IAPR

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

NEWSLETTER

Contents

Articles for inclusion in the *Newsletter* are always welcomed, and can be on any subject likely to be of interest to the IAPR community. They should be submitted, preferably electronically, directly to the editor at the above address.

From the Editor's Desk

This edition of the *Newsletter* contains the usual number of conference announcements, several of which will have passed their deadlines for submission by the time this reaches you. We are actively looking for faster means of disseminating the *Newsletter*; however, if you wish to announce a conference in the *Newsletter*, please send it to the editor well in advance of the submission deadline. Since the *Newsletter* is published only four times per year, there could be a delay of up to three months for the information to reach the readership.

Copy Deadlines

Last dates for editorial copy:

Volume 14 Number 1	10$^{\text{th}}$ March	1991
Volume 14 Number 2	20$^{\text{th}}$ May	1991

Circulation: 14, 900 copies

The British Machine Vision Conference 1990

THE BRITISH MACHINE VISION CONFERENCE was held at the Department of Psychology, Oxford University, and St Hughs College, Oxford from 24th – 27th September 1990. This was the first conference to be held since the merger of the British Pattern Recognition Association and the Alvey Vision Club at the beginning of this year and followed on from the series of Alvey Vision Conferences. The standard of the meeting was very high; time dictated that only 40 of the over 100 papers submitted could be accepted for oral presentation, a further 30 papers being presented as posters. In total, about 170 people registered for the conference, which ran for three days. Despite clashing with the Robot Olympics, the conference had a high robotic vision content as well as contributions in the areas of medical and industrial vision.

The conference opened with an invited paper given by Steve White from the Technical Arts Corporation. Steve described the technological innovations involved with industrial vision systems. His main example was the use of laser scanners for the inspection of tubes for aircraft engines. The actual algorithmic aspects of the vision system play only a small part of the overall inspection system: planning of camera movement and inspection strategy present their own challenges. His talk gave a very interesting insight into how the company had taken their initial ideas about non-contact measurement systems and worked through the problems involved in successfully bringing them to the market place.

The remainder of the first day contained sessions on Model-Based Vision, Stereo, Feature Extraction and Motion. David Forsyth *et al.* reported some of their work on transformational invariance. This is an interesting technique for characterising curves on the surface of a plane under perspective projection. The stereo session was well supported by both the Oxford and Sheffield groups. Reports included techniques for estimating camera calibration from general scenes, as well as active and passive trinocular systems. Hough transforms held a high profile in the session on feature extraction, with the emphasis being placed on speed and noise resistance. Two interesting papers from the Manchester group (one presented as a poster) demonstrated the use of belief updating on image data. The first session on motion was dominated by the group at Roke Manor and included papers on resolution of ambiguity and real-time tracking systems.

The second day opened with an invited paper by Steven Zucker. This talk covered the overall structure of the human vision system and showed how the combination of computer simulation and neurological studies could be used to unravel some of the many processes at work. Particular emphasis was placed on such detail as how the brain copes with noise during curve detection and the feedback mechanisms between the various centres.

The remainder of the day was devoted to feature extraction, motion, medical image understanding and applications. These session covered a wealth of topics and techniques ranging from relaxation labeling, feature grouping and qualitative vision. Particularly impressive were some of the medical and industrial papers.

The third day covered Shape from **X**, Model-Based Vision 2 and Segmentation. The shape from **X** session showed significant improvements in this area. One particularly impressive paper from the Manchester group demonstrated the combination of iterative surface fitting together with the inclusion of stereo data on SEM images.

The conference ended with the Robotics group at Oxford holding 'Open House' with many working demonstrations of some of the projects discussed in the conference. The success of the meeting can be judged by the fact that, despite a very rigorous selection procedure, the duration of the meeting had to be extended by an afternoon. Even so, the programme was very full and many excellent papers were presented as posters.

For those who missed the chance of attending this conference and would like more details of particular papers then copies of the complete proceedings (including posters) can be obtained for a nominal fee of £25 from: *The Secretary, BMVC90, Robotics Research Group, Department of Engineering Science, University of Oxford, Parks Road, Oxford OX1 3PJ, UK.* Proceedings of previous meetings in this series are also available at the same price.

P. G. Ducksbury, R. W. Series
Royal Signals and Radar Establishment, UK

The First Robot Olympics

MOST PEOPLE DON'T GET PASSIONATE, obsessive and captivated about building washing machines, telephones or trouser presses. So why is it that as soon as you start building clever robots everybody seems to be fascinated? To children they are wonderful toys whilst to the non-technical adult they are a combination of something to fear (horror movie or lost job) or some fun gadget for the home. To the business man they represent a technology that he cannot afford to ignore if his industry is to have a future, whilst to the TV cameraman they simply make good visuals. To the politician they may one day have the vote, to the military mind they might fight wars, whilst hopefully leaving humans out of it. For the handicapped they represent a liberating technology which allows them scope for expression which previous generations missed. For the robot builder they are a gold
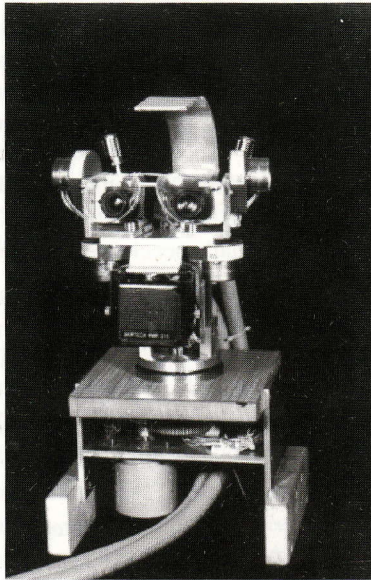
Richard 1ˢᵗ, a prototype anthropomorphic robot head being developed at the Turing Institute, which acted as commentator during the Robot Olympics.

mine of information showing how others have chosen to build legs, arms, sensors and control systems, and for the academic, something to make experiments with or write about. For the philosopher they challenge and shift our ideas about intelligence (or stupidity) and for the religiously minded, deep concern about the future of the human race.

As was clearly apparent by the capabilities displayed at the First Robot Olympics, all these ideas were well wide of the mark. Over sixty robots from twelve countries gathered in Glasgow at an event organised by the Turing Institute. As with any new and emerging technology, the results are typically unreliable, sometimes unpredictable and fraught with technical problems. If anything was surprising, then it was the fact that virtually all the robots managed to work properly during 27ᵗʰ and 28ᵗʰ September 1990. The only serious casualty was a Mexican robot that arrived in a box marked "fragile" but sadly looked like it had been dropped from a great height somewhere between South America and Europe.

Unlike a normal Olympics, where there are a number of preset competitions with preset rules, the route taken by the organisers was a little different. Instead, anyone with an interesting robot with an interesting set of behaviours was invited to attend and, upon registration, to indicate all the claimed capabilities of the robot. The organisers then simply looked through the list and, whenever any common capabilities were shown, a competition was devised. In this way eleven Olympic events were selected, namely wall-climbing, two legged races, more than two legged races, javelin, talk-

ing, obstacle avoidance, phototrophic, pole-balancing, manipulation, behaviours and wall-following.

The reason for this apparent back-to-front way of organising the events was in response to some of the problems with existing international robot competitions. Two of the best known are the micro-mouse competition and the world robot table-tennis championships. In both of these competitions the rules are such that they focus the robot-builder into a very narrow niche which does nothing more than produce better maze-searching robot mice and better ping-pong playing robot arms. In short, they do little for advancing our understanding of general robot problems such as perception or learning. The purpose of the Olympics was more to show what is possible, what the state-of-the-art is, and to bring this new and fascinating technology to a broader audience. It also brought the whole event closer to the Olympic ideal of *participation* being more important than *winning*.

Whilst some of the robots were put together by amateurs, many were developed with serious applications in mind. This was particularly true for the wall-climbing competition, where the British and Soviet entries were already prototypes for application work in the nuclear industry. Furthermore, this event clearly showed how some novel idea could easily lead to a quantum leap in this technology. All the wall climbers used feet with suction pads and all used the idea of some feet holding on whilst others slid forward on legs or rails. The winner, however, was an order of magnitude faster than the rest and used a quite different approach. The robot, called ZIG-ZAG, was formed like a parallelogram with a suction cup on each corner. By extending and contracting the parallelogram with the appropriate application and release of the suction cups, the small machine shot up the wall in record time.

The pole-balancing event was also keenly fought with technologies close to industrial applications. Many control problems such as those associated with rocketry, satellite dynamics or the process industries can easily be decomposed into problems similar to those associated with pole-balancing. With entries from Hewlett Packard, Salford University, Turing, Lancaster University and the UK National Engineering Laboratory, the competition was underway. The entry from Turing was especially interesting in that it made use of a machine learning algorithm which learned for itself how to balance a pole. However, the eventual winner was the Salford device which put the others to shame by being able to balance one pole on top of another pole—impressive stuff.

The biped event proceeded at a leisurely pace with the eventual winner from Cardiff in Wales completing the 10-metre race track in around 8 minutes. Things were a good deal faster in the multi-legged race when *Penelope* from Edinburgh University came thundering home well ahead of the American entry, *Ghengis* from MIT. It all went to show that
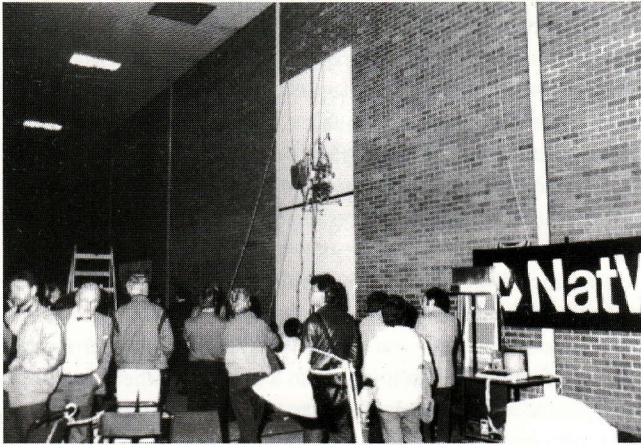
Live Action from the Robot Olympics involving two wall-climbing robots. The nearer of the two is Robug from Portsmouth Poly which is slightly in front of RVP2 from the Institute of Mechanical Problem Solving in Moscow. Robug later moved out of its lane, tried to clamber on top of the Russian robot and was disqualified!

when it comes to mechanical spider racing, eight legs are faster than six.

In the Javelin, Gold went to a 140-year-old Victorian mechanical archer from the Museum of Automata in York, which soundly put to shame many of the high-tech entries from Europe, whilst *Richard* the robot head won the speaking competition. Sadly, one Japanese talker had problems with pronounciation but made up for things by winning the wall-following. The most hotly-contested competition was the obstacle avoidance with twelve entries trying hard not to bump into a whole variety of objects designed to catch the unwary ultrasonic sensor or laser range finder. The gold medal went to *Asterix* from the University of Toronto, Canada (the only robot not to hit something) with *Oscar* from Edinburgh University taking the silver and *Yamabico* from Tsukuba University in Japan taking the bronze. Gold in the manipulation event went to the Belgrade/USC hand from Yugoslavia, whilst *Alpha Photon* from Kent University showed great prowess in following lights in the phototrophic competition. Other robots deserving special mention were a robot vacuum cleaner built by the local Inverkeithing primary school and a large anthropomorphic robot from India which checked the weather (important in Scotland) and counted the people it met.

In addition to robot winners, each of which received their

medals on the winners' podium to the accompaniment of a national anthem, a single overall champion was selected by the team of judges. The champion was chosen on the basis of three things. First, the quality of the mechanical and electrical hardware build. Second, the sophistication of the resulting behaviour and third, for novelty. On these criteria, the Olympic champion was *Yamabico* from the University of Tsukuba which made a small speech in Japanese to thank the humans for inviting him to Scotland.

The event was sponsored by the National Westminster Bank, the Scottish Development Agency and the American IEEE. The event is to be held every two years, returning to Glasgow every fourth year. No decision has yet been made concerning the venue for the 2nd International Robot Olympics.

Peter Mowforth
The Turing Institute
Glasgow, UK

The IAPR MVA'90 Workshop

KEEPING UP THE TRADITION of the previous IAPR Workshop on Computer Vision (IAPR CV'88) held in Tokyo two years ago, a renamed workshop, the IAPR Workshop on Machine Vision Applications (IAPR MVA'90), was held with great success during 28th – 30th November 1990 at the Central Research Laboratory of Hitachi, Ltd., Kokubunji, Tokyo under the co-sponsorship of three IAPR Technical Committees: TC-6 (Special Architectures), TC-8 (Industrial Applications), and TC-10 (Graphic Recognition). The chairmen of these TCs also served as the general co-chairmen of this workshop.

Papers were solicited from the areas that the above three TCs cover. To build up interest among industrial people— one of the major concerns of the IAPR in recent years—a special emphasis was placed this time on application-oriented aspects of machine vision technology.

Over 200 people submitted papers, of which 111 were presented, 40 orally and 71 as posters. The authors of these papers represented 16 countries, and the workshop received more than 230 participants from all over the world. Statistics indicate that 30% of the papers and 60% of the participants came from industry; both these figures are higher than those for the former workshop and other similar meetings held in the past.

Each day of this three-day workshop began with an invited talk. Speakers were selected from the chairmen and the members of the TCs to represent each of the TCs and their interests. The speakers were as follows:

Professor Pieter Jonker of Delft University of Technology (Chairman of TC-6): *Architectures for multi-dimensional low- and intermediate-level image processing*

Dr. Jorge Sanz of IBM Almaden Research Center (Committee member of TC-8): *Recent progress in industrial machine vision*

Prof. Rangachar Kasturi of Pennsylvania State University (Chairman of TC-10): *Techniques for line drawing interpretation: An overview*

Contributed papers were classified into three poster sessions and the following nine oral sessions: machine vision, industrial applications, 3-D shapes, map and line drawings, image sequences, new frontier architectures, navigation and robot vision, and document images. All these technical sessions were held in a single, serial mode that made it possible for the participants to listen to all the presentations throughout the workshop. One feature of the workshop was the broadcast of all presentations on a closed-line TV system, which gave an opportunity for the participants to listen to the presentation while relaxing on a sofa and/or having a cup of coffee, through large monitors arranged throughout the workshop site.

Prof. Mikio Takagi of the University of Tokyo again served as Chairman of the organizing committee for this workshop, and Dr. Katsuhiko Sakaue of the Electrotechnical Laboratory served as the program committee chairman. Copies of the proceedings of both this workshop and the previous workshop are available at the prices of:

15,000 yen	for IAPR MVA'90
10,000 yen	for IAPR CV'88

by writing to Prof. Takagi at the following address:

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Reduced Subscriptions to *Pattern Recognition Letters* for IAPR Members

Volume 12 of *Pattern Recognition Letters* (1991) is being offered at a reduced subscription rate to the individual members of both IAPR and the societies within the IAPR. Please note that member subscriptions at the reduced rate

- are exclusively for personal use by individual members of the Society and should not be passed to any library;

- are accepted only on a calendar year basis (January–December);

- only apply to the Volume published in the current subscription period and do not apply to back-Volumes.

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direct mailing Personal subscriptions to PRL of *individual* members of the society are fulfilled at 45% of the yearly institutional subscription price (inclusive of postage and handling costs). Such personal member subscriptions should be ordered from North-Holland and pre-payment by *personal cheque* or *credit card* is required. Issues are mailed immediately upon publication, by the publisher directly to individual member subscribers (surface air lifted to those countries for which this mailing method is available).

bulk mailing Any IAPR member society may order for its personal members a bulk subscription to PRL at 25% of the yearly institutional subscription (inclusive of postage and handling costs). The Society collects all orders and sends the publisher a list of names and addresses of individual members who subscribe, together with payment for the total number of subscriptions. The ultimate deadline for receipt of a society's 1991 bulk order is 15th January 1991. The issues will be mailed in bulk to the Society's secretariat, who will forward them to their subscribers.

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P O Box 103
1000 AC Amsterdam
The Netherlands

TC5 Activities in 1989–1990

AFTER A LONG REST, the Technical Committee TC5 (Benchmarking and Software) is restarting its activities. Since I was only asked to serve as the Chairman of TC5 in the fall of 1989, I have to date been recruiting committee members. So far. Dr. H. Tamura of Canon Inc. Japan agreed to serve as the Vice Chairman, and Dr. D. Heeger of the MIT media lab., a member of Dr. D. Rutovitz's group at the MRC Scotland, and Prof. K. Abe of Shizuoka University have joined the committee. We want to have more members from Europe and the U.S.A. So anyone interested in the interests of this group are kindly requested to contact me by e-mail or fax. The major topics of interest are:

- Image Processing and Computer Vision Software on Workstations

- Software Models (Data Structures) for Spatial Data

In the 1980s, advances of computer hardware and software technologies produced so-called engineering workstations to realize new, flexible programming environments. These feature high-resolution (colour) bitmap displays with so-called multi-window systems, high-speed network interfaces with standardized protocols, and fast CPUs and large memories with many powerful programming tools. On the other hand, several new programming paradigms have been proven to be very useful in many application areas: functional languages like Lisp, logic programming languages like Prolog, and object-oriented languages like Smalltalk.

These new hardware and software developments enable us to develop a new generation of image processing and computer vision software systems. In fact, many research groups and some private companies are developing new image processing and computer vision software which make full use of such new programming environments.

Survey of Image Processing Software Systems on Workstations Considering the current situations mentioned above, we believe that it is very useful for all members of IAPR to be involved in a survey of newly developed image processing and computer vision software on workstations.

In Japan, we, a special interest group on "Expert Vision" of the Institute of Electronics, Information and Communication Engineering, have already surveyed several public domain and commercial image processing packages on workstations, and published a report on their characteristics in 1989. (Although the report is written in Japanese, it is free and will be sent on request. The request should be made to me.)

However, its scope was limited; we surveyed only those software systems which were easily accessible to us at that time. So, as a major activity of TC5, we plan to conduct

a world-wide survey and inform the result to all members of IAPR. Currently, we are listing items on which characteristics of various software systems are to be compared. Any information about image processing and computer vision software on workstations are welcome.

Discussion on Software Models for Spatial Data In image processing, the modelling of spatial data has been studied for a long period, and a variety of spatial data structures, like quad-tree, oct-tree, chain code, run length coding *etc.*, were proposed. A recent new trend is that the problem of modelling spatial and geometric data is attracting the interest of many researchers in various other application fields: computer-aided design, multi-media databases, visual programming and visualization software, human interface and communication, and so on.

Considering such recent developments, we plan to have intensive discussions on how to design an integrated software model for spatial data, with which programmers in a wide area of applications can write software for processing, manipulating, retrieving, and displaying various types of spatial data. Major points for the discussions will be:

- Utilisation of object-oriented programming paradigms for spatial data structures;

- Software models for multi-media information processing;

- Investigation of algebraic models for spatial data.

Standardization of Image Processing Software Recently, two proposals from the USA and West Germany concerning the standardization of image processing softwares were submitted to ISO SC24 (Computer Graphics). Although our current activities have nothing to do with this standardization effort, we will watch such other activities on image processing software and inform the IAPR membership.

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Stop Press: New Meetings Chairman

The Chairmanship of the Conferences and Meetings Committee has been accepted by Professor Stefano Levialdi. Amongst other things, he and his Committee will be responsible for considering requests for sponsorship of conferences and workshops; such requests should therefore be sent to him in the first instance.

The AI*IA–GIRPR Agreement

A N AGREEMENT OF SCIENTIFIC CO-OPERATION has been signed by Luigia Carlucci Aiello, President of the AI*IA (Associazione Italiana per l'Intelligenza Artificiale), which belongs to the European Committee on Artificial Intelligence, and Vito Di Gesú, President of the GIRPR (the Italian Chapter of the IAPR). The agreement will encourage a better exchange of information between the two Associations, the activation of mixed working groups and the organization of joint workshops on common fields of interests.

> *Vito Di Gesú*
> *Dipartimento di Matematica ed Applicazioni*
> *University of Palermo*
> *ITALY*

Some Preliminary Considerations for Improving the Interface Between IAPR and Related Industries

O UR PRESIDENT, PROFESSOR M. DUFF, has asked me to take an initiative concerning the possible improvement to the IAPR regarding its interface with industry. There is an impression among IAPR members that the International Conference on Pattern Recognition (ICPR), and thus the IAPR itself, may not be receiving as much attention as it could, especially from industry. Rough statistics from the final program of the 1990 ICPR in Atlantic City are shown in Table 1.

From these statistics, we can observe that:

- only one-sixth of total presentations come from industry;

- for European countries, there are very few presentations from industry.

If you look at more detailed statistics, you will observe that there are also some exceptions; these include Japan, where presentations from industry exceed those from universities, and France, where presentations from research organisations are dominant.

To improve the IAPR–industry interface, it may be necessary to increase the number of industrial people who are interested in IAPR-related fields. To this end, presentations from industries, especially those in European countries, must be strongly encouraged. A proper proportion of presentations from industries should at least one-fourth of the total.

To increase the proportion of presentations from industry, and thus improve the interface between academia and industry, the following actions are worthy of consideration:

1. Every industrial society, in addition to academic societies, in each country must be well informed about the IAPR and ICPRs. Posting information on up-coming IAPR activities and reporting a summary of topics in past IAPR activities in major magazines and society publications in each country will greatly help the people understand and be encouraged. This may depend fully on the effort of members of the governing board representing each country.

2. The ICPR call for papers must include the announcement that participation from industry is strongly encouraged. This would help increase such industrial participation considerably, provided that the present problem stems from the misunderstanding that the IAPR is only for academics.

3. Special sessions should be organized at the ICPR which stress the importance of applications. Topic areas posted in the call for papers must be carefully chosen so that industry people feel that the conference is also their own.

4. Overviews on present technology and future trends, on subjects which are of common interest in both academia and industry, should be planned for presentation in each ICPR at the plenary session. Both academic and industrial speakers should be invited.

5. Special recognition must be made, by giving an IAPR award, to those who have presented papers that indicate a significant contribution to industrial progress.

6. A special membership award, such as IAPR Fellow, must be considered in the future to recognize industrial people as important persons, on a par with academics.

7. The staging of industrial exhibitions in conjunction with the ICPR may be worth keeping in mind for the future ICPRs, though there are many difficulties in realizing this. We may at least be able to ask a national industrial body in the hosting country of the ICPR to have a show concurrently with us.

8. All TC chairmen must be informed that the IAPR is willing to foster a close connection with industries so that they can plan sessions, seminars, or workshops with increased industrial participation. The planning of seminars for industry by TCs would also contribute to mutual understanding between academia and industry.

Although the above eight points are preliminary, I hope they include some important items to be considered further. So far, I have distributed these ideas to a limited audience, and have obtained some support. However, I have also found that

Areas	Universities	Research Organizations	Industry	Total
N. America	144	8	25	177
Europe	41	29	7	77
Asia	26	7	20	53
Other	9	1	2	12
Total	220	45	54	319

Table 1: Rough Statistics for ICPR90

situations differ from country to country. In some countries, an annual workshop is held, where all local IAPR members are expected to attend. As there is no review process in the workshop, everybody has a chance to present their results. Nevertheless, they say there are very few presentations from industry. I was told that there may be three reasons for this, namely:

- Actually, very little research is done in industry.

- What is done is so secret that it cannot be presented.

- People working in industry do not think it worthwhile to devote their time and effort in presenting their work to people in academia.

These may be true for a fairly large number of countries but may not be valid for some other countries. However, industrialists are all concerned about new developments in the field. Therefore, the first step may well be to get industry interested enough to come and have a look at the IAPR conferences and workshops. This may imply that every committee member, regardless of whether he or she is on the executive committee, governing board, or TCs, will have a large responsibility for encouraging industrial involvement.

To avoid reaching careless and trivial conclusions and to find a better direction, I would like to invite comments and suggestions from the readers of this article. My e-mail address is ejiri@crl.hitachi.co.jp.

Masakazu Ejiri
2nd Vice President, IAPR
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Japan

A Proposal for the Activation of an European Co-ordinating Committee of the IAPR

AT THE PRESENT TIME in Europe there are seventeen local IAPR chapters (Austria, Belgium, Bulgaria, Denmark, Germany (formerly DDR), Germany (formerly FRG),

Finland, France, Hungary, Italy, Norway, Portugal, Spain, Sweden, Switzerland, United Kindom and USSR). In my opinion, two relevant remarks can be made:

- several European countries working in the pattern recognition field are not represented in the IAPR community (*e.g.*, Czechoslovakia, Greece, Holland, Poland, Romania, Yugoslavia);

- there exists a need for more co-ordination in the activities carried out by the chapters; for example we should try to improve the scheduling of the IAPR's national conferences and workshops in order to reduce conflicts and overlaps.

The activation of an IAPR-European Co-ordinating Committee (IAPR–ECC) could address local initiatives in order to avoid dissipation, to encourage co-operation between IAPR-local chapters (for example the organization of European working groups, the organization of a European Conference). Moreover, the IAPR-ECC could promote better contacts with other European organisations (*e.g.*, the European Co-ordinating Committee on Artificial Intelligence). The IAPR-ECC could include all those European Countries that at the present time are not well represented in the IAPR. Other benefits should, perhaps, derive from the IAPR–ECC (for example Esprit-projects on image analysis and computer vision could be encouraged and recommended by the IAPR–ECC).

I strongly invite all the members of the European chapters of the IAPR to express opinions about this proposal and to formulate suggestions and remarks to Michael Duff and me. An open meeting could be organized during the 6th ICIAP (4th – 6th September 1991 at Villa Olmo, Como, Italy), to discuss both the reasonableness of this proposal and the modality for carrying out it.

Vito Di Gesú
Dipartimento di Matematica ed Applicazioni
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The Fourth International Workshop on Data Analysis in Astronomy

Ettore Majorana Center for Scientific Culture, Erice, Italy
12 – 19 April, 1991

Main Topics Image analysis in astronomy, pictorial databases, systems for data analysis.

Contact

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International Workshop on Visual Form

Capri, Italy
27 – 30 May 1991

Main Topics shape perception, shape representation, shape decomposition, shape description, shape recognition, shape from shading, texture, stereo and motion.

Luigi Cordella (General Chairman)
Carlo Arcelli (Vice Chairman)
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The Third Conference of the International Federation of Classification Societies

Edinburgh, Scotland
6 – 9 August 1991

Classification is interpreted very broadly and includes related methods of data analysis, image processing, knowledge acquisition, and pattern classification. The conference will be preceded by a short course on classification, to take place on 5th August.

Deadlines

15th January   abstracts (1 side, 3 copies)
15th March   authors notified

Submission

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Other Communications and Enquiries

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The Sixth International Conference on Image Analysis and Processing

Villa Olmo, Italy
4 – 6 September 1991

The 6th International Conference on Image Analysis and Processing is organized by the Italian Chapter of the IAPR. The Conference will be held at Villa Olmo on the Como lake, hosted by the Alessandro Volta Scientific Centre.

Scientific Programme The program consists of invited lectures as well as of contributed papers. Contributions are expected on the following topics:

- Parallel Computer Architectures for Image Processing and Pattern Recognition

- Human Perception and Computer Vision

- Shape Analysis and Object Recognition

- Artificial Intelligence Techniques in Image Processing and Pattern Recognition

- Computer Vision Systems

- Image Processing Algorithms, Data Structures and Representations

- Motion Analysis and Time Varying Images

- Neural Networks for Image Analysis

- Languages for Image Abstraction, Processing and Retrieval

- ASIC in Vision Modules.

The following invited lectures will be delivered:

Per-Erik Danielsson of Linköping University, Sweden: *Smart algorithms for bit-serial processor arrays*

Herbert Freeman of CAIP, Rutgers University, NJ, USA: *Machine vision approaches to automatic inspection*

Josef Kittler of the University of Surrey, United Kingdom: *Robust methods of 2D–3D image description*

Earl E. Swartzlander of TWR Defence Systems Group, USA: *Wafer-scale approaches to image processing*

Bertrand Zavidovique of Paris XI University, France: *Software supports for computer vision*

Submission Researchers involved in the aforementioned or closely related fields are solicited to submit an extended abstract (4 pages in A4 format) of their work, in which the original contributions are highlighted.

Four copies of the abstract, which may include figures, should be mailed before March 1, 1991 to:

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Please, note that submission of a paper implies a commitment to present the paper, if accepted.

Important Dates

1st March 1991	Extended Abstract
15th May 1991	Acceptance Notification
15th July 1991	Early Fee Payment
1st July 1991	Hotel Reservation
at the Conference	Camera-ready Paper

Conference Chairmen

Virginio Cantoni	General Chairman
Marco Ferretti	Vice Chairman
Renato Stefanelli	Program Chairman
Stefano Levialdi	Scientific Chairman
Roberto Negrini	Local Chairman

Social Events The social program includes a Welcome Cocktail on Wednesday 4 September and a Gala Dinner on Thursday 5th September. A half-day excursion on the lake and to the surrounding area, rich in history and art, will also be offered on Thursday 5th September.

Registration The registration fee is 400.000 Italian Lire (nearly 320 US dollars) before July 15, 450.000 Italian Lire (nearly 360 US dollars) afterwards. The fee includes admission to the conference sessions, the proceedings book, the particepant's wallet, coffee breaks, three lunches and the full social program. A reduced registration fee (250.000 Italian Lire, nearly 200 US dollars) is provided for accompanying persons. All payments must be made in Italian Lire. The fee is payable by:

- International Postal Money Order or Eurocheque addressed to Centro di Cultura Scientifica A. Volta.

- Banker's Draft drawn on Banco Lariano - Piazza Cavour 15, 22100 COMO, Italy- C/C 479619.3 (please, consider high bank charges). Please, specify your name and the name of the Conference, when paying in any of the above quoted ways.

Accommodation Hotel rooms will be booked by the Conference Secretariat. Prices range from 40.000 (65.000) to 100.000 (150.000) Italian Lire per night and person for b/b accommodation in double room (single room). An early hotel reservation is required to guarantee the desired accommodation. Hotel reservation forms and practical travel informations will be forwarded together with the registration form to any interested people.

Secretariat

6th Int. Conf. on Image Analysis and Processing
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The Second International Workshop on Frontiers in Handwriting Recognition

Bonas, France
23 – 27 September 1991

Programme The second IWFHR follows an earlier workshop, arranged by Prof. Y. C. Suen at Montréal in April 1990, and precedes the First International Conference on Document Analysis and Understanding, which will be held at Saint Malo, France, during 30th Sept – 2nd Oct 1991s. Topics include:

on-line and off-line handwriting recognition methods

- lower levels: acquisition, pre-processing, segmentation, features, regular versus singular features, symbolic descriptions, neural methods
- higher levels: decision techniques, automatic learning, self-correction

applications case studies and innovative applications, hardware, databases

Deadlines

15th Feb   proposed text of 5–10 A4 pages is received
15th May   acceptance and instructions for a final version are sent to the authors
30th Jun   camera-ready manuscripts are received

Submission

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The First International Conference on Document Analysis and Recognition

Saint-Malo, France
30 September – 2 October 1991

The domain of automatic analysis, recognition, modelling, and understanding of documents has gained considerably in the last few years. Automatic intelligent processing of documents is at the intersection of many fields of research, especially of computer science, image analysis, pattern recognition, artificial intelligence, studies on language, reading, and handwriting. This first International Conference intends to provide an international forum for the development and the dissemination of new ideas, basic research, and issues concerning practical applications of both off-line and on-line processing in the domains of automatic analysis and recognition of documents.

The conference will include prominent guest speakers, presentations of refereed papers, and poster presentations, as well as exhibits of experimental systems and commercial products. It is the first of a series which will be held every two years in conjunction with the *International Workshop on Frontiers in Handwriting Recognition.*

Timetable

15th February 1991   full paper submittal
15th May 1991   notification of acceptance
30th June 1991   full paper camera ready

Contact

Prof. Guy Lorette (Conference Chairman)
Universite de Rennes
Rennes
FRANCE

The Eleventh International Conference on Pattern Recognition

The Hague, The Netherlands
30 August – 4 September 1992

The 11th International Conference on Pattern Recognition of the International Association for Pattern Recognition (IAPR) will be organised as a set of four speciality conferences:

- computer and machine vision

- pattern recognition methodology and systems

- image, speech, and signal analysis

- architectures for vision and pattern recognition

Each conference will consist of both oral and poster presentations covering theory, methodology, algorithms, hardware and software implementations, special architectures, empirical studies, and applications. Contributions in the fields of *e.g.*, astronomy, remote sensing, medicine, biology, robotics, and industrial applications are especially welcome. Proposed contributions will be reviewed on the basis of full papers only. The proceedings containing full papers of all contributions will be distributed world-wide by one of the major scientific publishers. The conference venue at the Dutch capital of The Hague is conveniently located with respect to the international airports of Rotterdam and Amsterdam, and has excellent rail connections with all major cities.

Timetable

March 1991	call for papers
October 1991	full paper submittal
March 1992	notification of acceptance
April 1992	full paper camera ready

Contact

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