CANADIAN SOCIETY FOR COMPUTATIONAL STUDIES OF INTELLIGENCE/SOCIÉTÉ CANADIENNE POUR ÉTUDES D'INTELLIGENCE PAR ORDINATEUR, VICTORIA, BRITISH COLUMBIA, MAY 14-16, 1980.

The third biennial CSCSI/SCEIO conference was recently held at the University of Victoria, British Columbia. The main emphasis of this gathering is on Artificial Intelligence, although this year the conference also included participation by the Canadian Man-Computer Communications Society and the Canadian Image Processing and Pattern Recognition Society. Sessions included expert systems; man-computer communications; graphic standards; deduction and synthesis; image analysis; semantic nets; natural language processing; computer graphics; computer vision; speech analysis and synthesis; games; problems and search; computer film festival.

Anyone interested in obtaining a copy of the Proceedings should write to the Conference Chairman, Dr. Wayne A. Davis, CSCSI Conference, Dept. of Computing Science, University of Alberta, Edmonton, Alberta, Canada, T6G 2H1.

CONFERENCES AND WORKSHOPS

MILITARY AND SPACE APPLICATIONS OF ROBOTICS

The conference will be held in Washington, D.C., on Monday, Tuesday, and Wednesday, November 3 through 5, 1980. The purpose of the conference is to bring together major workers in the field to discuss the feasibility of current and future (military and space) applications of robot systems and to bring these ideas to the attention of those who should encourage the development and deployment of such systems.

The conference is co-sponsored by the Information Processing Directorate of the Office of Naval Research and the Computer Science Laboratory of the Communications Sciences Division of the Naval Research Laboratory. Over a dozen luminaries of the robot world have been invited to speak at the conference. The focus of the conference will be on current and future applications and on advanced robot technology including sensors, object recognition, control systems, high-level robot languages, robot planning, and problem-solving systems. Discussion of "old-fashioned" industrial robots with little or no sensing capabilities is expli-

citly excluded.

For information contact: John S. Dehne
(703) 664-2811

WORKSHOP ON DIGITAL SIGNAL AND WAVEFORM ANALYSIS

Co-sponsored by:

ADAPTIVE AND LEARNING SYSTEMS TECHNICAL COMMITTEE
OF IEEE SYSTEMS, MAN, AND CYBERNETICS SOCIETY

and

MACHINE INTELLIGENCE AND PATTERN ANALYSIS TECHNICAL
COMMITTEE OF IEEE COMPUTER SOCIETY

(In conjunction with the 5th International Conference
on Miami Beach, Florida)

Miami Beach, Florida
December 4, 1980

Recently there has been much interest in the interaction between digital signal analysis and pattern recognition, which are both rapidly growing areas. This one-day workshop is organized with emphasis on such interactions and a number of related applications. Research topics of interest to the workshop include:

- * Adaptive and learning algorithms for digital waveform study
- * New fast computational algorithms for signal analysis and classification
- * Signal modeling and waveform analysis
- * Integrated signal analysis and classification systems
- * Applications to geophysics, biomedicine, radar, sonar, pollution monitoring, etc.

Contact: Prof. C.H. Chen
Electrical Engineering Department
Southeastern Massachusetts University
N. Dartmouth, MA 02747
(617) 999-8475

NINTH AIPR WORKSHOP

September 22-23, 1980

University of Maryland
University College
Center of Adult Education
College Park, Maryland

Recent advances in automatic image processing and image understanding algorithms and in integrated microelectronics are beginning to achieve practical application in several areas. Current applications stress the need for high speed processing of the data and include detection, classification, and tracking of objects and patterns in tactical military imagery; processing of satellite imagery

NINTH AIPR WORKSHOP (CONT'D)

for civilian and military purposes; and industrial automation. This workshop is intended to highlight the most recent advances in such areas with emphasis on results, the use of practical approaches, and limitations of the current state of the art.

The Ninth Applied Imagery Pattern Recognition (AIPR) Workshop will focus on the theme:

HIGH SPEED IMAGE PROCESSING FOR PRACTICAL APPLICATIONS

The Ninth Workshop is being sponsored by the Subcommittee on AIPR under the Machine Intelligence and Pattern Analysis Committee of the IEEE. Previous workshops were sponsored by the Electronics Industries Association, when the Subcommittee was under that organization. Despite this shift, the Subcommittee retains its focus on the practical aspects of image pattern recognition and the need for a strong industry-government-academic interaction.

Co-chairpersons:

John S. Dehne (703)664-2811
U.S. Army Night Vision and Electronics Laboratory

William L. Alford (301)344-8275
Goddard Space Flight Center

R. Michael Hord (703) 893-5900, Ext. 239
General Research Corporation

CALL FOR PAPERS

SEVENTH CONFERENCE OF THE CANADIAN MAN-COMPUTER COMMUNICATIONS SOCIETY

10, 11 and 12 June 1981
University of Waterloo, Waterloo, Ontario

TOPICS OF INTEREST WILL INCLUDE:

Interactive Graphics. Display Systems. Man-Computer Interaction. Speech Processing. Computer Aided Design. Business Graphics. Industrial Applications. Graphics for Personal Computers. Graphics Standards. Graphics language. Computer Vision. Biomedical Image Processing. Special Purpose Hardware. Picture Communications. Picture Languages. Pattern Recognition. Robots.

Significant Dates:

Abstract due 31 October 1980 - *Notification of Authors by* 15 January 1981 - *Full Paper due* 31 March 1981

SEND ABSTRACTS TO:

Dr. Marcell Wein
Division of Electrical Engineering
National Research Council
Ottawa, Ontario, K1A 0R8
Telephone: (613)993-2629

ADDRESS FOR INFORMATION:

Dr. Kellogg Booth
Department of Computer Science
University of Waterloo
Waterloo, Ontario
N2L 3G1

Telephone: (519)995-1212 ext. 3472

Authors are reminded that if it is desirable to publish the material elsewhere, an extended abstract is sufficient for inclusion in the proceedings.

THIS CONFERENCE IS BEING HELD IN ASSOCIATION WITH THE CANADIAN IMAGE PROCESSING AND PATTERN RECOGNITION SOCIETY AND DURING THE SAME WEEK AS THE CIPS NATIONAL CONFERENCE.

EUROCON 1982

FIFTH EUROPEAN CONFERENCE ON ELECTROTECHNICS

Copenhagen, June 14-18, 1982

The Conference theme is:

Reliability in Electrical and Electronic Components and Systems

Original user-oriented, theoretical or tutorial papers are invited from all countries. Among topics which are considered as being in keeping with the Conference theme are the following:

reliability of power stations and distribution systems, atomic power plants, communication systems, bio-medical devices, microelectronic devices, computer hardware and software; testing and trouble shooting techniques for components and systems - both software and hardware, environmental considerations, burn-in procedures, accelerated testing, failure mode effects and criticality analysis, fault tree analysis, detection of incipient failures; models for reliability growth, applications based on operations research techniques, quality control; trade-offs among reliability, maintainability, availability, servicability and costs; human detection and diagnosis of failures, reliability planning and management, subjectivity of human assessments of reliability; life cycle cost, reliability as a marketing factor, legal liability aspects.

The deadline for one-page abstracts is December 1, 1980.

In the abstract it should be sent to:

Dr. Peter W. Becker
Electronics Lab.
DTH, Bldg. 344
DK-2800 Lyngby, Denmark

CALL FOR PAPERS (CONT'D)

2ND SCANDINAVIAN CONFERENCE ON IMAGE ANALYSIS

*Helsinki, Finland
June 15-17, 1981*

The Conference:

The Pattern Recognition Society of Finland hosts the Second Scandinavian Conference on Image Analysis. This is an international conference open to contributors and participants from all countries. The official language of the Conference will be English.

Topics-of Interest:

The Conference is open to all aspects of Image Analysis, including

- theoretical problems in IA
- remote sensing
- software
- hardware
- industrial applications
- biotechnical and biomedical applications

Sessions on other topics of Pattern Recognition may also be organized, depending on the received abstracts. The duration of the presentations will be 20 minutes. During the Conference, several invited speakers will give talks on selected topics of Image Analysis.

Paper Submission:

For reviewing, 3 copies of a 300-word abstract of the paper in English should be submitted by December 1, 1980, to

Dr. Olli Simula
Department of Technical Physics
Helsinki University of Technology
SF-02150 Espoo 15, Finland
Phone: (358-0) 451 2468

The deadlines will be

December 1, 1980	Reception of abstracts
February 1, 1981	Notification concerning acceptance
March 15, 1981	Reception of camera-ready copies of accepted papers

All accepted papers will appear in the Conference Proceedings, which will be available at the time of the Conference.

RESEARCH CENTERS

PICTURE PROCESSING LABORATORY
UNIVERSITY OF LINKÖPING, FAX
S-581 83 LINKÖPING, SWEDEN

The Picture Processing Laboratory is part of the Electrical Engineering department at Linköping University. The laboratory consists of three groups:

1. A group with emphasis on processor and systems design as well as algorithms and applications headed by Professors Per-Erik Danielsson and Björn Kruse.
2. A group with emphasis on algorithm and processor design headed by Professor Goesta H. Granlund.
3. A group with emphasis on picture coding and transmission headed by Professor Ingemar Ingemarsson.

Approximately 35 persons are engaged in the work of the Picture Processing Laboratory. This includes a permanent staff of 17 members and 14 doctorate students. The interaction between the groups is very strong in terms of participation in projects and use of resources. There is also cooperation with the nearby located laboratory for Image Processing of the National Defense Research Institute in Linköping. This laboratory engages approximately 25 persons in work on Image Processing.

The activities of the Laboratory are to a considerable degree supported by the National Swedish Board for Technical Development.

Work started at the laboratory in 1972 with development of a picture processing system around a parallel processor, the PICAP system. Over the years the work has expanded into a number of areas and projects, a description of which has been published in a report obtainable from Prof. G.H. Granlund.

BOOKS

ISSUES IN DIGITAL IMAGE PROCESSING

edited by *R.M. Haralick*, Professor of Electrical Engineering and Computer Science at the Virginia Polytechnic Institute and State University, and *J.C. Simon*, Professor of Computer Science, Institut de Programmation, Paris.

NATO Advanced Study Institute
Bonas, France, June 1978

No. 34 NATO ADVANCED STUDY INSTITUTE SERIES:
APPLIED SCIENCE

1980, 356 pages, Cloth, Dfl. 81.40/\$40.75

Sijthoff & Noordhoff International Publishers,
2400 MA Alphen aan den Rijn, The Netherlands.

This book includes the main lectures given at the NATO Advanced Study Institute on Digital Image Processing and Analysis which was held in Bonas, France, June 1978.

The book is organized in 4 sections: Digital Filtering, Neighborhood Operators, Discrete and Probabilistic Relaxation, and Applications.

BOOKS (CONT'D)

Operators, Discrete and Probabilistic Relaxation, and Applications. Digital filtering is covered briefly with emphasis on transform domain pictures. Boolean neighborhood operators which have parallel implementations are emphasized. The section on Discrete and Probabilistic Relaxation material which has been recently introduced into digital image processing. Relaxation applications include scene matching as well as cooperative algorithms for edge enhancement, clustering, and character recognition. The final section on applications includes a variety of topics in remote sensing, physics, medicine, and data compression.

SOCIETIES

THE CLASSIFICATION SOCIETY (NORTH AMERICAN BRANCH)

The Classification Society is devoted to the development and application of systems of classification. The Society draws its members from anthropology, archaeology, astronomy, biology, economics, geology, library science, linguistics, mathematics, medicine, pattern recognition, political science, psychology, psychiatry, sociology, and statistics. We study theories of classification, numerical and statistical techniques for constructing classification, methods for evaluating and validating classifications, and the actual construction of classifications of knowledge in many areas.

The Society produces each year a classification literature listing, and distributes the Classification bulletin produced by the European Branch. Each year there is an annual meeting attended by less than 100 people, which provides a forum for a friendly and intimate exchange of views between people of varied disciplines and orientations ranging from pure mathematics to pure application.

Anyone interested in further information should write to:

Professor John Hartigan
Department of Statistics
Yale University
New Haven, CT 06520
U.S.A.

GENERAL

PROPOSALS INVITED FOR 7ICPR

Proposals are being solicited by IAPR member societies wishing to host the 7th International Conference on Pattern Recognition, to be held in 1984. (The 6th ICPR is scheduled for Munich, Germany, in October 1982.) Societies wishing to host this conference should contact Prof. C.J.D.M. Verhagen, the IAPR Secretary. His address is Dept. of Applied Physics, Delft University of Technology, Lorentzweg 1, 2628 JC Delft, The Netherlands. Proposals should be submitted as soon as possible, as the IAPR Governing Board will try to make a decision concerning the site at its meeting during the 5th International Conference on Pattern Recognition, Miami Beach,

Florida, in early December 1980.

INTERNATIONAL CONFERENCE ON IMAGE ANALYSIS AND PROCESSING

A conference on image analysis and processing, organized by the Italian National Research Council, will be held in Pavia, Italy, during 22-24 October 1980. Topics covered are pattern recognition, image interpretation, parallel processors, geographical data bases and systems, map data analysis, and satellite image processing. A proceedings of the conference will be published. For further information, contact the Conference Secretariat, Prof. V. Cantoni, c/o Istituto di Informatica e Sistemistica, Universita' di Pavia, V. Strada Nuova 106/c, 27100 Pavia, Italy.

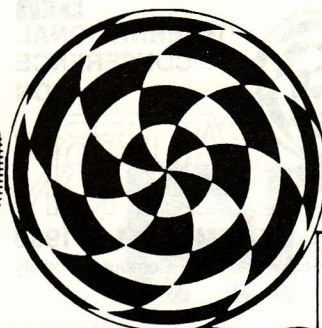
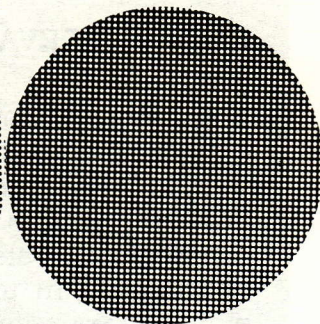
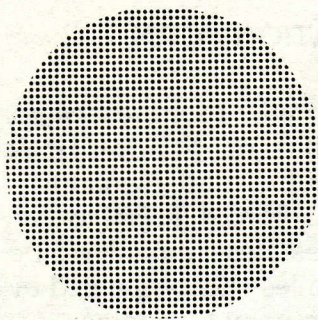
NOTES FROM THE PRESIDENT

In just a few weeks we shall be holding our 5th bi-annual international conference - the 5th International Conference on Pattern Recognition - in Miami Beach, Florida. We are no longer a fledgling association. IAPR had its beginnings at an informal meeting at Airlie House near Washington, D.C., more than eight years ago, in February 1976. Today it consists of 13 member societies and is an Affiliate Member of IFIP, the International Federation for Information Processing.

With the infant years now behind us, we must take a more careful look at our future. Where do we want to go? Does our scope need clarification? Is it too narrow? Too broad? Are we providing the services our member societies expect of us? Should we have regional conferences? Workshops? Should we expand our publication service beyond the present Newsletter? Questions like these should be - and are being - asked. To find the answers, we need your help.

The strength of any organization such as ours is derived from the services of its officers, committee members, and Governing Board delegates. Their dedicated efforts have brought us our accomplishments to date. However, if IAPR is to increase its services, an expanded committee structure will be required. Also since IAPR is an international association, it is important that it have a broad geographical distribution in its committees. If you are willing to participate in IAPR's activities, serve on its committees, and perhaps even run for an office, contact your society delegate or any of the IAPR officers. You will be making a valuable contribution to your profession and deriving much personal satisfaction from it as well. Let's hear from you!

H. Freeman



5th INTERNATIONAL CONFERENCE ON

PRELIMINARY PROGRAM

PATTERN RECOGNITION

Pre-Conference Two-Day Tutorial Pattern Recognition and Image Processing

Saturday and Sunday, November 29, 30, 1980
(9:00-5:00)

The tutorial is a comprehensive introduction to the fields of pattern recognition and image analysis, providing the conceptual, technical, and mathematical background required in the design and implementation of computer hardware/software systems for statistical and structural pattern recognition, image filtering and compression, neighborhood operators, region and boundary determination, and scene matching.

The five tutorial lecturers are scientists who have made substantial and recent research contributions in the area. They are:

King-Sun Fu, Purdue University—
Syntactic Pattern Recognition

Keinosuke Fukunaga, Purdue University—
Statistical Pattern Recognition

Laveen Kanal, University of Maryland—
State Space Search in Structural Pattern Recognition

Bobby Hunt, University of Arizona—
Image Filtering and Compression

Robert M. Haralick, Virginia Polytechnic Institute and
State University—
Scene Analysis

LIST OF SESSIONS

Monday, December 1, 1980
-Morning-

Remote Sensing
Speech Recognition I
Line Drawing and Contour Analysis
Relaxation and Labeling
Nearest Neighbor Techniques

-Afternoon-

Speech Recognition II
Panel: Speech Understanding Systems
Image Transforms
Panel: Image Understanding
Image Matching and Analysis
Panel: Structural and Statistical PR

Tuesday, December 2, 1980
-Morning-

Automatic Inspection
Hardware Concepts and Systems
Scene Analysis and Interpretation
Biomedical Applications I
Clustering and Learning

-Afternoon-

General Applications II
Panel: Robotics and Automation
Processors and Algorithms
Panel: Special Architecture for PRIP
Image Segmentation
Biomedical Application II
Decision and Discrimination Theories

Wednesday, December 3, 1980
-Morning-

Text Processing I
Programming and Software Systems
Texture Analysis
Hierarchical Structures

-Afternoon-

Text Processing II
Interactive Systems
Panel: Information Representation and
Algorithms for Parallel Image
Processing
Image Processing Techniques
Structural and Syntactical Pattern
Recognition
Panel: Biomedical Applications

Thursday, December 4, 1980
-Morning-

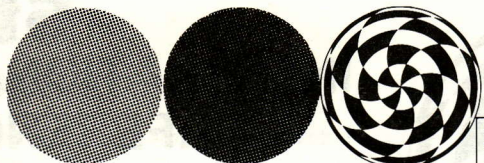
Shape Analysis
3-D Analysis
Image Modeling
Coding and Filtering
Feature Analysis

-Afternoon-

Panel Shape Description and Analysis
Motion Analysis
Panel: Entropy and Pattern Recognition
Edge and Object Detection
Geometric and Statistical Methods

-Special Events-

Sunday, November 30, 1980 - Reception
Wednesday, December 3, 1980 - Banquet
Thursday, December 4, 1980 - Luncheon



**5th
INTERNATIONAL
CONFERENCE
ON**

**PATTERN
RECOGNITION**

MIAMI BEACH, FLORIDA, DECEMBER 1-4, 1980

Co-Sponsored by IAPR and the IEEE Computer Society

ROOM RESERVATION FORM

In order to confirm your room reservation, it must be received by the Konover Hotel prior to November 11, 1980. Mention PATTERN RECOGNITION (ICPR) to receive special rates. Reservations will be held until 6 p.m. unless accompanied by a deposit, your company guarantees payment, or you provide an acceptable credit card number, expiration date, and signature.

KONOVER HOTEL

On the Ocean at 54th Street
Miami Beach, FL 33140
(800) 327-0555

Attention: Reservations Manager

Credit Card No. _____

Expiration Date _____ Signature _____

Please check accommodations desired:

Single (1 person) \$30 Double or Twin \$32-\$34 Suites (Parlor & 1 Bedroom) \$66-\$68

Arrival Date _____ A.M. _____ P.M. _____ NAME _____

Departure Date _____ A.M. _____ P.M. _____ COMPANY NAME _____

Please reserve _____ room(s) of the type and rate checked. ADDRESS _____

CITY/STATE/ZIP _____

Detach and return: 5ICPR, c/o Konover Hotel, On the Ocean at 54th Street, Miami Beach, FL 33140.

CONFERENCE RESERVATION FORM

Complete and return this form (with your check made payable to "5ICPR") to:

5 ICPR
P.O. Box 639
Silver Spring, MD 20901
Telephone: (301) 589-3386



Please check appropriate box	Advance Registration (Prior to November 11, 1980)		Late Registration (After November 11, 1980)	
	Member	Non-Member	Member	Non-Member
<input type="checkbox"/> Tutorial*	\$115	\$135	\$150	\$170
<input type="checkbox"/> Conference Only**	\$130	\$150	\$170	\$190
<input type="checkbox"/> Tutorial and Conferences	\$245	\$265	\$285	\$305

Student discount available for conference only (Fee: \$50). To receive a discount, students MUST be IEEE Student Members in good standing, not employed full-time, and must show membership card at the door.

NOTE: Conference committee and technical committee, session chairpersons and authors must pay for conference registration. Member registration rates are available only to the principal speaker, members of IAPR Societies, and to IEEE or IEEE Computer Society members.

*Fee includes luncheon and notes

**Fee includes one copy of the proceedings and tickets to the conference luncheon and banquet.

Note: Refund requests if received in writing and by November 15, 1980 will be honored.

Late registrations will be accepted at the Konover Hotel beginning Friday evening, November 28, 1980.

Amount Enclosed _____ Check Enclosed Please Charge to VISA/BANKAMERICARD

Card No. _____ Expiration Date _____ MASTER CHARGE

Signature _____

NAME _____ Society Affiliation & Member No. _____

COMPANY NAME _____

STREET ADDRESS _____

CITY/STATE/ZIP _____ PHONE _____

Detach and return to: 5ICPR, P.O. Box 639, Silver Spring, MD 20901.