

IAPR



International Association for Pattern Recognition, Inc.

An affiliate member of the International Federation for Information Processing

NEWSLETTER

Editor

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News Copy Deadlines

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FROM THE EDITORS DESK

Keeping abreast with the literature in any field of science or engineering is an essential prerequisite of successful basic and applied research and product development. In the previous issues of the Newsletter I have included material about new scientific journals in pattern recognition and related fields to keep you informed about additional potential sources of research reports. One of the new features I have also been planning to introduce in the Newsletter are reviews of recent books on topics in pattern recognition and image processing. Publishers have already been approached with the request for copies of relevant books for review in the Bookshelf section of the Newsletter. One review appears in this issue, for expediency written by the Editor. I expect to have many more for inclusion in the future issues, coming from a wider circle of reviewers.

The Editor

NEWS IN BRIEF

IFIP DEBATING THE ROLE OF ITS AFFILIATE MEMBERS The Activity Development Board of the International Federation for Information Processing (IFIP) is debating what services IFIP might offer to its Affiliate Members in order to develop a close and productive relationship with them. Any facilities offered by IFIP could be of direct benefit to IAPR, the oldest IFIP's Affiliate Member Organization.

THE AUSTRIANS GO INDEPENDENT At its Annual General Meeting held in Linz, 15-16 May, the Austrian Working Group for Pattern Recognition, formerly part of the Austrian Computer Society decided to form an independent learned society. Its new name is Austrian Association for Pattern Recognition and Dr W Kropatsch has been elected its first Chairman.

ARCHITECTURE SURVEY The IAPR Technical Committee TC6 (Special Purpose Architectures) is about to survey developments in computer architectures and processors specialised for image processing. They would like to include commercially available systems and also systems under development in industry, universities and other research laboratories. If your organisation is developing equipment or marketing it and you would like to be included in the survey, will you please send your name and address to Prof M J B Duff or Dr M Kidode immediately and a survey form will be sent to you. (For their addresses please see IAPR Newsletter vol 10, no. 1.)

PORTUGAL JOINS IAPR The Governing Board of IAPR has recently approved an application for membership submitted on behalf of the Portuguese Group for Pattern Recognition by its president, Prof J P Marques de Sá.

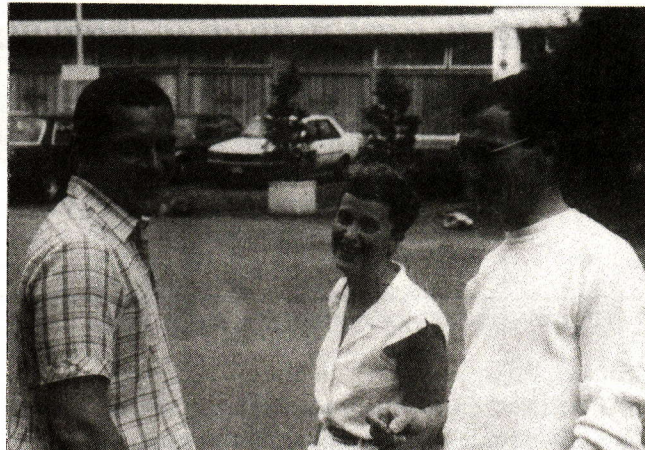
CONFERENCE REPORTS

NATO A.S.I. on Pattern Recognition Theory and Applications.

Spa, Belgium- 8-20 June 1986

The 3rd of a series of NATO Advanced Study Institutes on "Pattern Recognition: Theory and Applications" was held near Spa in Belgium between 8th and 20th June of last year. The previous NASI in this Pattern Recognition series was in 1981 and therefore the aim of this meeting was to discuss more recent developments. The major application domains considered were

the recognition and interpretation of both speech and images. In both these domains a key question is how to combine information or evidence from several disparate sources i.e. raw measurements and prior knowledge or constraints. Much of the meeting concerned topics such as contextual information and the utilisation of problem specific knowledge.



Pierre Devijver, Institute Director with his wife and Michel Deksels (left), one of the dedicated local organizers who contributed to the smooth running of the Institute.

The basic methods and the more recent ideas influencing the classical areas of statistical and structural pattern recognition were reviewed by eminent practitioners from the appropriate field. This was followed by other papers illustrating current research work in each of these areas i.e. advances in classification, clustering, inexact and incremental graph matching and methods of efficient graph search. Fuzzy set theory was also reviewed.

A major section of the institute was devoted to the consideration of the recent formal methods which are being explored as methods of combining evidence. Recent work using statistical models for incorporating contextual information were related to heuristic probabilistic relaxation techniques. Several people spoke on the use of Markov models. The important issues of the correct choice of models and the often difficult step of deriving realistic algorithms for the estimation of model parameters were discussed. Ideas were illustrated for both speech or image processing. There was much interest in related topics such as the reemergence of models based on neural networks. Boltzman machines and other multilayered learning networks were discussed and ideas from the connectionist school on high level visual perception were presented. Recent results on simulated annealing, a stochastic optimisation technique, were reviewed by several people.

Artificial intelligence was represented in a number

of talks. A rule based speech recognition system in which feature extraction was performed by operators activated by cooperating expert programs was described. Pattern classification was identified as a generic task which must be solved in most knowledge based reasoning tasks. The interrelationship of pattern recognition and artificial intelligence was illustrated in many ways.

In addition there were talks on topics such as computational geometry, texture analysis, shape analysis and applications of image interpretation in geology, biomedicine and industrial inspection.

The bare statistics of the two week meeting are that it attracted 91 attendees from 20 different countries and consisted of a mix of invited lectures, major reviews and current research papers from over 42 contributors. The proceeding of the institute are now available in book form published by Springer. However, although these figures are impressive they give only a partial idea of the ultimate worth of a meeting of this kind. Much of the benefit of the institute was in the informality of the meeting which allowed the discussion of ideas at a depth and over a time period which would not be possible at large scale conference level. This encourages the founding of contacts which are likely to lead to future collaboration or the future exchange of good research ideas.



Practising the art of relaxation

In addition to a full and varied technical program the conference organisers offered an extensive social program for the institute. This included trips during the one free weekend to both the capital of Belgium, Brussels, and areas of the small but beautiful neighbouring state of Luxembourg. The above photograph shows

Godfried Toussaint on the latter of these trips posing at the war museum in the Belgium town of Bastoigne. (Can you tell which is Godfried and which is the tank?) Other attractions included a mayoral welcome to Spa and two excellent barbeque evenings at a hotel lodge situated deep in the beautiful Ardennes forest. Sport activities were also available with the highlight being a race of pedalo boats. Surprisingly a boat pedalled by the institute codirectors, Pierre Devijver and Josef Kitzler, managed to overcome considerably younger opposition to snatch second place!!!

In summary, the NATO Advanced Study Institutes program provides an excellent forum for the interchange of knowledge and the meeting of scientists from many countries. This particular institute was excellently organised both administratively, technically and socially and should go a long way towards ensuring the success of the next of this series in a few years time.

John Illingworth

PATTERN RECOGNITION AND ACOUSTIC IMAGING

Newport Beach, California, USA- 4-6 Feb 1987

The IAPR Technical Committee on Biomedical Pattern Recognition (TC-9) sponsored a highly successful international symposium on Pattern Recognition and Acoustic Imaging. The meeting was co-sponsored by SPIE, with the cooperation of the Image Engineering Research Programme at the University of California, Irvine, the Acoustical Society of America, the IEEE Computer Society Technical Committee on Pattern Analysis and Machine Intelligence, the Pattern Recognition Society and the IEEE Ultrasonics, Ferroelectrics and Frequency Control Society.

The symposium organizing committee included Dr Leonard Ferrari (Chair), Dr A Duerinckx (Co-Chair) and Dr Glen Wade (Technical Chair). The subject matter covered medical, navigational and geophysical applications of acoustic imaging; texture analysis in medical ultrasound and material characterization in nondestructive testing. Several distinguished invited speakers presented reviews of recent research.

The symposium was attended by approximately 250 people. It was held in conjunction with the SPIE Conference on Medical Imaging, which took place in the same location during 1-4 February. The technical programmes of these two meetings were concurrent only on February 4.

J Sklansky
Chairman TC-9

REPORTS FROM JAPAN

This section contains report titles which have been submitted by corresponding editor Prof M Nagao. Most of these reports are in Japanese. For further information regarding access to these reports please contact Prof Nagao directly. His mailing address is as follows:

Prof M Nagao
Faculty of Engineering, Kyoto University,
Sakyo-ku, Kyoto 606, Japan

- Character Deformation Prediction using Deformation Vector Field and its Discrimination, *Toru Wakahara*, NTT Electrical Communications Laboratories.
- Symmetrizing Segmentation Method of Chinese Characters, *Kunio Takahashi, Hiroshi Amanuma, Hayato Takefushi, Masahiro Adachi*, Kanagawa University.
- Chinese Character Recognition using Feature Matching, *Hiroshi Ohta, Yasushi Nishimura, Tetsuo Tomimoto*, Wireless Research Laboratory and Matsushita Electric Industrial Co., Ltd.
- An Experiment of Recognition and Understanding System for Book Cards, *H Hase, M Yoneda, M Sakai, J Yoshida*, Faculty of Engineering, Toyama University.
- A High Speed String Correction Method using a Hierarchical File, *Eiichi Tanaka*, Yurie Kojima+*, *Utsunomiya University, +Tokyo Sanyo Electric Co.
- Image Restoration by Partial Projection Filter, *Hidemitsu Ogawa and Shoji Hara*, Tokyo Institute of Technology, Department of Computer Science, Ookayama, Meguro-ku, Tokyo 152, Japan.
- Analog Coding Theory: An Approach from the Pseudo Orthogonal Theory, it Itsuo Kumazawa, Hidemitsu Ogawa, Tokyo Institute of Technology, Department of Computer Science, Ookayama, Meguro-ku, Tokyo 152, Japan.
- Radon Transform as an Analog Coding: Image Reconstruction from Incomplete Projections, *Hidemitsu Ogawa, Itsuo Kumazawa, Sachihiko Okimura, Hiroshi Tajima*, Tokyo Institute of Technology, Department of Computer Science, Ookayama, Meguro-ku, Tokyo 152, Japan.
- Estimation of a Peciprocating Point on a Two-Dimensional Rigid Body in Cyclic Motion, Part 1. A Method using an area of Domein Enclosed by Motion Path, *Toyohiko Hayashi+, Taizo Iijima++*, +Department of 1st Prosthetic Dentistry, School of Dentistry, Niigata University, ++Department of Information Eng., Faculty of Eng., Tokyo Engineering University.
- A Study of an Image Processing Expert Sytem, *Miyahiko Orita, Morio Kanasaki, Chieko Onuma, Masao Takatoo*, Hitachi Research Laboratory, Hitachi Ltd.
- Recognition of Microscopic Biomedical Tissues, Reflective Objects and Transparent Objects by DP Matching Method, *Hirimitsu Yamada*, Electrotechnical Laboratory.
- Reconstruction of Cutted Image, *Yoko Toyota, Shinji Ozawa*, Keio University.
- Estimation of a Peciprocating Point on a Two-Dimensional Rigid Body in Cyclic Motion, Part 2. An Iterative Method via Mapping from Forward Path to Backward Path, *Toyohiko Hayashi+, Hidemitsu Ogawa++*, *Taizo Iijima+++*, + Department of 1st Prosthetic Dentistry, School of Dentistry, Niigata University, ++Department of Computer Science, Faculty of Engineering, Tokyo Institute of Technology, +++Department of Information Engineering, Faculty of Engineering, Tokyo Engineering University.
- A Study of Image Processing Expert System by Attributive Predicates with Fuzziness, *Hiroshi Nagahashi, Mikio Nakatsuyama, Norio Nishizuka*, Faculty of Engineering, Yamagata University.
- The Cellular Frame Model for Image Understanding, *Ryu-ichi Oka*, Electrotechnical Laboratory.
- Implementation of the Neural Network Model NEOCOGNITRON on the LISP, it Takashi Sonoda*, Kunihiko Fukushima**, Sei Miyake**, Takayuki Ito**, * Fundamental Technology Research Laboratory, Fuji Xerox Co., Ltd. and **NHK Science and Technical Research Laboratories.
- Computer Tutor System with Cognitive Model, *Kazuhisa Niki, J R Anderson, Motoi Suwa*, Man-Machine Systems Section, Electrotechnical Laboratory, Dept. of Psychology and Computer Science, CMU.
- The Dominance in Processing a Whole and its Parts in Visual Perception, *Jiro Gyoba*, Shinshu University.
- Fundamental Properties of Visual Short-Term Memory, *Shin'ichi Ichikawa*, Laboratory of Behavioral Science, Junior College of Economics, Saitama University.
- Parallel, Hierarchical and Serial Information Processing in the Central Neuronal System for Vision, *Keiji Tanaka*, NHK Science and Technical Research Laboratories.
- Handwritten Numeral Recognition by the Algorithm of the Neocognitron - An Experimental System Using a Micro-computer, *Kunihiko Fukushima+, Sei Miyake+, Takayuki Ito+, Takashi Kouno++*, +NHK Science and Technical Res. Labs., ++Waseda University.
- A Real-Time Image Processing Algorithm for Visual Inspection of Semiconductor Wafer Patterns, *Hiroshi Sakou, Haruo Yoda, Masakazu Ejiri*, Central Research Laboratory, Hitachi Ltd.
- Color Image Segmentation using Three Perceptual Attributes, *Shoji Tomimaga*, Osaka Electro-Communication University.
- Motion Stereo for Navigation of Autonomous Vehicles, *Thomas S Huang+, Toshifumi Tsukiyama++*, +University of Illinois, ++Electrotechnical Lab.
- Computer Vision Research at USC and Motion Analysis, *Yoshio Yasumoto*, Matsushita Electric Industrial Co. Ltd.
- Discrimination of Components in a Flowchart by Border Pair Tracing with Distinction of Outer/Hole Borders, *Yasushi Azumatani and Keiichi Abe*, Faculty of Engineering, Shizuoka University.

From the Kogan Page Fifth Generation Computing Series

Knowledge-Based Speech Pattern Recognition

Michael Allerhand

This is one of the very first books to have emerged examining the relatively new and exciting field of knowledge-based speech pattern recognition.

In the book, the author centres his thoughts around a novel line of investigation, employing the very latest knowledge representation techniques to incorporate linguistic and phonetic knowledge into speech pattern recognition models.

He has therefore drawn on a wide range of new expertise from the domains of signal processing, cognitive science and AI, linguistics, phonetics and traditional automated speech recognition (ASR).

Contents

Chapter 1: Introduction

Automatic speech recognition as a field of study; Why is ASR so difficult? Practical approaches to the problem: two schools of thought; An outline of the chapters to come.

Chapter 2: Recognition of isolated words using feature durations

Introduction; Two forms of information; Two forms of pattern recognition; A model for composite pattern recognition; Constrained recognizer using feature durations; Conclusions.

Chapter 3: Speech pattern recognition

Introduction; Models for speech pattern recognition; Models with hierarchical structure; Phonetic knowledge in automatic speech recognition; Summary.

Chapter 4: Feature extraction

Introduction; The Karhunen-Loève expansion in feature selection; Feature extraction from speech patterns; Pitch synchronous spectral analysis; Spectrogram feature extraction.

Chapter 5: A composite pattern recognition model for speech features

Introduction; Vector-space pattern recognition; Composite model; The advantages of a 'weak' decision rule; Summary.

Chapter 6: Modelling allophonic and phonotactic constraints

Introduction; Phonotactic and allophonic knowledge; Categorization; The syllabic model; Recognition results

Chapter 7: Conclusion

Appendix 1; Appendix 2; References; Index.

£22.50 (+£2.50 p&p) Hardback

ISBN 1 85091 260 2

244 pages 216x138mm

Published May 1987



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KOGAN PAGE

KING-SUN FU AWARD

ANNOUNCEMENT

- The KING-SUN FU AWARD is to be awarded bi-annually to a living person in recognition of outstanding contributions to the field of pattern recognition. The award honors the memory of Professor King-Sun Fu, who was instrumental in the founding of IAPR, served as its first president, and is widely recognized for his extensive contributions to the field of pattern recognition. The award consists of a suitably inscribed plaque and a cash amount, the costs of which are borne by interest income from a special fund created for this purpose.
- The award is to be made in recognition of a technical contribution of far-reaching significance and impact on the field of pattern recognition or its closely allied fields made at any time in the past.
- The award recipient is to be selected by the IAPR Awards Committee. This selection is subject to approval by the IAPR Governing Board. The recipient must be endorsed by at least 5 members of societies that are members of IAPR. Among these endorsers, their societies must represent at least 2 member societies different from that of the nominator.

- Members of the IAPR Executive Committee, as well as of the Awards Committee, shall be ineligible for the Award. Nor may they serve as nominators or endorsers.
- The first award will be presented at the Ninth International Conference on Pattern Recognition, in Beijing, CHINA, in October 1988.
- The nomination should be mailed on an IAPR nomination form.
- All nominations should be sent directly to the Chairman of the IAPR Awards Committee. Nominations for the first award must be received no later than May 1, 1988.

The current Award Committee consists of:

Dr. Jack Sklansky
 Chairman IAPR Awards Committee
 Department of Electrical Engineering
 University of California, Irvine
 Irvine, CA 92717
 U.S.A

Dr Hans-Helmut Nagel
 Prof Martin Levine
 Prof Makoto Nagao

NOMINATION FORM FOR THE KING-SUN FU AWARD

1. Name of nominee 2. Year of Birth
3. Membership in national society of IAPR
 (include grade of membership if any)
4. Professional affiliation and title
5. Address
-
6. Education at college or university level. Denote honorary degree by "(H)".

Institution	Degree	Year	Honors
-------------	--------	------	--------

7. Endorsers, names and addresses. (At least five supporting letters, but not more than ten are required. Every endorser must be a member of a national member society of IAPR. The name of the society must be noted under the signature of the endorser. The member societies represented by the endorsers must include at least two societies different from that of the nominator.)

8. Proposed citation

9. Principal employment, years, description

10. Principal publications, patents (prefer items of sole responsibility, otherwise give joint names)

11. Achievements pertinent to the qualifications for the King-Sun Fu Award.

12. Sources of information. Describe literature or other sources of information where the achievements described in Item 11 may be confirmed or validated.

13. Nominator name, position, address and national society of IAPR

Date

Signature of Nominator

KING-SUN FU AWARD FUND

IAPR has received contributions for the King-Sun Fu Award Fund from the following individuals during the period from 1 November 1986 through 9 May 1987:

Bruce Berra, Syracuse University, USA
Ruzena Bajcsy, University of Pennsylvania, USA
Herbert Freeman, Rutgers University, USA
Viola Fu, West Lafayette, Indiana, USA
Robert M Haralick, University of Washington, USA
C H Lee, Salinas, California, USA
Theo Pavlidis, State University of New York, USA
Azriel Rosenfeld, University of Maryland, USA
George Saridis, Rensselaer Polytechnic Institute, USA
Toshiyuki Sakai, Kyoto University, Japan
Jack Sklansky, University of California at Irvine, USA
Steven Tanimoto, University of Washington, USA
J P T Yao, Purdue University, USA

The King-Sun Fu Award was established by IAPR in 1986 to honor the memory of Professor King-Sun Fu, IAPR's first president. The award, sustained by interest income from the fund, is given biennially to an individual who has made an outstanding contribution to the field of pattern recognition or its closely related fields. Persons wishing to add to the fund should send their contribution to:

IAPR - King Sun Fu Award Fund
c/o Dr Herbert Freeman, IAPR Treasurer
7 Woodview Drive
Cranbury, NJ 08512
USA

Contributions in any amount, large or small, are welcome and will be individually acknowledged.

BOOKSHELF

Knowledge-Based Speech Pattern Recognition

*M Allerhand, Kogan Page Ltd,
London, 1987, ISBN 1 85091 260 2*

For a long time the library of books on pattern recognition has had embarrassing gaps in the area of speech recognition. Perhaps one might argue that in comparison with the human speech recognition capabilities the current speech technology is still primitive and can offer solutions only to problems of highly limited scope. Consequently, writing any definitive account of speech recognition methods might seem premature. Nevertheless there are now quite impressive speaker dependent speech recognition systems which bring the point when speech recognition products start recouping the extensive investment in research and development in this area over the last three decades much closer.

Yet the choice of books dealing with this active pattern recognition application domain is sparse, largely limited to edited collections of papers or at best to multi-author volumes.

Michael Allerhand's monograph published in the Fifth Generation Computing Series of Kogan Page helps to fill this gap in the literature. It gives a global view of the multifaceted problem of speech recognition and surveys an extensive set of structural and statistical pattern recognition tools suitable for building a hybrid speech recognition system producing a phonetic transcription of continuous speech input.

In Chapter 1 the automatic speech recognition problem is introduced and its two main components identified as i) vector space matching of speech input and ii) structural recognition of patterns in the symbolic representation of speech data obtained by vector space analysis.

Chapter 2 presents a review of syntactic pattern recognition. First standard types of grammars are introduced leading to the discussion of an augmented context free grammar considered particularly appropriate in the speech recognition context. Elements of fuzzy set theory are then presented as a prerequisite to fuzzy grammars. Their use is suggested for handling inherent uncertainties in the symbolic representation of the speech input obtained at lower levels of processing. The application of these techniques is illustrated on isolated word recognition using duration of voiced, unvoiced and silent features of speech signal.

Two popular approaches to low level speech signal matching are the subject of Chapter 3. The exposition of the template matching technique commences with linear prediction analysis for producing parametric representation of speech signal. The dynamic programming technique for optimally aligning the unknown and reference patterns is then described. The second approach is based on Markov models for speech. The backward-forward algorithm of Baum and the Viterbi algorithm are presented. The chapter is concluded by a discussion of issues relating to representing a language economically by sharing linguistic constituents in a hierarchy.

Chapter 4 considers the problem of extracting important features from the speech signal. The author first concentrates on the Karhunen-Loève expansion. The rest of the chapter is devoted to methods of extracting important characteristics from speech spectrograms.

A brief account of statistical pattern recognition techniques is given in Chapter 5 leading to a description of the hybrid speech recognition system advocated by the author which is essentially a stochastic context

free grammar. An example illustrating how a grammar for the hybrid system may be developed in specific cases is given in Chapter 6. The production rules of the grammar detailed in the appendix incorporate phonotactic and allophonic constraints.

Although the book is not suitable as a textbook for courses on speech processing, it will be found useful by existing practitioners because it provides a comprehensive review of speech technology from a global perspective. It will also be welcomed by newcomers to the field of speech recognition.

J Kittler

NEW JOURNAL

International Journal of Expert Systems: Research and Applications

The journal, published by JAI Press, seeks high quality original research and survey papers on all aspects of expert systems and related subjects. Papers may deal with theoretical issues or practical aspects of relevant topics including *expert systems for machine vision and pattern recognition*.

Editor-in-Chief

Prof Mehdi T Harandi
130 Digital Computer Laboratory
Department of Computer Science
University of Illinois at Urbana-Champaign
1304 West Springfield Avenue
Urbana
Illinois 61801
USA

Submission of Manuscripts

Manuscripts are accepted for review with the understanding that the same work has not been, is not presently and will not in future be submitted elsewhere. Manuscripts should be submitted in five copies to the Editor-in-Chief at the above address.

CALLS FOR PAPERS

The MIT PRESS (EUROPE)

Authors with monographs or book-length manuscripts in the UK, Europe and Israel intending to submit their work to the MIT Press should directly contact

Robert Bolick
Executive Editor (Europe)

The MIT Press
30 Linkside Avenue
Oxford OX2 8JB
England

PARALLEL PROCESSING FOR COMPUTER VISION AND DISPLAY

Leeds, United Kingdom- 12-15 January, 1988

Program

Papers are invited in any of the following topic areas:

- Parallel architectures, algorithms and languages
- Real-time image generation
- 3D modelling and representation
- Geometry engines
- Computer vision
- VLSI graphics and vision chip design
- Image processing algorithms

Deadlines

July 31, 1987	Full papers (8-15 pages)
Sept 30, 1987	Authors notified

Paper Submission and Further Information

Dr P M Dew
Dept Computer Studies
University of Leeds
Leeds LS2 9JT
United Kingdom

IEEE WORKSHOP ON COMPUTER VISION

Miami Beach, Florida, USA- Nov 30 - Dec 2, 1987

Program

The workshop is organized by the IEEE Computer Society. Papers are solicited in following and related areas:

- Image structure
- Segmentation and 2-D description
- 3-D from 2-D (motion, stereo, texture)
- Shape and 3-D description
- Range imaging
- Model based vision
- Vision guided manipulation and navigation
- Vision systems
- Industrial vision
- Human visual perception

Deadlines

July 14, 1987 Full papers (25 pages, 4 copies)
October, 1987 Camera-ready manuscripts

Paper Submission and Further Information

Narendra Ahuja
Coordinated Science Laboratory
University of Illinois
1101 W. Springfield Avenue
Urbana, Illinois 61801
USA

BPRA 4th INTERNATIONAL CONFERENCE ON PATTERN RECOGNITION

Cambridge, England- March 28-30, 1988

Program

The conference is organized by the British Pattern Recognition Association and co-sponsored by the IAPR through Technical Committee TC1. The programme will comprise invited and contributed papers on all aspects of pattern recognition and image processing including hardware and applications. A special focus will be on:

- Statistical and structural pattern recognition
- Algorithms for image analysis and computer vision
- Special architectures and VLSI implementations
- Knowledge based methods in image and speech understanding
- Applications in
 - automatic inspection and robotics
 - medicine
 - speech and waveform processing
 - remote sensing
 - document and text processing

Deadlines

Sept 30, 1987 Full papers (4000 words, 3 copies)
Nov 7, 1987 Authors notified
Dec 15, 1987 Camera-ready manuscripts

Paper Submission and Further Information

Dr J Kittler
Department of Electronic and Electrical Engineering
University of Surrey
Guildford GU2 5XH
England

PATTERN RECOGNITION IN PRACTICE III

Amsterdam, The Netherlands- May 18-20, 1988

Program

The conference will aim at stimulating interaction between experts in the field of Pattern Recognition and scientists from various areas in which pattern recognition techniques are applied. The proposed topics include:

- Acquisition of knowledge from large data bases
- Classification of populations
- Use of AI techniques in pattern recognition
- Use of context
- Combining evidence from multiple sources

Deadlines

Nov 1, 1987 Abstract
Jan 15, 1988 Authors notified
May 1, 1988 Camera-ready manuscripts

Paper Submission and Further Information

Prof E S Gelsema
Dept Medical Informatics
Free University
P O Box 7057
1007 MB Amsterdam
The Netherlands

4th EUROPEAN SIGNAL PROCESSING CONFERENCE

Grenoble, France- September 5-8, 1988

Program

The conference is organized by the European Association for Signal Processing. The aim of EUSIPCO-88 is to cover all aspects of signal processing theory and practice. Sessions will include tutorial and review papers and contributed papers on new results and applications. Areas of interest include:

- Theory of signals and systems
- Mono and multidimensional processing
- Signal interpretation
- Applications
- Hardware and software

Deadlines

Sept 30, 1987 Two-page abstracts (4 copies)
Jan 15, 1988 Authors notified
March 15, 1988 Camera-ready manuscripts

Paper Submission and Further Information

EUSIPCO-88 Conference Secretariat
CEPHAG-ENSIEG

BP 46
38402 St Martin d'Herès Cedex
France

1st INTERNATIONAL CONFERENCE ON VISUAL SEARCH

University of Durham, UK- September 5-8, 1988

Program

The conference organized by the Applied Vision Association will be devoted to the multi-disciplinary topic of visual search. Topics will include: detection and recognition, vigilance, visual lobe, eye movements, display parameters, search modelling, machine vision, medical, industrial and military applications.

Further Information

David Brogan
FIC VS
Department of Psychology
University of Durham
Science Laboratories
South Road
Durham DH1 3LE
UK

TUTORIALS

STATISTICAL PATTERN RECOGNITION: Introduction

The Cosener's House, Abingdon, England- October 5-7, 1987

The course will discuss fundamental methods of statistical pattern recognition. Several example classes will be aimed at familiarizing the participants with the material presented. The course will include 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.

The topics covered will include *elements of statistical decision theory, nonparametric pattern classification, learning machines, probability density function estimation, classification error probability estimation, feature selection, feature extraction and cluster analysis.*

Course textbook: P A Devijver and J Kittler, *Pattern Recognition: A statistical approach*, Prentice/ Hall, Englewood Cliffs, NJ, 1982.

Course lecturers: Dr P A Devijver and Dr J Kittler

STATISTICAL PATTERN RECOGNITION: Advanced Topics

The Cosener's House, Abingdon, England- October 8-9, 1987

The course will feature a number of advance topics in statistical pattern recognition. In particular, it will focus on the use of contextual information in decision making with the emphasis on Markov models. The methodology will be illustrated on applications in speech recognition, image restoration, image segmentation, computer vision and character recognition.

The topics covered will include: *role of context, Markov chain, Markov mesh and Markov random field models of a priori world knowledge, Gibbs distributions, hidden Markov models, elements of compound decision theory, Baum's algorithm, Derin's algorithm, Viterbi algorithm, labelling in hidden Markov meshes and random fields, discrete relaxation, probabilistic relaxation, learning contextual relationships, learning Markov models.*

Course lecturers: Dr P.A.Devijver and Dr J.Kittler

For further information and registration form for either of the two course write to:

Miss Susan Webber
Building R25
SERC Rutherford Appleton Laboratory
Chilton
Didcot OX11 0Qx
England

CALENDAR OF EVENTS

Date	Event	Location	Sponsor/Information
July 20-23, 1987	3rd International Symposium on Handwriting and Computer Applications	Montreal, Canada	3 ^e ISHCA, École Polytechnique de Montréal, Département de Génie Électrique, C.P.6079, Succursale A, Montréal (Québec), Canada H3C 3A7
August 19-21, 1987	IEEE Workshop on Visual Languages	Linköping, Sweden	Erland Jungert, FFV Elektronik AB, Agatan 22, S-582 22 Linköping, Sweden
Sept 2-4, 1987	European Conference on Speech Technology	Edinburgh, Scotland	Secretariat, European Conference on Speech Technology, CEP Consultants Ltd, 26 Albany Street, Edinburgh EH1 3QH, UK
Sept 2-4, 1987	2nd International Conference on Computer Analysis of Images and Patterns	Wismar, German Democratic Republic	CAIP87 Conference Secretariat, KDT- Präsidium-WGMA, Koll. Müller, Clara-Zetkin-Strasse 115/117, Berlin 1086, GDR

Sept 7-10,1987	1987 International Conference on Digital Signal Processing	Florence,Italy	Prof V Cappellini, Facolta di Ingegneria, via di S.Marta 3, 50139 Firenze, Italy
Sept 14-16, 1987	IEEE-EURASIP 5th Workshop on Multidimensional Signal Processing	Leeuwenhorst Congress Center, Noordwijkerhout, The Netherlands	Mrs Y Smits, Department of Electrical Engineering, Delft University of Technology, P.O.Box 5031, 2600 GA Delft, The Netherlands
Sept 23-25,1987	4th International Conference in Image Analysis and Processing	Cefalu,Sicily,Italy	Prof Vito di Gesu, Dipartimento di Matematica e Applicazioni, Universita di Palermo, 90123 Palermo, Italy
Sept 29 - Oct 2,1987	International Symposium on Data Analysis and Informatics	Versailles,France	INRIA, Service des Relations Exterieures, Bureau des Colloques, Domaine de Voluceau, Bp 105, 78153 Le Chesnay Cedex, France
Oct 26-30, 1987	International Workshop on Expert Systems and Pattern Recognition	Novosibirsk, USSR	ESPR Secretariat, Institute of Mathematics, Novosibirsk-90, 63090, USSR
Nov 1-6,1987	SPIE Symposium on Advances in Intelligent Robotics Systems	Cambridge, Massachusetts, USA	SPIE, P.O.Box 10, Bellingham, WA 98227-0010, USA
Nov 18-20, 1987	AFCET Sixieme Congres Reconnaissance des Formes et Intelligence Artificielle	Antibes, France	AFCET, 156 boulevard Pereire, 75017 Paris, France
Nov 30 - Dec 2, 1987	IEEE Workshop on Computer Vision	Fontainebleau Hilton, Miami Beach, Florida, USA	Narendra Ahuja, Coordinated Science Laboratory, University of Illinois, 1101 W. Springfield Avenue, Urbana, Illinois 61801, USA
Dec 16-18, 1987	International Symposium on Electronic Devices, Circuits and Systems	Kharagpur, India	Prof N B Chakrabarti, Dept. of Electronics and Electrical Communications Engineering, Indian Institute of Technology, Kharagpur 721302 WB, India
Jan 12-15, 1988	Parallel Processing for Computer Vision and Display	Leeds, United Kingdom	Dr P M Dew, Dept Computer Studies, University of Leeds, Leeds LS2 9JT, UK
Jan 31 - Feb 5, 1988	SPIE Conference on Medical Imaging	Newport Beach, California, USA	SPIE, P.O.Box 10, Bellingham, WA 98227-0010, USA
March 28-30,1988	BPRA 4th International Conference on Pattern Recognition	Queens College, Cambridge, England	Dr J Kittler, Dept Electronic and Electrical Engineering, University of Surrey, Guildford GU2 5XH, England
May 18-20, 1988	Pattern Recognition in Practice III	Amsterdam, The Netherlands	Prof E S Gelsema, Dept Medical Informatics, Free University, P.O. Box 7057, 1007 MB Amsterdam, The Netherlands
Sept 5-8, 1988	4th European Signal Processing Conference	Grenoble, France	Eusipco-88 Conference Secretariat, Cephag-ENSIEG, BP46, 38402 St Martin d'Herès cedex, France
Sept 5-8, 1988	1st International Conference on Visual Search	University of Durham, UK	David Brogan, FIC VS, Department of Psychology, University of Durham, Science Laboratories, South Road, Durham DH1 3LE, UK
October 17-20, 1988	IAPR 9th International Conference on Pattern Recognition	Beijing, China	9ICPR Secretariat, Chinese Association of Automation, P.O.Box 2728, Beijing, China