IAPR

International Association for Pattern Recognition, Inc.
An affiliate member of the International Federation for Information Processing

NEWSLETTER

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FROM THE EDITOR'S DESK

This eight page issue of the Newsletter reflects the conference season being in full swing. Four reports on a small sample of these meetings make you wish you were there, actively participating in excellent technical programmes and social events. And more important conferences are on the horison. This issue contains calls for papers for the 10th International Conference on Pattern Recognition sponsored by the IAPR and for the 1st European Conference on Computer Vision. Both require an immediate action from prospective contributors.

The Editor

CALL FOR

K S FU AWARD NOMINATIONS

King-Sun Fu Award was instituted in honor of the memory of Professor King-Sun Fu. Dr Fu was instrumental in the founding of IAPR, served as its first president, and is widely recognised for his extensive contributions to the field of pattern recognition.

The biennial award will be given to a living person in recognition of an outstanding technical contribution to the field of pattern recognition, and will consist of suitably inscribed and framed certificate and a cash amount, the costs of which are borne by interest income from a special fund created for this purpose.

The award recipient is to be selected by the King-Sun Fu Award Committee, with the selection subject to approval of the IAPR Governing Board, upon nomination by a member of a national member society of IAPR and by endorsement of at least five members, representing at least two member societies different from that of the nominator's.

Members of the IAPR Executive Committee, as well as the Award Committee shall be ineligible for the award and may not serve as nominators or endorsers.

The 1990 award is intended to be presented at the Tenth International Conference on Pattern Recognition, Atlantic City, USA in June 1990.

The nominations should be completed on the Fu Award Nomination Form. Copies of the Nomination Form may be obtained from the IAPR Secretary or the Fu Award Committee Chairman. Nominations must be received by the Award Committee Chairman no later than January 5, 1990.

Dr Jack Sklansky
>   Chairman of the Fu Award Committee
>   Department of Electrical Engineering
>   University of California, Irvine
>   Irvine, California 92717
>   USA

Prof Michael J B Duff
>   IAPR Secretary
>   Department of Physics and Astronomy
>   University College London
>   Gower Street
>   London WC1E 6BT
>   England

CONFERENCE REPORTS

3rd INTERNATIONAL WORKSHOP ON TIME-VARYING IMAGE PROCESSING AND MOVING OBJECT RECOGNITION

Florence, Italy - May 29-31, 1989

The workshop which was chaired by Prof V Cappellini, University of Florence, was sponsored by a number of organizations including the European Association for Signal Processing (EURASIP), IEEE Middle and South Italy Section and International Center for Signal and Image Processing (ICESP) among others. The venue of the workshop was Grand Hotel Baglioni, which is situated right outside the central station, allowing easy access to most part of Florence for fascinating siteseeing trips and other extramural activities.

The members of the programme committee, all renowned researchers in motion processing, put together a very interesting technical programme. The aim of the workshop was to allow the exchange of ideas and presentation of recent developments in the field of time-varying image processing and moving recognition with applications to communications, radar-sonar systems and remote sensing etc. Related topics such as multi-dimensional digital transformations and filters were also covered. The workshop attracted delegates from many countries, most of whom actively participated in vigorous discussions.

S F Wu

University of Surrey

6th SCANDINAVIAN CONFERENCE ON IMAGE ANALYSIS

Oulu, Finland - June 19-22, 1989

I have a pleasure to include two reports on the above conference. The first, unsolicited but nevertheless most welcome, has been provided by the Chairman of the Conference Programme Committee, Prof Matti Pietikainen. It gives a very useful factual information about the conference. The second report, invited by the Editor, gives the impressions the conference made on one of the participants, Dr Maria Petrou.

First Report

The 6th SCIA organized by the Pattern Recognition Society of Finland and University of Oulu was held at the Linnanmaa campus of the university. The Conference Chairman was Erkki Oja, Program Chairman Matti Pietikainen, Local Organization Chairman Juha Roning and the Exhibition Chairman Hannu Hakalahti.

The conference attracted over 300 attendees from 22 countries. On the whole, this sixth in the series of biennial conferences whose venues alternate between the Scandinavian countries turned out to be a great success. The conference was of record size in the number of submitted papers, accepted papers and attendees.

The program included 120 ordinary papers and 55 posters. About 2/3 of the papers came from non-Scandinavian countries. Among the conference contents were such advanced research topics as 3-dimensional vision, motion, knowledge-based vision, perception, neural networks, and parallel processing. Due to several application-oriented topics like remote sensing, biomedical image processing, robot vision, and document analysis, a good balance between theory and application was achieved. The scientific program of the conference also included seven invited talks and four panels. The invited talks given by well-known experts covered some of the most advanced research topics in the field. The topics of the panels were chosen to further emphasize the importance of the interaction between theory and application in image analysis. In the exhibition 19 companies or research institutes presented their products and research activities.

The social program included a get-together party, city reception, midnight sun buffet, and conference banquet featuring Azriel Rosenfeld's after dinner speech. Thanks to excellent weather conditions the attendees were able to enjoy the midnight sun.

The conference proceedings, two volumes of over 1250 pages are available from the address below. The price is FIM 400 (US$ 90).

The 7th SCIA will take place in Copenhagen, Denmark, in 1991.

Address for ordering proceedings of the 6th SCIA (all orders must be prepaid with cheques made payable to Pattern Recognition Society of Finland c/o Juha Roning):

Pattern Recognition Society of Finland
c/o Juha Roning
University of Oulu
Dept. of Electrical Engineering
SF-90570 Oulu
Finland

Matti Pietikainen
University of Oulu

Second Report

This was definitely one of the best organized conferences I have ever attended! Congratulations are due to the members of the organizing committee. Small details like the availability of sachets of herb tea and sugar-free cakes for the coffee breaks, show that some people gave a lot of thought to the whole event, paying special attention to everything, from the minutest to the most important detail!

Besides the organizational success, it was an academic success too, with participants from all over the world and lots of interesting papers. Apart from the invited talks, there were three parallel sessions, so one could only take a flavour of what was on offer. What follows is a very selective view of the particular flavour I got.

It is clear that neural nets are "in". People apply them to everything either they are suitable, remotely relevant, or even entirely inappropriate! There was a panel discussion on the subject and it was interesting to see that most of the participants agreed that neural nets have nothing new to offer mathematically, but they are here to stay, probably not as a replacement of conventional computers but rather as a sort of co-processors incorporated into them. One of the participants questioned the use of the word "learning" instead of the expression "parameter estimation" in the context of neural nets. The answer he got epitomizes the conclusion of the panel discussion: You can always replace the term "learning" by the term "parameter estimation". However, this has two disadvantages: First, "parameter estimation" is longer than "learning" and second, it does not get you money for research!

It was disappointing to see people working on high level vision doing injustice to their projects by still using Sobel edge detectors! But old habits die hard and Sobel filters are so easy to implement! Maybe there is a hint somewhere there to those who put a lot of effort in developing optimal edge detectors, to publish their work in such a way that people can apply it readily without going into the details of the subject.

Finally, it was interesting to see people applying techniques from Physics to Vision. We had local structure representation by tensors and perceptual grouping done by potential theory, to mention but two.

There was also an exhibition running in parallel to the conference. Among other things we saw a demonstration of the phonetic typewriter for Finnish and Japanese developed by the University of Helsinki, and the table tennis playing robot developed by students of Tempere University, Finland, in 1985. Apparently, it is the oldest robot still participating in competitions. What we were not told is whether in its old age of four(!) it actually wins any competitions at all!

All in all it was a very successful meeting. The weather was excellent too. Had the organizers taken care of that as well? It wouldn't surprise me if they had!

Maria Petrou
University of Surrey

NATO ADVANCED STUDY INSTITUTE ON ACTIVE PERCEPTION AND ROBOT VISION

Maretea, Italy - July 17-28, 1989

This meeting was a 2 week intensive summer school with delegates from NATO countries and Japan. It consisted of a mix of 2 hour talks from respected experts as well as half hour contributions from more junior research workers. Morning and early evening sessions ensured that delegates attended up to 6 hours of lectures each day. However the afternoons afforded a welcome siestas which were used for either informal discussions or, more usually, relaxation at the beach or pool.

As 43 of the 73 conference attendees gave presentations of one form or another it is impossible in a short report to describe each in detail and therefore I must limit myself to a brief, and possibly idiosyncratic, description of only those ideas and incidents which seemed most memorable to me. I must therefore ask the forbearance of all the speakers who I do not mention below and say that their omission is only a reflection of my poor judgement in these matters!

The overall theme of the school was active vision: a diffuse melange of concepts which include detailed modelling of perception, the treatment of perception as a process in time and the explicit control of data capture processes. Using these ideas it is hoped that ill posed problems can become well posed i.e. problems with a unique solutions that are robust to noise.

The conference was fortunate to have one of the first exponents of active vision present, Ruzena Bajcsy. She reported on recent work within the GRASP laboratory at the University of Pennsylvania. In particular she stressed the careful examination of assumptions which may underly any technique and skillfully advocated a more critical approach to experimentation so that our discipline might attain, and require, the same stringent standards required of reported work in established sciences such as physics (cold fusion aside!).

Chris Brown described the initial experiments performed at Rochester University on the use of a robot head to implement fixation studies. He showed how fixation can be used to great advantage in both image segmentation and depth estimation. Both he and Dana Ballard, who spoke later, stressed that relatively inexpensive off-the-shelf real-time hardware is making possible a very wide range of new studies in robot perception. Chris Brown completed his talk by describing simulation studies of the control mechanisms used in human vision, presenting detailed plots of the often disastrous effects of delay within such a real-time system. Dana Ballard presented his latest thoughts on the role of "behaviours" within human vision. Behaviours are individual atomistic mechanisms, both controlled and reflex, which interact together to give the complex visual strategies which yield our sophisticated visual competence.

A major theme of the talk given by John Tsotsos of the University of Toronto was to develop an understanding of the computational complexity of vision tasks before considering a suitable machinery for their implementation. He used experimental data from psychology to show that certain visual problems seemed to be performed in parallel while others require sequential visual search. Using this understanding it is much clearer what optimisations and approximations may have to be made to implement such tasks on given computational engines such as the human brain.

Jan-Olaf Eklundh from the Royal Institute of Technology in Stockholm reported work on Focus-of-Attention in active vision. He described the work on edge focussing performed at his institute by Fredrik Bergholm. In this technique edges are tracked across scales from low to high resolution. He also gave a preliminary report of the use of controlled sensor motion using a recently acquired robot arm.

Joe Mundy of General Electric presented work on model based vision for military aerial reconnaissance missions. He showed how polyhedral models are sufficient to represent objects such as buildings and/or vehicles and spoke about the problems of matching poor image segmentations to models. A large part of his talk concerned the development of an algebraic system for representing and reasoning about geometric models.

The single most immediately impressive piece of work was demonstrated by Professors Dickmanns and Graefe from Munich. Their work concerned an autonomous vehicle which can travel along autobahn routes at speeds in excess of a 100 kilometres per hour. They have developed a specific dynamic model of how to drive a vehicle and implemented a real-time vision system based around standard microprocessors. Following initialisation, their visual processing is restricted to small image regions where the edge of the road is expected. Each

road edge is detected in up to 3 overlapping image windows. The system is extremely robust and video demonstrations were given of its capabilities in conditions ranging from strong sunshine with shadows to misty rain with windscreen wipers on.

In addition to the above intensive technical program one of the most vital and enjoyable aspects of the school was the impressive social program. As well as the customary banquet these included a welcoming sparkling wine reception, a midnight beach party and day excursions to places of local interest such as Maretea town, the Greek temple at Paestum and the ruins of Pompei. However, a major setback for the social program was the cancellation of a proposed soccer match between the conference delegates and the young fit staff of the hotel. The hotel management proferred the feeble excuse that the local soccer stadium was being reseeded (no doubt in preparation for next years World Cup competition!). Fortunately our unhappiness was tempered by the rumour that the score of the last similar event was NATO- 0 Hotel Staff- 20! Obviously NATO still has much to learn about defense!

The organising Committee of the School are to be much congratulated for bringing together such a distinguished group of experts and for providing such a pleasant forum for the exchange of current ideas within this field. Arun Sood, co-director of the school with Harry Wechsler, must be particularly thanked for ensuring the smooth running of the event on a day to day basis. The proceedings of the School will appear in about one years time as a book published by Springer-Verlag and I feel certain that they will prove most useful to all practitioners in the Computer Vision and Pattern Recognition communities.

John Illingworth
University of Surrey

BOOKSHELF

Explorations in Parallel Distributed Processing

J L McClelland and D E Rumelhart MIT Press, Cambridge MA, 1988, ISBN 0-262-63113-X

This is not just a book; it is THE book which goes with the software which is sold with the book! Although it is sold as an independent package, it has been written as the third volume of the PDP books by the same authors (see Newsletter of June 1989 for a review). It is clearly much superior to the other two volumes and it would have been much better if one had not to refer so often to the maize of worded explanations of the other volumes.

Most of the book is devoted into making the running of the software idiot-proof! And it is! I spent several pleasant hours playing around with the six PDP programs included in the package. The programs can be used in various levels. For the ignorant beginner, they provide a means of "hands on" for all those things described in the theory. For the more adventurous user there is ample scope of experimentation with various aspects of the programs and even with the source code itself (written in C).

Each chapter of the book refers to a particular aspect of PDP. It gives some brief theoretical background (I found there some of the best descriptions I have come across of simulated annealing and elementary and multilayer perceptrons) and then describes step by step the relevant software and various excercises and experiments one can run with it. A very positive aspect of the book is that it includes the answers to most of the excercises (why not all?).

The first program refers to interactive activation and competition mechanisms simulating content-addressable memory retrieval. The second is all about constraint satisfaction processes using a schema model, a Boltzmann machine or Harmony theory. Next we move to real learning systems all under the general name pattern associators. One can test here the pros and the cons of the Hebbian and the delta learning rules. Systems with hidden units and the generalised delta rule are explored by the next program. Auto-associators and competitive learning are yet another section and finally, the interactive activation model for modelling cognitive processes concludes the collection.

The book is concise but unfortunately not self-contained. The best way to use the three PDP volumes is to start from the end, i.e. this package and refer to the other two books only when it becomes necessary.

Maria Petrou
University of Surrey

CALLS FOR PAPERS

10th INTERNATIONAL CONFERENCE ON PATTERN RECOGNITION

Atlantic City, New Jersey, USA - June 17-21, 1990

Program

The conference is sponsored by the International Association for Pattern Recognition and the IEEE Computer Society. It will be organised as a set of four specialty conferences, each dealing with a different topic but held in the same place and at the same time. The opening session as well as social events will be common to the four conferences. The program for each individual conference will be organised by its own programme committee under leadership of a Program Chairman.

The titles of the individual conferences and their Program Chairmen are:

- Computer Vision: Prof J K Aggarwal

- Pattern Recognition Systems and Applications: Prof R M Haralick

- Image, Speech and Signal Processing: Dr A Netravali

- Computer Architectures for Vision and Pattern Recognition: Dr Jorge Sanz

Each conference will consist of a single track of paper presentations, with its papers published as a separate proceedings volume. There will be a basic registration fee which will entitle a participant to attend one conference of choice and to receive its proceedings. For small suplementary fees, attendees will be to participate (and receive the proceedings for) any of the other conferences as well.

Each conference will have about 50 quality paper presentations, as well as panel discussions and poster displays. Based on previous conferences, a total attendance of close to 1000 persons is expected from all over the world.

Individual Conference Descriptions

Computer Vision
Prof J K Aggarwal
Computer and Vision Research Center
Electrical and Computer Engineering Dept
The University of Texas
Austin, Texas 78712
USA

Topics

- 3D representation and recognition
- Stereo
- Shape from X
- Vision and real world scenes
- AI and vision systems
- Motion, visual navigation
- Machine vision

Pattern Recognition Systems and Applications
Prof R M Haralick
Dept of Electrical Engineering, FT-10
University of Washington
Seattle, WA 98195
USA

Topics:

- Early vision, segmentation and edge detection
- Statistical, syntactic and AI pattern recognition algorithms
- Color and multispectral classification
- Multiresolution methods
- Character recognition

Image, Speech and Signal Processing
Dr A Netravali
Room 3D406
AT&T Bell Laboratories
600 Mountain Ave.
Murray Hill, NJ 07974
USA

Topics:

- Image enhancement and restoration
- Image coding
- Signal processing
- Speech recognition
- Image geometry
- Image representation and data structures

Computer Architectures for Vision and Pattern Recognition
Dr Jorge Sanz
K53-802
IBM Almaden Research Center
650 Harry Road
San Jose, CA 95120
USA

Topics:

- Vector, mesh, hypercube systems
- Loosely and tightly coupled multiprocessors
- Shared memory systems

- Languages for image, signal and vision processing on such systems

Information for Contributors

Papers must be cleanly typed and in English. Each paper should be securely stapled in the upper left-hand corner and should consist of the following:

- Cover page, containg: a) Title of the paper; b) Name, affiliation and mailing address of authors; c) Name of conference for which paper is submitted, i.e. Computer Vision, Pattern Recognition Systems and Applications, etc.; d) The signed statement: "Neither this paper nor any version close to it has been or is being offered for publication elsewhere. If accepted the paper will be personally presented at the designated 10ICPR conference by the author or one of the authors."

- Abstract page (page 2 of paper), containing a 100 word abstract of the paper.

- Text of the paper (beginning on page 3), with illustrations.

- All pages should show the author's name (first author's if more than one author) in the upper left hand corner, and the pages should be numbered in the upper right hand corner.

Paper Submission

Papers should be sent to the Programme Chairman of the conference best matching the content of the paper.

Deadlines

Sept 30, 1989	Full papers(4 copies)
Jan 15, 1990	Authors notified
March 1, 1990	Camera-ready manuscript

1st EUROPEAN CONFERENCE ON COMPUTER VISION

Antibes, France - April 23-25, 1990

Programme

The conference programme will include consolidated research results (long papers) and projects describing promising ideas and preliminary results (short papers). Papers are solicited on the following topics:

- Colour
- Texture
- Stereo

- Motion
- Active vision
- Shape
- Object identification
- Hardware architectures
- Neural nets (as applied to vision)

Deadlines

Oct 15, 1989	Full papers (4 copies)
Dec 15, 1989	Authors notified
Jan 31, 1990	Camera-ready manuscript

Paper Submission

Madame C Juncker
INRIA
Bureau des Relations Exterieures
2004, route des Lucioles
06565 Valbonne Cedex
France

3rd INTERNATIONAL CONFERENCE ON INFORMATION PROCESSING AND MANAGEMENT OF UNCERTAINTY IN KNOWLEDGE-BASED SYSTEMS

Paris, France - July 2-6, 1990

Program

The aim of this conference is to bring together researchers working on various methodologies for the management of uncertain information and to provide a useful exchange between practitioners and theoreticians using these different methods. Topics include knowledge representation and manipulation, expert and decision making systems under uncertainty, nonmonotonic logics, temporal reasoning, artificial neural networks, pattern recognition and image processing, knowledge acquisition, learning, etc.

Deadlines

Dec 1, 1989	Abstracts (4 pages, 3 copies)
Jan 31, 1990	Authors notified
June 1, 1990	Camera-ready manuscript

Paper Submission

Secretariat de la Conférence IPMU
ENSTA
32 Boulevard Victor
75015 Paris
France

CALENDAR OF EVENTS

Date	Event	Location	Sponsor/Information
September 20-22, 1989	5th International Conference on Image Analysis and Processing	Positano, Italy	Dr Gabriella Saniti di Baja, Chairman 5ICIAP, c/o Instituto di Cibernetica, CNR, 80072 Arco Felice, Naples, Italy
October 4-6, 1989	IEEE Workshop on Visual Languages	Rome, Italy	Prof S Levialdi, Dip. Matematica, University of Rome, P.le A Moro 2, 00185 Rome, Italy
October 17-18, 1989	1st IEE International Conference on Artificial Neural Networks	IEE, Savoy Place, London, United Kingdom	IEE, Conference Services, Savoy Place, London WC2R 0BL, United Kingdom
November 13-16, 1989	2nd International Workshop on Neural Networks and their Applications	Nimes, France	Jean-Claude Rault, EC2, 269-287, rue de la Garenne, 92000 Nanterre, France
November 22-24, 1989	4th Latin American Symposium on Remote Sensing	Bariloche, Argentina	CICELPA-INTI, Secretaria del 4 Simposio Latinoamericano de Sensores Remotos, C.C. 157 - (1650) San Martin, Provincia de Buenos Aires, Republica Argentina
November 22-24, 1989	International Workshop on Sensorial Integration for Industrial Robots	Zaragoza, Spain	A Alcolea, Dpt. Ing. Eléctrica e Informática, C/ Maria de Luna 3, E-50015 Zaragoza, Spain
November 27-29, 1989	IEEE Workshop on Interpretation of 3D Scenes	Austin, Texas, USA	Eric Grimson, AI Lab, MIT, 545 Technology Square, Cambridge MA 02139, USA
Nov 27 - Dec 1, 1989	International Conference on Pattern Recognition and Artificial Intelligence (in French)	Paris, France	Prof G Stamon, AFCET, 156 Boul Pereire, 75017 Paris, France
December 11-14, 1989	Intelligent Autonomous Systems 2	Amsterdam, The Netherlands	IAS-2 Conference Secretariat, PO Box 41882, NL-1009 D B Amsterdam, The Netherlands
December 26-27, 1989	6th Israeli Conference on Artificial Intelligence and Computer Vision	Tel-Aviv, Israel	Dr Y Yeshurun, 6th IAICV, Dept Computer Science, Tel Aviv University, 69978 Tel Aviv, Israel
March 6-8,1990	Neural Networks: Biological Computers or Electrical Brains	Lyon, France	AFCET, Conference Department, 156 Boulevard Péreire, 75017 Paris, France
April 23-25, 1990	1st European Conference on Computer Vision	Antibes, France	Madame C Juncker, INRIA, Bureau des Relations Exterieures, 2004, route des Lucioles, 06565 Valbonne Cedex, France
June 17-21,1990	10th International Conference on Pattern Recognition	Bally's Hotel, Atlantic City, NJ, USA	10th International Conference on Pattern Recognition, c/o Conference Department, IEEE Computer Society, 1730 Massachusetts Avenue, N.W., Washington, DC 20036-1903, USA
July 2-6, 1990	3rd International Conference on Information Processing and Management of Uncertainty in Knowledge-Based Systems	Paris, France	Secretariat de la Conférence IPMU, ENSTA, 32 Boulevard Victor, 75015 Paris, France