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

It is my pleasure to accept this job as the editor of the Newsletter of the IAPR. Martin Levine will be a hard act to follow, but I will try.

My ambition is to make this newsletter a forum for the exchange of all ideas related to Pattern Recognition and dissemination of related information. Any data that shows some invariance forms a pattern. Hence, our field touches upon many fields. In particular, I would like to invite writers from the Artificial Intelligence, Robotics and Cognitive Science communities to exchange ideas and experiences with us. The boundaries between the fields are fuzzy, perhaps nonexistent. Maybe there are different points of view about the priority of problems to be solved and about the methodologies applied. I feel, however, that these differences are introduced by people and not by the subject matter, and therefore they could and should be overcome. We could learn from each other.

In order to open discussion I would like to pose some questions that have worried me for some time:

Is Pattern Recognition a science, applied science or engineering?

Should Pattern Recognition retain its name or would a better name by Machine Perception?

If Pattern Recognition is a science, then what is the domain; what are the elementary perceptual or pattern units; what are the underlying principles or laws that can be applied on these units; what are the constraints, assumptions?

If Pattern Recognition is an applied science, then again--what is the domain of application: is it the model of human perception or is it the automatic aspect of machine perception and cognition?

What is the ideal curriculum for a prospective researcher in Pattern Recognition?

What are the most important and open problems in Pattern Recognition?

There are clearly many more questions. However, I leave them up to you. I hope that by thinking about and formulating these and other related questions we can make our scientific endeavor crisper, more rigorous and effective.

I hope to hear from all of you very soon.

Ruzena Bajcsy

THE NEW GOVERNING BOARD OF IAPR

Executive Committee of IAPR

President:	Prof. A. Rosenfeld (USA)
First vice-president:	Prof. P.W. Becker (DK)
Second vice-president:	Prof. T. Sakai (Japan)
Past President:	Prof. H. Freeman (USA)
Secretary:	Dr. P.A. Devijver (Be)
Treasurer:	Prof. M.D. Levine (Ca)
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Conference Committee:	Dr. T. Pavlidis USA) Ch. Prof. T. Chang (China) Prof. T. Kohonen (Fin) Dr. S. Levialdi (It)
Membership Committee:	Prof. P.E. Danielsson (Sweden), Chmn. Prof. T. Sakai (Japan) Prof. J.C. Simon (Fr)
Nominations Committee:	Prof. H. Freeman, Ch. Prof. K.S. Fu (USA) Prof. J. Nagumo (Japan) Prof. D. Rutovitz (UK)
IAPR Newsletter Editor:	Prof. R. Bajcsy (USA)

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Awards:	Prof. D. Rutovitz (UK) Ch. Prof. P.E. Danielsson Dr. S. Levialdi
Brochure:	Dr. E. Backer (Nl)
Constitution and bylaws:	Prof. H. Freeman, Ch. Prof. D. Rutovitz
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Technical committees:	Prof. H. Freeman

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	Prof. J. Nagumo University of Tokyo Faculty of Engineering Bunkyo-ku, Tokyo, Japan
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School of Electrical Engr.
West Lafayette, Indiana 47907 USA

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Rensselaer Polytechnic Institute
Troy, NY 12181, USA

EXCERPTS from the *MINUTES* of the GOVERNING BOARD OF IAPR and EXECUTIVE COMMITTEE OF IAPR, which took place at the International Pattern Recognition Conference in Miami Beach in December 1980.

**THE PAST PRESIDENT'S REPORT*. Prof. Freeman surveyed the activities of IAPR during recent years. He stated that:

a) The growth of IAPR and the growing importance of pattern recognition in science and engineering make a larger body of officers desirable.
b) It will be necessary to expand the activities, especially to form Working Groups on special applications of pattern recognition. This is also a wish of IFIP. This will create additional work, for which more officers, such as an additional vice president, would be useful.
f) It might be useful to have a flyer *What is IAPR?* (like IFIP's) in order to promote new members to join IAPR.

* *IFIP AFFILIATION*. Freeman visited as affiliation officer the General Assemblies of IFIP in London and Melbourne, where he reported about IAPR. The desirability to form Working Groups in the field of pattern recognition has been stressed by IFIP. For this reason, Freeman raised the following resolution: "Resolved that IAPR create a set of Technical Committees to look after designated technical specialities within the field of pattern recognition and that the President prepare a plan for setting up such a committee structure and submit it for approval to the Governing Board no later than 1 January 1982." A mail ballot of the Governing Board will be necessary in order not to wait till the Munich conference to start activities in this field. Leberl advocated a flexible organization in order to avoid great inertia. A periodic review of the functioning of the groups will be necessary. The "Technical Committees" mentioned in the resolution are in fact "Working Groups" with only a single level of organization. They have to be really international in scope and activities. The resolution was adopted.

* *LONG RANGE PLANNING COMMITTEE CHAIRMAN'S REPORT* (Prof. K.S. Fu)

Fu reported some conclusions of the Planning Committee:

a) There is a possibility for IAPR to start a journal for the quick publication of short communications in the field of pattern recognition. A commercial publisher with professional staff seems to be desirable for this purpose. A simple refereeing system will be necessary. This journal should not compete with other journals. Though some hesitation did exist as to the desirability of another new journal, a motion was adopted to go ahead in considering the foundation of such a journal. An ad hoc committee will be appointed to make a plan; an announcement in the Newsletter may solicit suggestions. The committee also has to look into the relationship with the Newsletter, including the use of the Newsletter for this purpose. The 1982 meeting has to decide.
b)There is a need for IAPR to stimulate regional conferences (like the ones in Scandinavia). The difficulties as to the conference language(s) were discussed intensively. It was suggested by Rutovitz that IAPR support for simultaneous translation should be considered. Kohonen expected that the use of English will usually not give problems. IAPR as an international organization will not (co) sponsor national conferences: only international regional ones should be considered by IAPR. No specific motion seemed to be needed in the field.
c) There is a possibility for IAPR to stimulate tutorials, e.g., in relationship with the international conferences. Also, roving courses may be useful; for instance, for underdeveloped countries. IAPR may organize tutorials itself, if necessary, including financial risk. No specific motion seemed to be needed in this field. A special committee for tutorials can be initiated according to the Constitution and the Bylaws. Such a committee has to work closely with a conference committee if the tutorials are combined with a conference.
d) The president of the Membership Committee should be active in expanding the membership of IAPR. No specific action is needed.
e) IAPR awards for achievements in the field of pattern recognition will be useful to promote the advancement of theory and practice in the field of interest. Rutovitz gave some thought to the problem of awards according to a request at the EC meeting in Amsterdam. Several possibilities exist in this field. He mentioned among others: the encouragement of exceptionally gifted young people, and the encouragement of researchers in an isolated situation. The award could be a one to two months visit to laboratories, conferences, foreign countries, etc.

The identification of candidates seems to be difficult, but there is experience in this field, e.g., in IEEE. The raising of money from industry seems to be possible. Rutovitz was encouraged to go on and make a detailed plan. Again, a small ballot might be useful in order to start before the next meeting. All suggestions related to awards will be welcomed by Rutovitz.

* *CONFERENCE COMMITTEE CHAIRMAN'S REPORT.* Devijver reported that the UK proposed to host the IAPR conference in 1984 or 1986, and that Canada made a detailed offer for 1984. Simon revealed that France also has a proposal for 1984. After consultation within the conference committee it was advised to have the conference in 1984 in Montreal, Canada. Levine gave details about the Canadian proposal. According to several members of the Governing Board, the period of July 8-12, 1984, as proposed by Canada, seems not to be optimal. The facilities available in Montreal and the good climate to be expected in that period were main causes to select the period mentioned. Several suggestions for other dates were made. A motion to elect Montreal for the 1984 conference was adopted.

a) President Rosenfeld proposed the appointment of the following standing committees:

Conferences: Pavlidis (Ch.), Chang, Kohonen, Levialdi
Membership: Danielsson (Ch.), Sakai, Simon
Nominations: Freeman (Ch.), Fu, Nagumo, Rutovitz

The conference committee will prepare guidelines to help the preparation of future conferences. Becker will provide notes that were prepared after the Copenhagen conference.

b) Rosenfeld proposed the appointment of the following ad hoc committees:

Awards: Rutovitz (Ch.), Danielsson, Levialdi
Brochure: Backer
Constitution and Bylaws: Freeman (Ch.), Rutovitz
Long range planning: Becker (Ch.), Guzman, Nagao
Technical committees: Freeman

c) TUTORIALS AND WORKSHOPS. Future conference committees will be encouraged to consider the possibility of organizing tutorials or workshop in conjunction with the international conference. The matter of whether or not to engage in the organization of tutorials is left up to the IAPR Conferences Committee. The Chairman of this committee should be notified of plans concerning the organization of regional workshops.

d) NEWSLETTER. When Fu is relieved from his present duty of senior editor of PAMI, Rosenfeld intends to suggest that he become IAPR Newsletter editor. Concerning the matter of including technical contributions in the newsletter, suggestions were made to publish periodic bibliographies (Rosenfeld) or tables of contents of major journals of meeting proceedings. Levine and Rosenfeld will study the matter and circulate proposals to the G.B.

e) JOURNAL. As experienced journal editors, Rosenfeld and Fu will investigate the idea of creating a new journal in the form of "Pattern Recognition Letters" aiming at rapid publication of short communications. Backer will provide information about the possible appearance of a new European Journal for Pattern Recognition.

CONFERENCES AND WORKSHOPS

INTERNATIONAL CONFERENCE AND EXHIBITION

EUROGRAPHICS '81

TECHNISCHE HOCHSCHULE DARMSTADT - F.R. OF GERMANY
SEPTEMBER 9-11, 1981

EUROGRAPHICS '81 Is the annual conference of EUROGRAPHICS ASS., the European Association for Computer Graphics. The conference will consist of a technical program, an industrial exhibition, and an industrial seminar. Tutorials will precede the conference. A Computer Graphics Art show and a Computer Graphics Film show will be presented.

CALL FOR PAPERS
for the
IEEE COMPUTER SOCIETY TENTH WORKSHOP ON APPLIED IMAGERY PATTERN RECOGNITION
September 21-22, 1981
University of Maryland University College
Center of Adult Education
College Park, MD 20742

The Tenth AIPR workshop is being sponsored by the Applied Imagery Pattern Recognition (AIPR) Subcommittee under the Machine Intelligence and Pattern Analysis Committee of the IEEE Computer Society, assisted by the University of Maryland University College. The AIPR continues with its focus on the practical aspects of image pattern recognition and the need for a strong industry-government-academia interaction.

The Tenth Annual Workshop will focus on the theme:

CHANGE AND INVARIANCE IN IMAGE PROCESSING

Scene change and scene invariants represent twin themes that are fundamental in modern practical image processing. The detection of meaningful changes in a sequence of scenes, which are perhaps provided with different contrast, look angle, time of day, or imaging equipment, is basic to image processing for medical and dental analysis, land use studies, military surveillance (acquisition, detection, recognition, and tracking), and earth resources analysis. Similarly, an ability to recognize invariants within a scene, utilizing properties of intrinsic shape, spectral signature, tone, or texture, is basic to image analysis in navigation, military surveillance, molecular biology, materials identification, and scene registration.

In many cases, the ability to recognize scene change or scene invariants is useful only when the necessary computation can be performed within tight time constraints. The Workshop will highlight recent advances in image processing involving constant or changing elements of a scene, with emphasis on practical approaches, hardware implementation methods, processing algorithms, and state-of-the-art reviews.

Authors in industry, government and universities are invited to submit papers on the above themes and in the following subject areas:

* Processing of meteorological satellite imagery
* Image processing for industrial automation
* Specialized systems and devices for high speed

image processing
* Information storage, retrieval and data bases
* Image Processing for Society's Needs
* Landsat processing and analysis
* Image segmentation procedures
* Image compression techniques
* Image processing in medical technology
* Reconnaissance
* Target screening, cueing and tracking
* Image cartography
* Navigation

AIPR EXECUTIVE COMMITTEE

Chairman:	William Alford
Treasurer:	R. Michael Hord
Program Chairman:	Charles Sheffield
Program Co-chairman:	Allen Klinger
Program Co-chairman:	John Hall
Local Arrangements:	Glen Tisdale
	Mel Geokezas
	Graham Nudd

SECOND WORLD CONFERENCE ON MATHEMATICS AT THE SERVICE OF MAN

Las Palmas (Canary Islands), Spain
June 28 - July 3, 1982

The Conference consists of eight selected topics covering different fields of modern mathematics and/or mathematical applications (excluding those related to warfare), with emphasis on those purportedly aiming at the improvement of world's natural and social living conditions.

Each topic is organized by a program committee of field experts. Topic presentations will feature current research papers, panels on controversial issues, workshops, state-of-the-art surveys and lectures on advanced subjects.

CHAIRMAN	TOPICS
E. Bonet. Institut Central d'Estadistica. Barcelona, Spain	- *ADVANCES IN MULTIVARIATE ANALYSIS AND ECONOMETRIC MODELS*
M.P. Schützenberger. Université Paris VI. Paris, France	- *"CONCRETE" MATHEMATICS*
J. Aczél. University of Waterloo. Ontario, Can.	- *FUNCTIONAL EQUATIONS - THEORY AND APPLICATIONS*
S. Levialdi. Istituto di Cibernetica (CNR), Napoli, Italy	- *MATHEMATICAL METHODS IN PATTERN RECOGNITION AND ARTIFICIAL INTELLIGENCE*
A. Ballester. Unidad de Oceanografía (I.I.P., C.S.I.C.). Barcelona, Sp	- *MATHEMATICAL MODELS IN BIOLOGY AND ECOLOGY*
D. Cardús. Baylor College of Medicine. Houston, Texas, USA	- *MATHEMATICS IN MEDICAL RESEARCH AND HEALTH SERVICES*
S. Termini. Istituto di Cibernetica (CNR). Napoli, Italy	- *MEASURING "DEVIANCE" IN NON-CLASSICAL LOGICS AND MODELLING*
A. Barone. Istituto di Cibernetica (CNR), Napoli, Italy	- *NON-LINEAR WAVE PROPAGATION IN DIFFERENT MEDIA*

DETAILS OF SUBMISSION

Include:

(a) 3 copies of typed or printed paper, in English
(b) Topic under which the paper should be reviewed
(c) An abstract of 100-300 words
(d) Author's name and address

The submitted paper need not be formatted as it is sent primarily for evaluation and selection purposes. Accepted papers shall be resubmitted again in a final formatted form to be published as a book. The proceedings will be available to all the participants when checking in.

PRE-CONFERENCE SCHEDULE

Paper submission	Before *July 31, 1981*
Full paper submission (for accepted papers)	Before *February 28, 1982*

CONFERENCE DATE

June 28 (Monday) to July 3 (Saturday), 1982

CONFERENCE SITE

Colegio Universitario de Las Palmas (Las Palmas University College, a set of ample facilities owned by the local government, the Cabildo Insular de Gran Canaria).

CONFERENCE LANGUAGE - English

SOCIAL AND TOURING PROGRAM

Optional social and touring activities will take place during the Conference. Details will be given in due course.

REGISTRATION, Fees:

Before December 31, 1981	US $160
From January 1 to May 31, 1982	US $180
After June 1, 1982	US $200
Accompanying person	US $ 50

REGISTRATION AND PAYMENT ADDRESS

Ultramar Express, S.A.
Diputació, 238
Barcelona - 7 Spain
Telephone (domestic) 93-3173700
Telephone (international) 34-3-3173700
Telex 54728

HOTEL RESERVATION

Some particular hotels have been chosen near the Conference site with a special price. Those interested in making reservations, please apply to the registration address (above).

6th INTERNATIONAL CONFERENCE ON PATTERN RECOGNITION

Munich, Germany, October 19-22, 1982

CALL FOR PAPERS

Anybody interested in the field of pattern recognition in general is invited to attend the 6. ICPR at the Technical University in Munich, Germany, October 19-22, 1982.

Papers are sought on all aspects of pattern recognition, including:

CLASSIFICATION OF PATTERNS (assigning a pattern to a

class) - statistical, structural and syntactic methods for classification of patterns, clustering and learning techniques, preprocessing for classification, feature extraction for classification, biocybernetic approaches to pattern recognition.

ANALYSIS OF PATTERNS (determining a symbolic description of patterns) - extraction of simple constituents of patterns including contour extraction, region determination, and texture analysis; coding normalization, and filtering; models; control strategies; speech and image understanding.

IMPLEMENTATIONS - data structures and data bases, special processors, digital and optical systems, innovative computer architectures, interactive systems.

APPLICATIONS - character recognition, speech recognition, industrial applications, medical applications, remote sensing, and other fields.

Furthermore, contributions to POSTER SESSIONS covering these areas of interest are invited.

Application of pattern recognition should be a focal point of the conference and hence papers in this area are particularly welcome. This aspect will be further emphasized by the inclusion of an industrial program, featuring industrial exhibitions and reports.

SUBMISSION OF PAPERS

Prospective authors are invited to submit four copies of a draft of a full-length paper in English no later than February 1, 1982, or an abstract for the Poster Session by April 1, 1982 to the program chairman:

Prof. Dr. H. Niemann
Lehrstuhl fuer Informatik 5
der Universitaet Erlangen-Nuernberg
Martensstr.3
8520 Erlangen, F.R. of Germany

IMPORTANT: To facilitate the review of papers, authors are requested to submit with each copy of their paper one separate sheet containing the type of paper (long or short), the title, the name of the author(s), one mailing address, an informative 200 word summary, five to seven key words which best characterize the paper in the order of decreasing importance (according to the author's feeling) and a short statement (1-3 lines) indicating the new contribution of the paper.

The typing format of the Conference Proceedings is two columns per page, each column 11x29 cm^2. This size will be reduced by a factor of .75 to give the printing format. A paper will be either a long paper (6 pages) or a short paper (3 pages). One additional page, but not more, will be allowed if the camera-ready paper is accompanied by a 150.-DM cheque. All papers accepted for presentation will be included in the Conference Proceedings. In addition, one page, but nor more, of an informative abstract of an accepted poster will be included in the Proceedings. A long paper will have about 30 minutes for presentation, a short paper about 15 minutes.

Authors will be notified concerning the acceptance of their papers by May 1, 1982, and will receive kits for typing their manuscripts. A camera-ready copy of the accepted paper should be available to the Publications Chairman no later than July 1, 1982.

CONFERENCE COMMITTEE:

H. Marko, Muenchen, Conference Chairman

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G. Granlund, Sweden
T.S. Huang, USA
T. Kohonen, Finland
S. Levialdi, Italy
M.D. Levine, Canada
H. Niemann, Germany
E. Paulus, Germany
T. Pavlidis, USA
J. Prewitt, USA
D. Rutovitz, England
J.C. Simon, France
K. Tanaka, Japan
E. Triendl, Germany
N.G. Zagoruiko, USSR

ORGANIZERS:

International Association for Pattern Recognition (IAPR)

Deutsche Arbeitsgemeinschaft fuer Mustererkennung (DAGM)

FOR FURTHER INFORMATION ABOUT 6.ICPR, WRITE TO:

Prof. Dr. H. Marko (Conference Chairman)
Lehrstuhl fuer Nachrichtentechnik
der Technischen Universitaet Muenchen
Arcisstraße 21
8000 Muenchen, Federal Republic of Germany

IEEE COMPUTER SOCIETY INTERNATIONAL SYMPOSIUM ON MEDICAL IMAGE AND PATTERN ANALYSIS : 1982

GESELLSCHAFT FUER STRAHLEN - UND UMWELTFORSCHUNG MBH

MUNICH, GERMANY *OCTOBER 24-26, 1982*

Sponsored by:
IEEE COMPUTER SOCIETY, TECHNICAL COMMITTEE ON COMPUTATIONAL MEDICINE

In Cooperation with:
INTERNATIONAL ASSOCIATION FOR PATTERN RECOGNITION
IEEE Computer Society, Technical Committee on MACHINE INTELLIGENCE AND PATTERN ANALYSIS
IEEE SYSTEMS, MAN AND CYBERNETICS SOCIETY
IEEE ENGINEERING IN MEDICINE AND BIOLOGY SOCIETY
WORLD COMPUTER GRAPHICS ASSOCIATION
ALLIANCE FOR ENGINEERING IN MEDICINE AND BIOLOGY
DEUTSCHE ARBEITSGEMEINSCHAFT FUER MUSTERERKENNUNG
GESELLSCHAFT FUER MEDIZINISCHE DOKUMENTATION UND STATISTIK
DEUTSCHE GESELLSCHAFT FUER MEDIZINISCHE PHYSIK

CALL FOR PAPERS

Recent technological advances in biomedical imaging and signal acquisition and recent innovations in computer architecture and displays are opening new vistas in computer-automated and computer-assisted pattern analysis. The International Symposium will provide a transdisciplinary forum for biomedical and

computer scientists/engineers and medical professionals from universities, medical centers, industry and government to exchange information and ideas, and to assess progress and potential. The participation of young scientists, engineers and physicians will be encouraged.

The technical program will emphasize innovative research and applications, and will consist of contributed and invited papers, workshops and panels covering the state-of-the-art, work-in-progress, critical issues and research initiatives and incentives.

Papers are solicited on all aspects of biomedical image, signal and pattern analysis, and will be drawn from the following topics:

RADIOGRAPHY
NUCLEAR MEDICINE
ULTRASONOGRAPHY
HERMOGRAPHY
NUCLEAR MAGNETIC RESONANCE
COMPUTED TOMOGRAPHY
LIGHT MICROSCOPY
ELECTRON MICROSCOPY
ACOUSTIC MICROSCOPY
AUTORADIOGRAPHY
PHYSIOLOGIC SIGNALS
MULTIPLE MODALITIES
DYNAMIC IMAGING
NEW INSTRUMENTATION
CALIBRATION/STANDARDS
PSYCHOPHYSICS/PSYCHOMETRICS
CLINICAL APPLICATIONS
PERFORMANCE EVALUATION
RESTORATION
ENHANCEMENT
SIGNAL PROCESSING
INFORMATION THEORY
SEGMENTATION
PATTERN REPRESENTATION/DESCRIPTION
PATTERN CHARACTERIZATION/CLASSIFICATION
DATA STRUCTURES
DATA BASES
IMPLEMENTATION: HARDWARE
IMPLEMENTATION: SOFTWARE
APPLIED COMPUTER GRAPHICS
SYNTACTIC/STRUCTURAL/STATISTICAL PARADIGMS
ARTIFICIAL INTELLIGENCE
LINGUISTICS AND ICONICS
INNOVATION CYCLE: CONCEPT TO PRODUCT
QUALITY ASSURANCE
REGULATORY CONSIDERATIONS

Prospective authors and panelists should submit four copies of a 500-1000 word abstract, including six keywords which best characterize the paper, plus a short statement indicating the new contribution and its biomedical impact. Authors should indicate whether the paper will be long (10 pages maximum, 30 minutes) or short (5 pages maximum, 15 minutes). Papers will be published by the Computer Society Press in the Conference Proceedings and will be eligible for inclusion in "Computers and Computing Medicine: 1982." Authors' kits for typing camera ready manuscripts will accompany notification of acceptance.

On behalf of the Conference Committee, we extend our invitation to all who would like to share the excitement and rewards of biomedical image and pattern analysis in the atmosphere of the International Symposium.

Dr. Judith M.S. Prewitt
Div. of Computer Research and Technology
Office of the Director
Building 12A, Room 2053
National Institutes of Health
Bethesda, MD 20205 USA
Telephone: 301-496-1247

Dr. Ing. Siegfried J. Poeppl
Dept. of Signal Processing and Computer Technology
MEDIS/Institut fuer Medizinische Informatik und Systemforschung
Ingolstaedter Landstrasse 1
D-8042 Neuherberg, Germany
Telephone: 089/38745340

CONFERENCE COMMITTEE:

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Local Arrangements:	S. Perz
Publicity:	M. Loew, F. Hoehne, M. Onoe
Registration:	H. Hayman
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K.S. Fu, USA
G. Granlund, Sweden
P. Hawkes, France
F. Hoehne, Germany
K. Kayser, Germany
C.C. Li, USA
H. Marko, Germany
H. Niemann, Germany
M. Onoe, Japan
D. Preston, USA
D. Rutovitz, UK
R.H. Schneider, USA
B. Stenkvist, Sweden
N. Tanaka, Japan
J. van Bemmel, Netherlands
H.G. Zimmer, Germany
S. Zucker, Canada

CONFERENCE TIMETABLE:

Four (4) copies of 500-1000 word abstract due..... March 15, 1982

Acceptance letters and authors' kits mailed..... June 15, 1982

Complete, camera-ready manuscripts due.....August 2, 1982

GOLDEN JUBILEE CELEBRATION CONFERENCE
on
ADVANCES IN INFORMATION SCIENCE AND TECHNOLOGY

INDIAN STATISTICAL INSTITUTE

The Institute was founded in 1931 and will celebrate its golden jubilee through a series of conferences from *December 1981* to *March 1982*. The computer age in India may be said to have begun with the installation of the first general purpose digital computer system in India at the Institute in Calcutta in 1954 and since then computer related research and teaching in information science and technology have been a major area of activity at the Institute. It has, therefore, been thought appropriate to organize this conference as part of the golden jubilee celebration of the Institute.

The conference is scheduled to take place from *11-14 January 1982* at Calcutta for a duration of four days. Both invited and contributed papers will be presented and discussed at the conference. Short abstracts of invited and contributed papers accepted for presentation in the conference will be published in mimeographed form as proceedings of the conference Selected papers after examination by expert referees may be published later in a golden jubilee volume. Along with other areas of Information Science and Technology an important topic in the conference is *PATTERN RECOGNITION AND IMAGE ANALYSIS* including Automatic Speech Recognition Research. Papers will be presented on all aspects of Pattern Recognition, Speech Recognition, Image Processing and Signal Processing. There will be invited lectures by the leading experts in the field.

For information concerning participation, please contact the Organizing Secretary:

Prof. D. Dutta Majumder
Electronics and Communication
Sciences Unit
Indian Statistical Institute
203 Barrackpore Trunk Road
Calcutta 700 035
INDIA

REPORTS ON PAST CONFERENCES

THE SECOND SCANDINAVIAN CONFERENCE ON IMAGE ANALYSIS A POSTSCRIPT

Approximately 160 scientists and engineers from different fields of picture processing and pattern recognition attended the Second Scandinavian Conference on Image Analysis in Helsinki, Finland, June 15-17, 1981. The Conference, which was the second in a series of IAPR regional conferences on Image Analysis, was arranged by the Pattern Recognition Society of Finland and cosponsored by the Helsinki University of Technology. The Conference attracted participants from 17 countries representing North America, South America, Asia, and Europe.

The technical program consisted of invited talks and 17 sessions for contributed papers. The invited speakers were K.S. Fu from Purdue University, USA; U. Grenander from Brown University, USA; S. Jaakkola from the Swedish University of Agricultural Sciences, Sweden; F. Jelinek from IBM T.J. Watson Research Center, USA; H. Platzer from Technical University Munich, FRG; Ju I. Zhuravlev from the Academy of Sciences, USSR; and N. Aslund from the Royal Institute of Technology, Sweden. The technical sessions ranged from theoretical problems of image analysis to hardware systems and biomedical image analysis. Special sessions on human visual processing and speech processing were also included. The total number of presented papers was 72. All the invited and contributed papers were published in the Proceedings. (Extra copies of the Proceedings are still available for FIM 100 or USD 25 from Kai Mäkisara, Helsinki University of Technology, Dept. of Technical Physics, SF-02150 Espoo 15, Finland. The price includes the mailing costs except the overseas air freight which is FIM 12 or USD 3 extra.)

All in all, the Conference was a great success. The wide international interest also from outside the Nordic Countries slightly exceeded the expectations of the organizers. The series of Scandinavian Conferences on Image Analysis seems to be well on its way. We look forward to the third conference, which in all probability will be arranged by the Danish Pattern Recognition Society somewhere on the Danish territory in 1983.

We would like to thank sincerely all the invited speakers and authors for their papers and presentations, and the chairmen of the sessions for the smooth running of the program as well as for stimulating discussions. Special thanks are due to the staff of the Laboratory of Computer and Information Science, Helsinki University of Technology (especially to Drs. Erkki Oja and Olli Simula) for devoting much of their time to the organization.

Teuvo Kohonen
Conference Chairman

REPORT ON THE 5-ICPR

The Fifth International Joint Conference on Pattern Recognition took place on December 1-4, 1980 at the Konover Hotel of Miami Beach, Florida. There were over 600 registrants, about 400 from the United States and the rest from 24 other countries. The three largest overseas participants were France (43), West Germany (42), and Japan (36). The two day tutorial that preceded the conference had 107 attendees.

About 300 Papers were presented during the meeting. Almost one quarter of the presentations were on applications, including robotics, text processing, biomedical, etc. One third were on image analysis problems: segmentation, texture, shape, etc. Approximately one sixth were on implementation problems, both hardware and software.

Another sixth on statistical pattern recognition, the topic that was far more prominent in the first two International Conferences. The remaining papers were on other theoretical topics. (This breakdown does not necessarily reflect the popularity of methodologies since most of the applications papers were based on some theoretical approach.) The major emphasis on applications and implementations is a sign of the maturity of the field. Today pattern recognition is far more a part of engineering practice than part of a scientist's dream.

The number of the participants was a pleasant surprise, even though it strained the hotel accomodations. The size of the Proceedings was far bigger than what we had planned. It seems that the $50 a page charge was too low and most authors paid for additional pages to their basic allotment. (A few though objected strenuously to paying the charges.)

The IEEE Computer Society staff, led by Harry Hayman, was a great help and did the bulk of the administrative work. The members of the organizing committee felt fortunate that they could always rely on them to take care of the myriad of details that the preparation of such a meeting entails.

I close this brief report with an expression of thanks to all those who helped with the organization: Y.T. Chien, who, as the program chairman, did more work than all the rest of us. Bob Haralick, who organized the tutorial. Tzay Young, who selected the hotel and took care of the local arrangements. Joe Mundy, who did such a good job on the publicity and also designed the cover for the program and the proceedings. John Jarvis, who had to worry about the money. Ruzena Bajcsy, who had the responsibility for the proceedings; and last but not least, Herb Freeman, who, as president of the IAPR, was there to help with his experience on so many occasions.

T. Pavlidis

OTHER NEWS

IMAGE PROCESSING AND RECOGNITION AT INPE, BRAZIL

C. de Renna e Souza
N.D.A. Mascarenhas

Instituto de Pesquisas Espaciais - INPE
Conselho Nacional de Desenvolvimento Cientffico e Tecnológico - CNPq
12200 - São José dos Campos, SP - Brazil

The program on image processing and recognition at the Informatics Division of INPE is directed mainly towards research in processing methods and algorithms, and remote sensing and meteorological applications. The group is presently composed of nine full time members and three M.Sc. students. At the moment, research effort is being directed to:

a) Preprocessing Techniques: geometric correction and registration of multitemporal scenes, including interpolation methods

b) Feature Selection and Data Compression: linear and non-linear mapping of multivariate Landsat data for interactive classification and transform coding of multispectral images;

c) Classification Algorithms: hierarchical multispectral clustering, classification of clouds in meteorological images and estimation of proportion of classes within a resolution element;

d) Spatial Context: use of spatial attributes combined with spectral features for Landsat classification and texture edge detection.

Research on structural description of scenes is also being conducted toward including semantic infomation on a previously developed graph-based syntactic model (a generalization of webs and web grammars).

Some results of all this research effort has already been published in the international literature (1) - (4).

The present image processing laboratory equipment in centered on a General Electric I-100 System, controlled by a well configured PDP-11/45 minicomputer. A communications link with the main computing facility of INPE (B-6800) is being considered. The B-6800 is also extensively used in algorithm testing and will be used in computing speed dependent applications.

1. F,R.D, Velasco and C. de Renna e Souza: "An Application of Formal Linguistics to Scene Recognition," International Journal of Computer and Information Sciences, Vol. 6 Nr. 4, pp. 289-306, 1977.

2. N.D.A. Mascarenhas and L.O.C. Prado: "Edge Detection in Images: A Hypothesis Testing Approach," Proceedings of the IVth International Joint Conference on Pattern Recognition, Kyoto, Japan, pp. 707-709, 1978.

3. N.D.A. Mascarenhas and L.O.C. Prado: "A Bayesian Approach to Edge Detection in Images," IEEE Transactions on Automatic Control, vol. AC-25, Nr. 1, Feb. 1980, pp. 36-43.

4. L.V. Dutra and N.D.A. Mascarenhas: "Texture Edge Detection by Propagation and Shrinking," Symposium on Machine Processing of Remotely Sensed Data, Purdue University, June 1980.

RESEARCH ACTIVITIES IN PATTERN RECOGNITION AND IMAGE PROCESSING AT
DELFT UNIVERSITY OF TECHNOLOGY, NETHERLANDS

The main activities are concentrated in the Department of Applied Physics (1) and the Department of Electrical Engineering (2). The two groups thereby operate from different backgrounds:

(1): A group with emphasis on instrumentation aspects, sensors and applications, formerly headed by Prof. C.J.D.M. Verhagen.
(2) A group with emphasis on algorithms, modelling and applications headed by Prof. IJ. Boxma.

The interaction between the two groups consists mainly of joint courses, joint discussions, software exchange and multiple use of hardware. There is a cooperation with the nearby located academic hospitals in Rotterdam (cardia angiograms and scintigrams and echo-cardiography) and in Leyden (chromosome and cell recognition) and with the Postal Research Centre (speech recognition and OCR).

At present there are 14 permanent staff members and technicians, 4 students working towards a Ph.D. and about 30 students working towards a masters degree. The work on pattern recognition started in about 1965, while after 1972 the activities on image processing grew considerably. In the Department of Applied Physics this resulted in the development of DIP-1: the Delft Image Processor, a programmable pipelined processor, while the group in the EE department concentrated on software development.

The hardware facilities include, apart from DIP-1, a HP1000, a PDP-11/40, a PDP-11/34, a GRINNELL display system, TV-frame grabbers (one connected with a microscope) and a flying spot scanner.

The following applications and research activities are now undertaken:

cluster analysis
small-sample-size effects in discriminant analyses
use of fuzzy set theory for features and labeling
feature ordering and selection
pattern complexity
prosthesis control by PR
various applications in multivariate data-analysis
image segmentation (texture analysis, edge and contour detection, region growing; relaxation labeling)
grid quantisation effects
shape analysis
3-D reconstruction
3-D image processing and display
2-D statistical filtering
non-linear neighbourhood operations
handprinted characters
cardiac X-ray images
cardiac scintigrams
echo-cardiograms
chromosomes
cell recognition
asbestos fibres
interferograms
land use and crop classification from MSS and SLAR-data
various industrial applications
Image processing hardware

Research reports and publication reprints may be obtained via E. Backer (Dept. of Electrical Engineering) or R.P.W. Duin (Dept. of Applied Physics).

Sixth Summer Course
on
STATISTICAL PATTERN RECOGNITION

21-25 September 1981
OXFORD UNIVERSITY

PROGRAMME

The course will feature a selective survey of fundamental methods of statistical pattern recognition together with a detailed treatment of a number of advanced topics.

Several example classes will be aimed at familiarizing the participants with the material presented. The course will include two seminars on application of pattern recognition methods to specific problems in which a step by step description of the design of practical pattern recognition systems will be outlined. Ample time will be devoted to discussion of algorithmic and practical aspects of pattern recognition techniques.

GENERAL INFORMATION

Location of the Course:

Nuclear Physics Laboratory, Keble Road, Oxford OX1 3RH

Lecturers:

Pierre DEVIJVER	Philips Research Laboratory, Avenue Em. Van Becelaere 2, B-1170 Brussels, Belgium
Josef KITTLER	SRC Rutherford and Appleton Laboratories Chilton, Didcot, Oxfordshire OX11 0QX, U.K.

PROGRAMME SCHEDULE

The course will commence at 10:00 a.m. on Monday, September 21 (registration 9:00-10:00 a.m.) and finish at 4:00 p.m. on Friday, September 25. Lectures will take place in the mornings. Afternoons will be devoted to seminars, example classes and discussions.

BOARD AND LODGING

Accomodation for the participants will be available at St. Anne's College, Oxford (near the town centre) for the nights of September 20 - September 24. The course lecture room is a 10 minute walk from the college.

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Checklist of New Titles
September 1981

13 new titles since June 1981, not listed in our publications catalog,* for computer science professionals.

Please send us these new titles:

☐ **Tutorial: The Security of Data in Networks**
by Donald W. Davies

Presenting the major advances in the applications of cryptography since the midseventies, this tutorial covers the main components from which a secure data network can be designed and describes some of the potential weaknesses of such a system. Techniques to keep data secure from "line-tapping" are explored as well ways to develop and evaluate the security of networks. Tutorial includes 22 reprints, extensive original work, an annotated bibliography, and subject index.
366 (EH0183-4): **August 1981,** 242 pp. **NM, $20.00; M, $15.00**

☐ **Tutorial: Parallel Processing**
by Robert H. Kuhn and David A. Padua

Divided into two parts covering hardware and software, this tutorial focuses on the wide variety of processors available today, in the past, and in the future. The authors review the taxonomic types into the spectrum of parallel processors can be divided and consider the theoretical obstacles to massive parallel processing as proposed by noted researchers. Part 2 discusses: languages for parallel programming, compilers for translating sequential programs into parallel programs, operating systems, and algorithms for parallel computers. Contains 45 reprints.
367 (EH0182-6): **August 1981,** 498 pp. **NM, $25.00; M, $18.75**

☐ **Tutorial: Database Management in the 80's**
by James A. Larson and Harvey A. Freeman

This tutorial addresses the kinds of data base management systems (DBMS) that will be available through this decade. Interfaces available to various classes of users are described, including self-contained query languages and graphical displays. Techniques available to data base administrators to design both logical and practical DBMS architectures are reviewed, as are data base computers and other hardware specifically designed to accelerate database management functions.
369 (EH0181-8): **September 1981,** 472 pp. **NM, $25.00; M, $18.75**

☐ **Proceedings: Symposium on Reliability in Distributed Software and Database Systems**
Pittsburgh, Pennsylvania

Continuity of operations in real-time systems, such as in automated systems for air-traffic control, nuclear plant monitoring, ballistic missile defense, etc., was the theme of this symposium. Discussions and papers describe the current research and future directions for research in making various distributed systems robust and reliable. Sessions covered: robust concurrency control in distributed database management systems, language constructs, research issues in developing robust system software and structures, etc.
351 (81CH1632-9): **July 1981,** 205 pp. **NM, $20.00; M, $15.00**

☐ **Proceedings: 1981 Pattern Recognition & Image Processing Conference**
Dallas, Texas

Following the tradition of its predecessor conferences, this meeting brought together professionals from all over the world to discuss such topics as: texture analysis, pattern and shape recognition, user-oriented graphics, industrial and commercial applications, feature extraction, time-varying imagery, etc.
352 (81CH1595-8): **August 1981,** 625 pp., **NM, $40.00; M, $30.00**

☐ **Proceedings: Software Engineering Standards Applications Workshop**
San Francisco, California

The Software Engineering Standards Applications Workshop (SESAW) brought together individuals to discuss and address pertinent issues relating to software standards today. Twenty-two papers focus on such topics as: the need for standards, general approaches, quantitative methods, specific approaches, and "words to the wise."
353 (81CH1633-7): **August 1981,** 151 pp. **NM, $16.00; M, $12.00**

☐ **Proceedings: 2nd International Symposium on Computer Aided Seismic Analysis and Discrimination**
North Dartmouth, Massachusetts

The interest in computer-aided seismic analysis and discrimination has been steadily increasing in light of international developments. This volume covers such topics as: migration and geophysical inverse techniques, pattern recognition, multiple-sensor data analysis, digital filtering, power spectrum analysis, etc. Also included is a tutorial on current inverse techniques in geophysics.
370 (81CH1687-3): **August 1981,** 158 pp. **NM, $16.00; M, $12.00**

☐ **Proceedings: Trends & Applications - Advances in Software Technology**
Washington, D.C.

Twenty papers were presented in the proceedings of this one-day annual conference. Sessions were devoted to software quality, the evaluation of new trends, data bases, applications, etc.
349 (81CH1631-1): **May 1981,** 183 pp. **NM, $16.00; M, $12.00**

☐ **Proceedings: 1981 International Conference on Parallel Processing**

The tenth anniversary meeting of this conference reflected the increasing interest in and growth of parallel and distributed processing in a wide variety of applications. Sixty-six papers are included under session topics which cover: languages, compilers, distributed systems and networks, algorithms, multiprocessor architectures, VLSI architectures, interconnection networks, array procesors, performance evaluation, etc.
354 (81CH1634-5):**August 1981,** 360 pp. **NM, $25.00; M, $18.75**

☐ **Proceedings: 11th International Symposium on Fault-Tolerant Computing**
Portland, Maine

The emphasis of this annual conference is on diagnostics, testing, and reliability of a wide variety of systems. Sessions cover: communications, software, distributed system research, designing for testability, new testing techniques, performance evaluation, network models, microprocessor and VLSI testing, etc. Contains 64 papers.
350 (81CH1600-6): **June 1981,** 290 pp. **NM, $25.00; M, $18.75**

☐ **Proceedings: COMPCON Fall '81**

The theme of this year's conference was "Productivity -- an Urgent Priority." With very few real productivity measures available in the field of data processing (except, of course, hardware), this conference brought together a large cross-section of computer professionals. Topics covered included: improving software productivity, human factors in software development, quality assurance, software models, hardware design, tool evaluation, software management productivity, etc.
372 (81CH1702-0): **September 1981,** 362 pp. **NM, $25.00; M, $18.75**

☐ **Proceedings: 7th International Conference on Very Large Data Bases**
Cannes, France

Fifty-one papers were presented at the Seventh Very Large Data Bases Conference (VLDB), cosponsored by the IEEE Computer Society, ACM, and INRIA. In the 20 sessions, papers discuss such topics as: data modeling, data base transactions, concurrency control, performance evaluation, data base design, data compression, etc.
371 (81CH1701-2): **September, 1981,** 594 pp. **NM, $36.00; M, $27.00**

☐ **Proceedings: 1981 Symposium on Security and Privacy**
Oakland, California

Concerned with all aspects of data flow and data base protection and security, this symposium consisted of 20 presentations. Subjects of the symposium cover such areas as cryptography, security verification, protocols, data base management and security, system architecture to support security, hierarchichal protection systems, security models, etc.
345 (81CH1629-5): **April 1981,** 182 pp. **NM, $16.00; M, $12.00**

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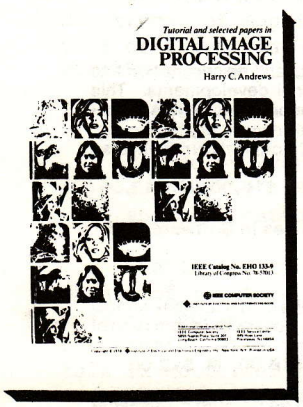
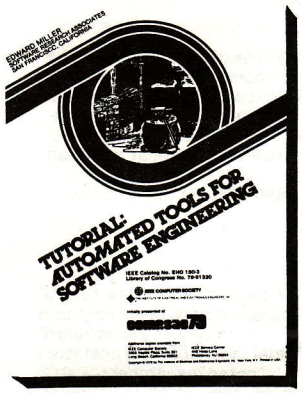


Tutorial and Selected Papers in Digital Image Processing

Harry C. Andrews

Covers image transforms, coding, enhancement, and restoration; feature extraction and image understanding; hybrid optical/digital image processing. Includes an extensive bibliography. Amply illustrated in full color. Contains 85 reprints.

199 (EH0133-9): 1979, 732 pp.
NM, $25.00 M, $18.75



Tutorial: Automated Tools for Software Engineering

Edward Miller

Covered in 24 articles on the five phases of the software life cycle—requirements/specification, design, implementation, quality assurance, and maintenance. Comprehensive index of automated tool suppliers.

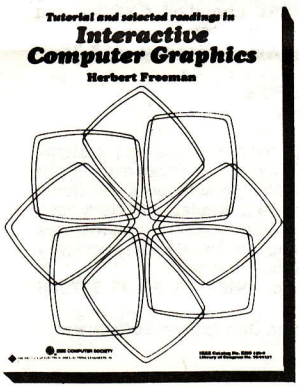
257 (EH0150-3): November, 1979, 262 pp.
NM, $16.00 M, $12.00

Tutorial: Computer Graphics

Kellogg S. Booth

Topics include: hardware for plotters, line-drawing CRTs, master video, and input devices; software for communications, display primitives, transformations, slipping, perspectives, data structures, and hidden-line/hidden-surface removal; commercial and turn-key systems, and graphics standards.

233 (EH0147-9): 1979, 433 pp.
NM, $28.00 M, $21.00

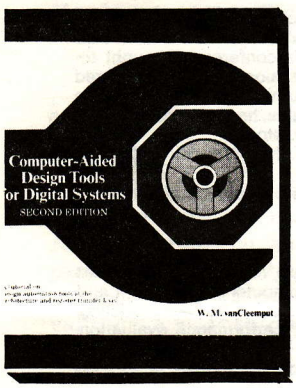


Tutorial and Selected Readings in Interactive Computer Graphics

Herbert Freeman

Major topics include graphics systems, facilities, algorithms for line and curve generation, graphics languages and data structures, hidden-line removal algorithms, generation of half-tone images, computer animation, and design of free-form surfaces.

266 (EH0156-0): February 1980, 415 pp.
NM, $25.00 M, $18.75

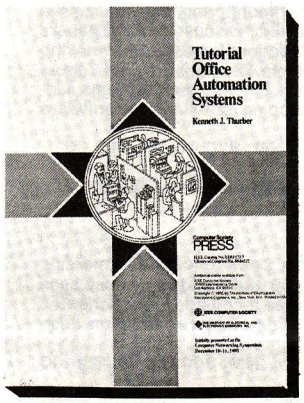


Tutorial: Computer-Aided Design Tools for Digital Systems

W. M. vanCleemput

Contains 21 papers dealing with computer design methodology, its relationship to DA tools, digital design languages, architecture-level description, simulation of digital systems, register-and gate-level simulation techniques.

242 (EH0132-1): January 1979, 181 pp.
NM, $12.00 M, $9.00



Tutorial: Office Automation Systems

Kenneth J. Thurber

Insights into OAS capabilities and concepts, executive planning, household automation, factory industrial control, and future trends in first section of 21 reprints. Second section devoted to networks in the OAS environment.

339 (EH0172-7): December, 1980, 201 pp.
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