IAPR

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

NEWSLETTER

Editor
Josef Kittler
Dept. Electronic and Electrical Engineering,
University of Surrey,
Guildford GU2 5XH,
UK.
Telephone: (44 483 509294)
kittler@uk.ac.surrey.ee

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FROM THE EDITOR'S DESK

One of the most important items of this issue of the IAPR Newsletter is a reminder about the approaching 10th International Conference on Pattern Recognition. A quick action is required if you want to beat the early registration deadline of 30 May and even more importantly if you want to stay at Bally's Park Place Hotel. Hotel reservations after 20 May will be accepted only on space-available basis.

The Editor

News Copy Deadlines

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Volume 13 Number 2   20 May 1990
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NEWS IN BRIEF

NEW IAPR TC12 CHAIRMAN Prof Pietro Laface of the Torino Polytechnic, Italy has become the Chairman of the IAPR Technical Committee TC12 on Automatic Speech Recognition.

IAPR WOOING CHINA Through the good offices of Professor Nagao considerable efforts are being mounted to persuade the Chinese Association for Automation to get once again actively involved in the activities of the IAPR.

ROMANIA Following their recent political upheaval, scientist from Romania have been appealing for help to restore the basic necessities in Romanian universities and research laboratories. One such appeal was received by IAPR from Dr Victor Neagoe, who is an Individual Member of our Association. In response IAPR have made an Executive decision to show support for our colleagues in Romania by waiving this year's annual dues for Dr Neagoe and Dr Andonie (the other Romanian Individual Member) and by offering Dr Neagoe a free subscription to Pattern Recognition Letters for the next two years. It is hoped that this small gesture will encourage others to help at a time when help would be most appreciated.

10th ICPR 1990 APPROACHING

The date of the next biennial ICPR is rapidly approaching. The conference will be held at Bally's Park Place, Atlantic City, New Jersey, USA on June 17-21, 1990. It is sponsored by the International Association for Pattern Recognition and the IEEE Computer Society. The meeting has been 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 has been 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.

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

- 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

- 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

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

Computer Architectures for Vision and Pattern Recognition

- Vector, mesh, hypercube systems
- Loosely and tightly coupled multiprocessors
- Shared memory systems
- Languages for image, signal and vision processing on such systems

A detailed conference programme will be issued very shortly. The preconference activities include two days of tutorials (16-17 June) on

- Fundamentals of computer vision
- Intelligent pattern recognition and applications
- Statistical pattern recognition
- Hierarchical data structures for image databases

- Mathematical morphology

- Image recovery

For conference registration and hotel booking forms please contact

Ms Michelle L Carbone
IEEE Computer Society
1730 Massachusetts Avenue, NW
Washington DC 20036-1903
USA

Please note the member rate for conference registration applies not only to IEEE members but also to members of ICPR.

Atlantic City can be reached most conveniently by flying to Philadelphia and completing the journey by bus or alternatively by flying to New York (JFK) and then proceeding by air shuttle.

In conjunction with the conference, a workshop on Artificial Neural Networks & Pattern Recognition sponsored by IAPR TC1 will be held at Sands Hotel on Sunday 17 June. The workshop has been organised by Prof A K Jain and the speakers include L Kanal, P Werbos, Y Pao, H Baird, S Rogers, and R DeMori. For registration information contact

Ms Cathy Davison
Department of Computer Science
A-714 Wells Hall
Michigan State University
East Lansing
MI 48824
USA
Tel (+1) 517-3555218
email:davison@cps.msu.edu

NEWS FROM DOWN UNDER

Despite the fact that IAPR now has twenty-two national members, none of them are from the Southern Hemisphere (although we do have Individual Members from that half of the world!). I was therefore particularly pleased to be invited to take part in the conference: 'Image Processing and the Impact of New Technologies' which was held in Canberra, Australia, just before Christmas. This meeting was organised by a committee chaired by Dr Donald Fraser from the Electrical Engineering Department of the Australian Defence Force Academy (where the meeting was held) and several prestigious Australian organisations (CSIRO, IREE and so on) also served on the committee. The meeting was extremely well organised and all the facilities, especially in relation to the audio-visual services, were operated with commendable military precision and efficiency.

Perhaps more significantly, some seventy-five papers were presented in two parallel sessions throughout the three day conference and one could not fail to be impressed by the lively and enthusiastic community of researchers that took part. Australia is an enormous country and it is obviously difficult and expensive to bring people together for scientific meetings. Also from the chauvinistic viewpoint of a European, it has to be admitted that Australia is rather 'cut-off' from the bulk of the scientific world; travel costs to international conferences and foreign laboratories must be quite prohibitive. It was most encouraging to find that an image processing conference could be so well supported and of such a high standard, under circumstances that must have made organisation quite a headache.

Two of the conference delegates have started an initiative which had its first public announcement at the conference. Binh Pham and Anthony Maeder, both from the Department of Computer Science at Monash University, are endeavouring to form an Australian Pattern Recognition Society and used the assembly of potentially interested people at the conference to publicise their plans and to solicit interest and support. I was glad to be able to give some help in this and to confirm that IAPR will welcome an application from this new Australian society which has declared its intention to try to become the Australian national member of IAPR as soon as it is firmly established. IAPR are hoping to be able to complete the necessary formalities so that Australian delegates can attend 10ICPR as full members. We wish them luck and look forward to welcoming our first Southern Hemisphere colleagues.

Personal Footnote: It is, as they say, a small world. The Canberra conference brought me into contact with three Americans who were attending the conference, two of them from the University of Arizona where I had managed to fail to meet them during the whole of the six months sabbatical I spent in Tuscon, and the other from Carnegie-Mellon who had managed to miss me when he visited our group in London. Perhaps Australia isn't so cut off, after all!

Michael Duff
IAPR Secretary

REPORT ON TC10 ACIVITIES

TC-10 was dormant for many years prior to 1989. It was revived during 1989 and an advisory committee consisting of members from USA, Japan, Sweden, UK, India, and West Germany has been formed. TC-10 is cosponsoring (along with TC-6 and TC-8) a workshop on Machine Vision Applications in Tokyo during November 28-30, 1990. Many members who are interested in the activities of TC-10 are expected to attend the IAPR workshop (sponsored by TC-2 and TC-11) on Syntactic and Structural Pattern Recognition which has an emphasis on Document Image Analysis.

Rangachar Kasturi
Chairman, TC-10

CLOSER COOPERATION BETWEEN

SCANDINAVIAN IAPR SOCIETIES

Image analysis and Pattern Recognition have a long tradition in the Nordic countries, including Denmark, Finland, Norway, Sweden, (and Iceland). Danish, Finnish and Swedish image analysis societies where founded around 1976, and the Norwegian one in 1983. Together we have about 600 members.

The four societies circulate the task of arranging the biennial Scandinavian Conference on Image Analysis (SCIA). The sixth in the series was held in Oulu, Finland in June this year. This conference has become one of the larger international conferences in the field, with about 2/3rds of the contributions from outside Scandinavia.

Unfortunately the SCIA conferences has been almost the only connection between the Scandinavian societies so far. In fact, in many cases we know better what various groups in North America is doing, than what our neighbours are working on. The first step of improving the situation was taken in December 1988, when the four Scandinavian chairmen (or their representatives) met in Link—ping, Sweden. We discussed Scandinavian cooperation during a whole day (and night).

The most immediate result of this meeting was that all important information will be shared between the societies. This information includes Newsletters (issued in Finland, Norway and Sweden), lists of internal reports in the field, and presentations of various groups. We also

decided that the Scandinavian chairmen will continue to meet on a regular basis.

The next meeting of the chairmen took place at the 6th SCIA in Oulu. Here the discussions continued, on how to make various Scandinavian groups with common interests aware of each other, and thus to facilitate cooperation between them. We agreed that one good way to achieve this is to start a series of workshops on special subjects. These workshops will be open only to a limited number of Scandinavians (except for invited speakers). The first workshop in the series will be held in Linkoping (which was also the venue of the first SCIA conference) in March 1990. The subject is "Parallel algorithms and architectures in vision and image processing" and the general chairman is Prof. Per-Erik Danielsson.

In Oulu we also heard of plans to start an Icelandic society in the field. That would, finally, make the number of Scandinavian IAPR societies complete. We wish them all success, and warmly welcome them among us!

Gunilla Borgefors, Coordinator
Group of Scandinavian IAPR Chairmen

1992

It is sometimes argued that the size and scale of the market for image processing technology within individual countries in Europe is the major cause for the lack of success of commercial organisations in these countries. The high quality of the research carried out in European universities and research establishments is not in question, although the actual amount of research is sometimes indicative of under-funding. Despite national and multinational government sponsored R & D programmes (or, perhaps, to be cynical, because of such sponsorship), it has proved surprisingly difficult to translate good ideas into the marketplace. For example, the Alvey Programme in the UK and ESPRIT in the EC have hardly distinguished themselves in this respect and, in the opinion of at least some of us, have actually had a debilitating effect on the basic research which should have been underpinning a successful exploitation. What might have been more sensible would have been to have provided extra financial and organisational help for international collaboration and for attempt at exploitation which had already begun but weere foundering for lack of cash. Unfortunately, governments and their civil servants seldom seek advice on such things from those who have to try to live with the problems their naive policies create.

The arrival of a greater unity in Europe in 1992 is bound to have an effect on pure science as well as on political and economic factors and it is prudent to consider whether IAPR need to take notice of these matters. By the time this Newsletter reaches your desk, there will have been a meeting in Paris to discuss the establishment of a European Vision Association. This initiative stemmed from a group of individuals with ESPRIT connections and has the support of a French manufacturers' association called 'Club Vision'. ESPRIT itself has sponsored a European Conference on Computer Vision (Antibes, France, 23-27 April 1990) and it seems likely that the new associations will offer to take on this conference in subsequent years.

How should IAPR react to these developments? Our Constitution does not make allowance for multinational membership, i.e. the European Vision Association would not be eligible for membership as things stand at the present, even if they should wish to join us. However, there would appear to be no reason why our Constitution and Bylaws should not be changed if the members choose to do so. To be realistic, the first opportunity to do this would be at the meeting of the Governing Board at 10ICPR, but it would be helpful if your views could be made known to your Governing Board representative well in advance of the meeting. If you prefer, or in addition to talking to your Governing Board representative, you might like to write to the Secretary stating your opinions as to how IAPR should respond to these new circumstances. Arguments collected in this way will be summarised and presented at the meeting.

Michael Duff
IAPR Secretary

BOOK REVIEWS

Digital Image processing and Computer Vision.

by Robert J. Schalkoff, John Wiley & Sons Inc., 1989

The field of image processing and computer vision spanns a number of disciplines: signal processing, psychophysics of vision, computational theories of numeric and symbolic processing and computer architecture. To write an introductory text on this multidisciplinary subject and to present its underlying concepts to an audience of engineers, computer scientists and applied mathematicians alike is by no means an easy task. Robert Schalkoff should be praised in producing a book which contains a well-balanced mix of theory and its practical ramifications.

The book begins by introducing the basic tools of the trade, namely geometrical models of imaging and the mappings between the 3D scene and its 2D image. Topics covered include homogenous coordinates, camera modelling and calibration and perspective-projective transform. The basic theory of linear transformations such as convolutions, correlation and sampling theory are also presented; the latter the effects of both spatial and temporal sampling.

In the area of image modelling, the reader is treated to a detailed discussion of image modelling using deterministic methods and the different forms of basis functions which include Fourier, Walsh-Hadamard and the Slant transforms. the modelling of images using stochastic techniques, however, is only mentioned in passing. Image compression techniques, particularly, differential encoding and run-length encoding schemes are assessed in depth.

Image enhancement and restoration techniques are presented in terms of both linear (spatial and temporal averaging) and non-linear (ranking and homomorphic) filters. The book also includes a comprehensive evaluation of a range of edge detection operators based on spatial derivative and template matching approaches.

An entire chapter has been devoted to the issue of motion analysis in which motion detection and analysis techniques such as image differencing and optic flow analysis are discussed. The latter is presented in relation to the various constraints designed to alleviate the ill-posed problem of flow field estimation. Also included in this chapter are motion estimation techniques based on Fourier and Hough Transforms.

The second half of the book deals with high level interpretation of images under a single heading - image analysis. various approaches to image interpretation are discussed. This includes statistical and synactic pettern recognition as well as knowledge-based techniques. The use of intermediate representations and feature extraction techniques such as moment invariance, contour description, Hough Transform and Minkowski operators are also discussed.

The text covers only briefly hierarchical image analysis in which scale- space techniques and pyramidal analysis are presented. However, I found the section on 2.5D image representation and 3D object modelling lacking in substance and in depth.

The book finishes on a discussion of the parallelism inherent in image processing and a brief survey of com-

puter architectures which have been designed specifically for the processing of image data. This includes 2D processing arrays such as the MPP and CLIP4.

In my opinion, this book covers a lot of ground for both low-level image processing and high level image interpretation in terms of theory, algorithms and their practical uses. difficult concepts are often first explained in terms of 1D cases before extension to 2D. The book is well- written and provides enough mathematical detailes for us to appreciate the underlying theories and concepts in image processing and computer vision. It is suitable for both students new to the field and for more experienced practitioners of image processing and computer vision.

Horace Ip
The City Polytechnic, Hong Kong

CALLS FOR PAPERS

3rd INTERNATIONAL CONFERENCE ON COMPUTER VISION

Osaka, Japan - December 4-7, 1990

Program

The program will consist of high quality contributed papers on all aspects of computer vision. All papers will be refereed by the members of the Program Committee. Accepted papers will be presented as long papers in a single track or as short papers in two parallel tracks.

Deadlines

April 30, 1990	Full papers (4 copies)
July 15, 1990	Authors notified
August 15, 1990	Camera-ready manuscript

Information for Contributors

Papers must contain major new research contributions. All papers will be reviewed using a double-blind procedure, implying that the identities of the authors will not be known to the reviewers. To make this possible, two title pages should be included, but only one containing the names and addresses of the authors; the title page with the names and addresses of the authors will be removed prior to the review process. Both title pages should contain the title of the paper and a short (less than 200 words) abstract. Authors must restrict the lengths of their papers to 30 pages; that length should include everything, meaning the title pages, texts (double-spaced), figures, bibliography, etc.

Paper Submission

Saburo Tsuji
Department of Control Engineering
Osaka University
Toyonaka
Osaka 560
Japan

IAPR WORKSHOP ON MACHINE VISION AND APPLICATIONS

Tokyo, Japan - November 28-30, 1990

Program

The workshop, which will be held one week before the IEEE 3rd International Conference on Computer Vision (Osaka), is sponsored by the IAPR Technical Committees 6, 8 and 10. The workshop will address the following topics:

- Architectures for machine vision
- Neural networks
- Industrial applications
- Document, map and line drawing processing

Deadlines

June 30, 1990	Paper summary (400 words, 4 copies)
July 30, 1990	Authors notified
Sept 30, 1990	Camera-ready manuscript

Submission

Prof Mikio Tagaki
Institute of Industrial Science
University of Tokyo
7-22-1 Roppongi, Minatoku
Tokyo 106
Japan
Fax:+81-3-423-2834
Email: takagi@tkl.iis.u-tokyo.ac.jp

BRITISH MACHINE VISION CONFERENCE 1990

Oxford, United Kingdom - September 24-27, 1990

Program

The Alvey Vision Conference became established as the premiere annual UK national conference for Machine Vision and related topics. Following the merger of the British Pattern recognition Association and Alvey Vision Club the series of conferences has taken the name 'British Machine Vision Conference'.

While the emphasis will continue to be on UK research being undertaken through national or international collaborative projects, papers from other nations,

especially those collaborating with UK groups, are also very welcome.

Contributions are sought on any novel aspect related to:

- Image Processing and Feature Extraction
- Robotic Vision and Sensor Fusion
- Object Recognition and Scene Analysis
- Practical Applications of Machine Vision
- Reconstruction of 3D Shape
- Model Based Coding
- Advanced Pattern Analysis
- Architectures for Vision Systems
- Computational Issues in Visual Perception

Deadlines

May 7, 1990   Paper summary (1500 words, 6 copies)
June 11, 1990 Authors notified
July 16, 1990 Camera-ready manuscript

Submission

Dr A Zisserman
BMVC90
Dept Engineering Science
Parks Road
OXFORD
OX1 3PJ
U.K.

7TH ISRAELI CONFERENCE ON ARTIFICIAL INTELLIGENCE AND COMPUTER VISION

Tel-Aviv, Israel - December 26-27, 1990

Program

The conference is the joint annual meeting of the Israeli Association for Artificial Intelligence, and the Israeli Association for Computer Vision and Pattern Recognition, which are affiliates of the Israeli Information Processing Association. The language of the conference is English. Papers addressing all aspects of AI and Computer Vision, including, but not limited to, the following topics, are solicited:

- Image Processing, Computer Vision, and Pattern Recognition

- Visual Perception, Robotics, and Applications of Robotics and Vision.

- Inductive inference, Knowledge Acquisition, Planning and Search

Deadlines

June 1, 1990   Full papers (4 copies)
August 1, 1990   Authors notified

Submission

Prof. A. Bruckstein
7th AICV
Faculty of Computer Science
Technion
32000 Haifa, Israel
freddy@techsel.bitnet

CALENDAR OF EVENTS

Date	Event	Location	Sponsor/Information
April 15-19, 1990	Artificial Intelligence - Industrial Applications	Leningrad, USSR	Prof V M Ponomaryov, Leningrad Institute for Informatics and Automation of the USSR Academy of Sciences, 39, 14th Line, Leningrad, 199178 USSR
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
May 5, 1990	1990 Gulf digital Signal Processing Symposium	Kuwait	1990 GDSPS Secretariat, Faculty of Technologocal Studies, P.O. Box 42325, 70654 Shuwaikh, Kuwait
May 28 - June 1, 1990	Expert Systems and Their Applications	Avignon, France	Jean-Claude Rault, EC2, 269-287, rue de la Garenne, 92024 Nanterre Cedex, France
June 13-15, 1990	IAPR Workshop on Syntactic and Structural Pattern Recognition	Murray Hill, New Jersey, USA	Dr Henry S Baird, AT&T Bell Laboratories, Rm 2C-557, 600 Mountain Avenue, Murray Hill, NJ 07974, USA
June 14-15, 1990	IAPR TC7 Workshop on Multi-source Data Integration in Remote Sensing	University of Maryland, USA	Dr James C Tilton, Mail Code 636, NASA Goddard Space Flight Center, Greenbelt, MD 20771, USA

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
July 9-13, 1990	International Neural Network Conference	Paris, France	Nina Thellier, NTC INNC0-90-PARIS, 19, rue de la Tour, 75116 Paris, France
September 17-20, 1990	Applied Optics and Opto-Electronics	Nottingham, UK	Applied Optics and Opto-Electronics, Applied Optics Group, Blackett Laboratory, Imperial College, London SW7 2BZ
September 18-21, 1990	5th European Signal Processing Conference	Barcelona, Spain	EUSIPCO-90, Dept Teoria de la Senal y Comunicaciones, ETSITB - UPC, Apdo 30002, 08080 Barcelona, Spain
September 19-22, 1990	4th International Conference on Artificial Intelligence	Varna, Bulgaria	Dr Christo Dichev, AIMSA 90, ITKR - Bulgarian Academy of Sciences, Bl. 29 A, Acad. G Bonchev St., 1113 Sofia, Bulgaria
Sept 24-27, 1990	British Machine Vision Conference 1990	Oxford, England	Dr RW Series, RSRE, St Andrews Rd, Malvern, Worcs. WR14 3PS, U.K.
October 2-4, 1990	Visual Communications and Image Processing 90	Lausanne, Switzerland	SPIE, PO Box 10, Bellingham, WA 98227-0010, USA
October 4-6, 1990	1990 IEEE Workshop on Visual Languages	Skokie, Illinois, USA	Prof S K Chang, Department of Computer Science, University of Pittsburgh, PA 15260, USA
October 22-26, 1990	International Conference on Signal Processing 1990	Beijing, China	Prof Yuan Baozong, Research Institute of Information Science, Northern Jiaotong University, Beijing 100044, China
October 29-31, 1990	Remote Sensing: An Operational Technology for the Mining and Petroleum Industries	London, UK	The Conference Office, The Institute of Mining and Metallurgy, 44 Portland Place, London W1N 4BR, UK
November 6-9, 1990	International Symposium on the Intergration of photogrammetry and remote sensing into GIS: Use and Quality	Strasbourg, France	Alsace Congress, 20, rue du Jeu des Enfants, 67000 Strasbourg, France
November 28-30, 1990	IAPR Workshop on Machine Vision Applications	Tokyo, Japan	Prof Mikio Takagi, Institute of Industrial Science, University of Tokyo, 7- 22-1 Roppongi, Minatoku, Tokyo 106, Japan
December 3-7, 1990	IEEE 3rd International Conference on Computer Vision	Osaka, Japan	IEEE
December 26-27, 1990	7th Israeli Conference on Artificial Intelligence and Computer Vision	Tel-Aviv, Israel	Prof A Bruckstein, 7th AICV, Faculty of Computer Science, Technion, 32000 Haifa, Israel (freddy@techsel.bitnet)