



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

WELCOME TO THE FIRST edition of the *Newsletter* to be printed and distributed from Czechoslovakia. As was described in an earlier issue, the move has been made in order to allow the *Newsletter* to be distributed directly to individuals, rather than via member bodies. We anticipate that many member bodies will take advantage of this facility in the coming months. This means that we should be able to get information from my workstation to your desk much more quickly than ever before!

The IAPR President changes at each ICPR; in this issue, we have a farewell message from Prof. Michael Duff and an address from the incoming President, Prof. Jake Aggarwal. There is also an article on Prof. Laveen Kanal, the winner of the IAPR's 1992 Fu Award — and an announcement for nominations for the 1994 award.

The Editor

Articles for inclusion in the *Newsletter* are always welcomed, and may 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.

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Presidents Come and Presidents Go

IT CAN COME AS A BIT of shock for a new IAPR President to read the Constitution and Bylaws and discover just what is expected of him or her. In some ways, the whole organisation seems disturbingly undemocratic. Following the election of officers at the Governing Board meeting (held traditionally at each ICPR), the President is required to select and appoint the Chairmen and members of all the Standing Committees except the Nominating Committee (the committee that is responsible for collecting nominations for IAPR's officers next time round). Even in this latter case, the President is expected to make all the nominations for subsequent election by the Governing Board. After this, the President may appoint a Chairman and Secretary for each of the twelve Technical Committees and may also set up so-called *ad hoc* committees (once again appointing all the members) to tackle any subject of interest to IAPR.

At the end of the day, of course, every President is answerable to the Governing Board and thus to all the members of IAPR. Since the Board only meets once every two years, the usual term of office of the President, it is natural to think about what might be achieved in such a period. In practice, nothing can be achieved without wholehearted support from all those people appointed into key positions in IAPR but, on the other hand, much will often be achieved without the President even being aware of it.

In the October 1990 edition of the *Newsletter*, I suggested some areas in which I felt it would be useful for IAPR to become more involved and some of the appointments I made reflected these intentions. It seemed particularly important to me that IAPR should move further away from its image of being merely the sponsor of the biennial ICPRs. The more active Technical Committees had already done a lot to dispel this illusion but there was clearly still much that could and should be done. One of the two new *ad hoc* committees, the Industrial Liaison Committee, has worked with its energetic Chairman, Dr. Masakazu Ejiri, to produce a series of proposals for improving the interaction between Industry and IAPR. In association with the Awards Committee (chaired by Professor Saburo Tsuji), an award for the best industry-related paper at the ICPR has been set up and was presented for the first time at The Hague. Furthermore, an IAPR Fellowship scheme has been devised and is now being considered in full detail with a view to making the first awards at the earliest possible date. These awards will recognise service to Pattern Recognition in Industry or Academia and to IAPR itself.

The second *ad hoc* committee to be formed was Dr. Gabriella Sanniti di Baja's Education Committee (which, along with the Industrial Liaison Committee, will be continued under my successor's approval). This committee has many ideas which it will endeavour to put into effect, including the construction of databases containing information on teaching material, lists of tutorial lecturers, useful books,

and so on. It will also initiate the production of teaching videos and other worthwhile aids to the better understanding of Pattern Recognition and its applications.

The twelve Technical Committees have continued (in most cases) to flourish and I hope reports on their various activities will appear in this publication on perhaps a rather more regular basis than before.

One disappointing aspect of IAPR has always been the fact that many individuals who belong to IAPR through their membership of a national organisation do not in fact realise this. Some have even been heard to say that they have never heard of IAPR! This phenomenon is particularly to be observed in countries where there is not a clearly-identified association devoted to Pattern Recognition representing that country as the IAPR national member. In these cases, the IAPR 'member' is defined as a subset of an organisation with its 'scope of activity broader than the field of interest of IAPR'. The Publications and Publicity Committee and the Editor of the *Newsletter* have been working to organise individual mailing of the *Newsletter* wherever this is practicable and I am sure you will read more about this in these pages in the near future. The same committee has published a revised and less 'volatile' version of the IAPR flyer, this activity stimulating the decision to employ a professional Secretariat which will give IAPR a permanent address in the future; 'permanent' should be taken to imply a degree of stability which is more long-lasting than the limited tenure of office of IAPR's Secretaries. Concerning the *Newsletter*, I would comment that this is the only publication from IAPR that should reach every individual member and it is therefore of great importance to IAPR. It is fortunate that Dr. Adrian Clark has agreed to continue his excellent work on our behalf.

I was most pleased to experience the friendly co-operation of the organisers of the recent ICPR in relation to giving IAPR more prominence. With the help of our new Secretariat, the willing participation of all our various committee Chairmen and the helpful attitude of Professors Gelsema and Backer and their co-workers, IAPR was able to display large quantities of interesting material on a prominently-placed stand in the conference lobby. This stand attracted much attention and acted as a focus for IAPR members over the course of the four conference days. I do hope this enterprise will help our members to feel that IAPR does mean something worthwhile to them and will go some way to making the organisation seem more user-friendly.

Those of you who were fortunate enough to attend the 11th ICPR will not need me to tell you that it was a great success and a credit to all those who put so much effort into its organisation. The only black spot was the weighty proceedings. I fear that many of the more old and feeble participants will now be walking around with permanently damaged shoulders and cricked necks! However, every cloud has a silver lining and the organisers of the 12th ICPR are

already considering offering the next proceedings on CD-ROM.

It is always dangerous to single out particular individuals to thank them but I must just record my gratitude to Dr. Gunilla Borgefors. Gunilla worked unceasingly, despite suffering considerable pain from a recent road accident, and combined her efficient work as Secretary with a particularly productive period as Chairman of the Membership Committee, as a consequence of which we now have five new members (South Korea, Poland, Slovenia, Hong Kong and Czechoslovakia). My job as President was made much lighter and more enjoyable as a result of Gunilla's advice and support and I am very grateful to her.

My thanks to you all for your co-operation in the past eight years. I have enjoyed working for IAPR and I look forward to a continuing association with you and your various activities in the years to come.

Michael Duff



Prof. J. Aggarwal, IAPR President

Incoming President's Message

I BEGIN MY TENURE as President of IAPR in the footsteps of Michael Duff and Martin Levine, under whom I served as Treasurer of the Association. The job of Treasurer has now passed to Steve Tanimoto. I would like to take this opportunity to thank Michael and Martin for the excellent leadership that they provided over the past years. The programs they initiated are beginning to bear fruit, and the entire membership has benefited from their efforts. Also, I would like to thank Martin Levine for nominating me, and the Governing Board for electing me to this position. I will do my best to meet the challenge of the Presidency. I can state with great pride and confidence that our organization is fiscally sound and, from talking with many of you who attended ICPR at The Hague, I believe there is a renewed sense of optimism and energy among our membership.

I would also like to thank the outgoing Executive Committee members and welcome our new ExCom members. Stefano Levialdi and Masakazu Ejiri, our former 1st and 2nd Vice-Presidents, have been replaced by Saburo Tsuji and Josef Kittler respectively. Gunilla Borgefors stays on as Secretary, and Michael Duff replaces Martin Levine in the capacity of past President. Finally, Steve Tanimoto joins the ExCom as our incoming Treasurer. I am delighted with this mixture of new blood and past experience and I look forward to a busy and productive term of office.

Since our meeting at The Hague, one of the first orders of business has been the appointment of new committee chairs. Secretary Gunilla Borgefors will continue to chair the Membership Committee. This dual role, of coordinating membership applications and of orienting incoming members, has worked well for us in the past.

Second Vice-President Josef Kittler has assumed responsibility for coordinating Technical Committee affairs, following in the steps of Mikio Takagi, who so ably looked after this important task for several years. A number of new TC chairs have been appointed, including Erkki Oja, who will chair TC3 (Neural Nets); Linda Shapiro and Worthy Martin, who will co-chair TC4 (Image Understanding and Computer Vision); and Karl Tombre, who will head TC10 (Map and Line Drawing Processing).

Martin Levine will lead the Awards Committee, which assists our Governing Board in choosing the recipients of the K. S. Fu Award and the Industrially-Related Paper Award. Other members of the Awards Committee are Tom Huang, Laveen Kanal (a past K. S. Fu Award recipient), Matti Pietikainen, and Yoshiaki Shirai.

Herb Freeman and Shmuel Peleg will co-chair the Constitution and Bylaws Committee. This committee is currently addressing the issue of whether to continue the individual membership category. I encourage everyone to inform Profs. Freeman and Peleg of your views on this important decision.

The Conference and Meetings Committee will be led by Walter Kropatsch, with Anthony Maeder as Vice-chairman. Since Prof. Kropatsch will chair ICPR 1996 in Austria, I thought it especially appropriate for him to serve in this capacity.

Finally, following our tradition, past President Michael Duff will chair the Nominating Committee. The membership of this committee will be determined in due course. Adrian Clark will continue at the helm of the *Newsletter*, and the Education Committee will continue to be chaired by Gabriella

Sanniti di Baja. The chairmanships of the Industrial Liaison Committee and, possibly, a Fellow Committee, will be determined in the near future.

Again, I would like to convey my deep appreciation to all our outgoing officers and committee members for their hard work on behalf of the Association. Further, I have been delighted at the response of our members to my requests to serve on the various committees. It is very heartening to see so many of you ready and eager to work on behalf of the Association. I invite you all to join in these committee activities – please let me know how you would like to participate.

Looking ahead, the 12th International Conference on Pattern Recognition will be held in Jerusalem in October 1994. It is being organized by Shimon Ullman and Shmuel Peleg, the General Conference Chairs. Four conference programs, with individual program committees, will be presented, in Computer Vision and Image Processing (Tom Huang), Pattern Recognition and Neural Networks (Naftali Tishby), Signal Processing (David Malah) and Parallel Computing (Steve Tanimoto). I hope you will all join us in Jerusalem to participate in ICPR 1994.

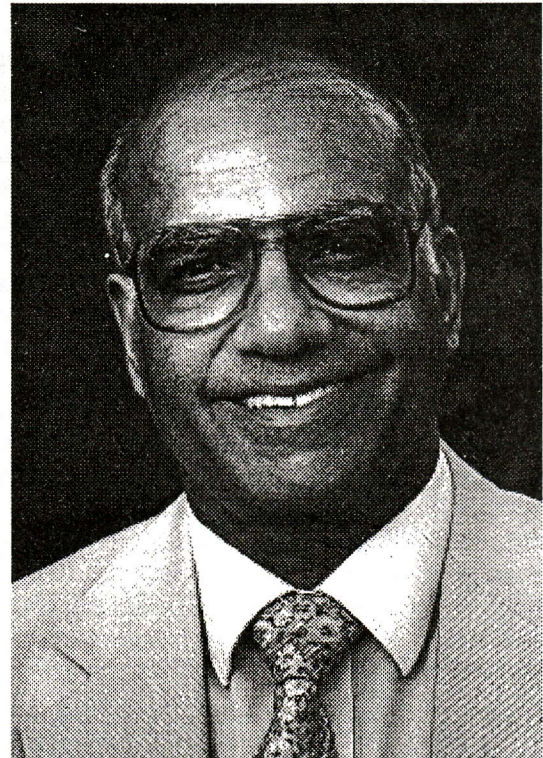
J. K. Aggarwal
IAPR President

The K. S. Fu Award 1992

THE K. S. FU AWARD was presented to Professor Laveen N. Kanal, University of Maryland, at the 11th ICPR in the Hague.

Professor Kanal received the B.S.E.E. and M.S.E.E. degrees from the University of Washington, Seattle, in 1951 and 1953 respectively, and the Ph.D degree from University of Pennsylvania, Philadelphia, in 1960. His Ph.D dissertation in electrical engineering on Stochastic Models for Learning was supervised by the mathematical psychologists Robert R. Bush and R. Duncan Luce.

From 1953 to 1955 he was a Communications Engineer with Canadian General Electric Company, and from 1955 to 1960 he was on the research and teaching staff of the Moore School of Electrical Engineering. From 1959 to 1960 he was also associated with the Department of Psychology, University of Pennsylvania. In 1960, he joined General Dynamics/Electronics, Rochester, NY, as Manager of the Machine Intelligence Laboratory. He left in 1962 to become Research Manager for Information Sciences at the Philco Research Laboratory, Blue Bell, PA. For the next seven years he held a variety of managerial positions in Philco-Ford's research and advanced engineering activities. During 1963–1970 he was also a Visiting Professor of Operations Research, Regional Science and Statistics at the Wharton Graduate School of Business of the University of Pennsylvania and an Adjunct Professor of Electrical Engineering at Lehigh University, Bethlehem, PA. Since 1969 he has been a managing



Prof. L. Kanal, Fu Award winner 1992

director of L.N.K. Corporation, a firm doing management consulting, research, development and engineering services in applied artificial intelligence and operations research, on problems in digital terrain elevation modeling and simulation, data visualization, intelligent data management, integrated logistics systems, image processing, pattern recognition, expert and hybrid neural network/expert systems, planning, and technology assessment. In 1970, he was appointed Professor of Computer Science at the University of Maryland and directs research in machine intelligence, pattern recognition and artificial neural systems.

Professor Kanal is one of the leading scientists in bridging fundamental ideas of pattern recognition and machine intelligence. It is remarkable that the links between statistical pattern recognition and Perceptron-type neural networks, which he wrote about in papers in the early sixties, are, after almost thirty years, still of dominant interest to the present research in that field.

In a 1965 paper, Dr. Kanal and co-authors introduced the first use of space-filling curves in the engineering literature and also introduced the Markov mesh models. These models anticipated subsequent work in Markov random field models and have been extensively used by several researchers, including Geman & Geman, Derin, *et al.*, and Devijver. In 1971, he raised fundamental questions on dimensionality and

sample size problems in pattern recognition and provided some key insights.

In 1968, he proposed the use of hybrid linguistic-statistical models for pattern recognition and an article of his on this topic published in 1972, was selected as the lead paper in the IEEE Computer Society Press Collection titled, *Context-Directed Pattern Recognition and Machine Intelligence Techniques*, edited by Pao and Ernst.

Dr. Kanal promoted the design and development of interactive pattern analysis and classification systems. In collaboration with Dr. Kanal, Professor Edzard Gelsema developed the system ISPAHAN/IPACS which has been used in several research laboratories in the U.S., Japan and Europe.

Dr. Kanal's 1974 survey paper *Patterns in Pattern Recognition: 1968-1974* was one of the most widely cited papers in the field for over a decade. It still serves as an important guide to new researchers in pattern recognition.

Professor Kanal has also contributed significantly to the development of pattern recognition as a discipline as evidenced by the following activities.

- Chairman, Working Group on Pattern Recognition and Learning System, IEEE SMC, 1966-1972
- Vice-Chairman, Pattern Recognition Committee, IEEE Group on Electronics Computers, 1965-1968
- Associate Editor, IEEE Transactions on Information Theory, 1968-1972
- Member, Board of Governors, IEEE Information Theory Group, 1973-1979
- Chairman, NSF Workshop on Near Future Prospects for Image Pattern Recognition, November, 1974
- Member, National Academy of Science's Army Robotics and Artificial Intelligence Committee, 1982-1984
- Co-Chairman, International Conference on Pattern Recognition in Practice Amsterdam, Netherlands 1980, 1985 and Pattern Recognition and Artificial Intelligence, Netherlands, 1988
- Editor of 15 books on pattern recognition and artificial intelligence.
- Associate Editor, Pattern Recognition Letters

He is the recipient of many honours, including election to the status of Fellow of AAAS and IEEE in 1972 and Fellow of the AAAI in 1992.

Saburo Tsuji
Osaka University
Japan

6th Int. Conf. on Image Analysis and Processing

THE RECENT PUBLICATION of the proceedings of the 6th International Conference on Image Analysis and Processing gives me the opportunity to report on that conference that took place about a year ago in Como, Italy. It was the 6th in a well-established series of conferences organised every two years by the Italian chapter of IAPR in beautiful locations in various parts of Italy.

The volume of the proceedings is a nicely presented hard-back edited by Cantoni, Ferretti, Levialdi, Negrini and Stefanelli (World Scientific, ISBN 981-02-0800-6). It contains 100 papers presented at the conference out of the 170 submitted. It is a pleasant surprise to find all the invited presentations included in the proceedings. The book is divided into five sections, each one preceded by the corresponding invited talk. The first section is on 2D and 3D Image Analysis with an invited talk by Kittler, who reviewed various robust approaches to 2D and 3D image description with extensive reference to robust kernel design for feature identification.

Gagalowicz introduced the section on Active Vision by presenting work that exploits the duality between Computer Graphics and Computer Vision. The proposed approach is concerned with the 3D interpretation of stereo pair images. The stereo pair is analysed both geometrically and photometrically. The deduced scene parameters are fed into a computer graphics synthesizing module which produces a model of the scene and a stereo pair as it would be expected to be seen by the two cameras. The synthesized images are compared with the true ones and the scene parameters are refined in a feedback loop until captured and synthesised images coincide.

The section on Methods and Software Platforms was introduced by Zavidovique who spoke on the problem of the haphazard accumulation of image processing algorithms over the years. Even under the best of intentions most of the algorithms are given as recipes for cooking without making allowances for the creative touch of the user. Zavidovique and his colleagues advocate the alternative approach to algorithmic development, according to which an algorithm is like a chemical compound made up from molecules with appropriate bonds between them. Thus the algorithms are analysed, decomposed, generalised and transformed to equivalent classes in an attempt to provide ways by which the expertise of the creator of the algorithm can be captured, understood, shared and made to evolve. Danielsson opened the session on Special Algorithms and Architectures. He gave a clear review of the various types of parallel architectures and summarised the arguments pro and against bit-serial arrays concluding that they do not seem to have much future in view of the floating point architectures. Their future, however, lies in the area of HDTV which will soon be a reality. He then proceeded to present VIP, a bit-serial SIMD chip built at the university

of Linköping which is an attempt to test the possibility for a general purpose, low-level, video-oriented architecture.

The session on Image Processing and Architectures was introduced by a review on some general issues of automatic inspection by Freeman. Part of his talk was on the description of LESTRADE (Learning Environment for Searching, TRacking and DEcision) developed by the CAIP center at Rutgers University. The system can be trained by the human expert in many ways: it can learn where the expert shifts his gaze and why in order to perform his task and what features he uses after the region of interest has been selected. Another interesting part of the talk was on the number of characteristic views a simple object can have and how they can be used in a hierarchical way to identify it.

Scientific matters aside, the conference was a great success. The Italians surely know how to do things in style! The conference took place in a beautifully-restored villa located at the bank of Lake Como. The opening reception was in yet another villa and the banquet was at a restaurant by the lake, where we were taken by a steam boat! It was a beautiful scenery and we were surrounded by beautiful things! The next conference in the series is in Bari, in September 1993 and I highly recommend it! I certainly do not plan to miss it — if they are going to have me, that is!

Maria Petrou
University of Surrey
UK

First Swiss Symposium on PR and CV

THE FIRST SYMPOSIUM of the Swiss Association for Pattern Recognition (SAPR) was held in Lausanne on January 30–31 1992. SAPR is a member organization of IAPR. The contributors, 12 in total, presented their papers in the standard form of speeches. Moreover, they provided full papers to print the proceedings despite having very short notice of the symposium. All contributors but two were Swiss. An invited lecture was given by Prof. J. Kittler, University of Surrey, UK.

There were 35 registered participants at the symposium. An event which was specially appreciated by the participants was that the Executive Committee of the IAPR had one of its regular meetings at the same time and place as the Symposium. There are still a few copies of the proceedings (over 100 pages) which gives an impression of the different Swiss activities, which fall into the domain of interest of IAPR, available. Interested persons can receive a copy for a fee of CHF 25, by contacting the undersignee.

Josef Bigün
Swiss Federal Institute of Technology
Switzerland

International Workshop on Visual Form

A FAT, HANDSOME red volume, that has just appeared under the Plenum imprimatur, brings back fond memories of a workshop held in Capri in May 1991. It is a good bet that *Visual Form-Analysis and Recognition*, edited by the organizers of the Workshop, Carlo Arcelli, Luigi Cordella, and Gabriella Sanniti di Baja, will constitute the prime reference to this engrossing and multifaceted subject for years to come.

The invited speakers — Jan-Olah Eklundh, Larry Davis, Robert Haralick, Tom Huang, Martin Levine, Michael Leyton, Theo Pavlidis, Azriel Rosenfeld, Hanan Samet, Linda Shapiro, Jun-ichiro Toriwaki, and Leonard Uhr — set the tone of the volume as they did of the discussions at the meeting. The forty or so contributed papers show the traces of adept refereeing by a hard-working Scientific Committee. A bound pamphlet of abstracts was distributed at the meeting, but the book contains the illustrations that are indispensable for arguments relating to form and shape.

The workshop was organized by the Department of Computer Science and Systems of the University of Naples and the Institute of Cybernetics of the National Research Council of Italy, with support from leading European research laboratories.

The airy and comfortable Capri Congress Center (a converted cinema) comfortably held the 90 or so participants. Posters were displayed in the lobby, and refreshments were served on a terrace overlooking an enchanting view of the Marina Grande. The sessions were run according to schedule, leaving ample time for discussions at a series of thoughtfully organized social events and even for an excursion or two to the far corners of the Isle.

The workshop and this volume focus welcome attention to an essential and inexhaustible theme that underlies much current research in pattern recognition, image processing, and computer vision.

George Nagy
Rensselaer Polytechnic Institute
USA

Workshop on Structural and Syntactic Pattern Recognition

A WORKSHOP ON *Structural and Syntactic Pattern Recognition* (SSPR) was held in Bern, Switzerland, during 26–28 August 1992. This was the fourth in a series of bi-annual workshops on the same topic. Previous workshops were held in Barcelona, Spain (1986), Nancy, France (1988), and Murray Hill, NJ (1990). The workshop was under the auspices of the International Association for Pattern

Recognition (IAPR) as part of the activities of the Technical Committee 2. The meeting was financially supported by IAPR, the Swiss National Science Foundation, and the Max and Elsa Beer-Brawand Foundation, Bern.

Structural and syntactic pattern recognition methods emphasize pattern structure — for example, relations of spatial, temporal, or conceptual nature that may exist between different parts of pattern. Furthermore, the hierarchical composition of complex structures from simpler substructures plays an important part in SSPR. There are many pattern recognition problems where structural and syntactic methods are a useful tool. The aim of the workshop was to get an overview of the current situation and to disseminate new results in SSPR. A total of 65 paper submissions were received of which 41 were selected by the program committee for inclusion in the program. Additionally, there were 10 invited talks. Over 80 people from 15 different countries attended the workshop. The major session topics were *Computer Vision; Document Analysis; Image Processing and Segmentation; 1-D Signals and Speech; String Matching; Methodology; Learning and Inference*. Most of the presentations were from the areas of Computer Vision and Document Analysis. The proceedings of the workshop will be published by World Scientific and are scheduled for January 1993.

Following is a more detailed discussion of some of the talks. It is not intended to be an exhaustive overview; rather it is a personal recollection of some of the presentations. Representing patterns by strings is a natural way for one-dimensional signals, for example speech. However, contours of 2-D shapes can also be represented this way, as they are a linear description of multi-dimensional patterns. Using one-dimensional strings for pattern recognition, string matching techniques can be applied to compare unknown patterns with given models. A survey entitled *Recent advances in string matching* was given by H. Bunke, the Chairman of the workshop. He discussed some recent work in string matching and proposed a solution for one of the unsolved problems concerning the inference of the costs of the elementary edit operations. An application of string matching to 2-D shape recognition was presented in another paper by N. Ranganathan.

A number of papers were on graph matching. The matching technique presented by J. Kittler is based on probabilistic relaxation. The data in this approach are represented by an attributed relational graph.

Another class of problems considered in this meeting was formal grammars and their representation. A. Sanfeliu presented in *Understanding neural nets for grammatical inference and recognition*, a model of using neural networks to represent regular grammars. A number of other papers were concerned with the automatic inference of grammars.

Several other papers focused on the recognition of 3-D objects. The approach common to all these papers is to model objects by features and relations which enable the recognition.

In their paper *Automatic object modelization in computer vision*, R. Mohr and P. Gros presented a method to infer the models of 3-D objects directly from 2-D characteristic features detected in 2-D images. Their idea is to select from the 2-D image the 2-D invariant features related to the same aspect of an object. The described method is able to cope with errors. Another paper by Tsuji was entitled *Selection of landmarks based upon 3-D and iconic properties*. He wants to get a model of the environment to guide the navigation of a robot over a long distance. This representation allows the robot to establish a matching between its model and the sensed environment.

Other presentations were about industrial applications. An example is the paper by L. F. Pau *et al.* entitled *Shape classification in computer vision by the syntactic, morphological and neural processing technique*. This paper describes an approach based on the use of robust techniques like mathematical morphology and classification. It results in a fast, inexpensive and reliable automatic fish recognition system.

Document analysis was the central theme of the 1990 SSPR workshop. This year a number of papers were also devoted to this domain. In *Background structure in document imaging*, H. Baird showed how the relevant blocks can be extracted from the image of a printed document. His method is based on computational geometry algorithms. It is completely insensitive to page orientation and reading direction.

Finally, let me add that I found this workshop very interesting. People appreciated to have the opportunity to meet each other and exchange their ideas about their works in a pleasant atmosphere at a nice place. The next SSPR workshop is planned to be in Israel in 1994.

Houda Chabbi
CRIN — CNRS/INRIA Lorraine
FRANCE

BMVC92 — An Ex-Pat's View

THE THIRD British Machine Vision Conference was held at the University of Leeds in the UK on Sept 24–26 1992. As has become the norm, the conference was made up of single track sessions with two poster sessions. As a UK academic who has worked in Perth, Australia for the past two years, I was eager to meet old friends and get more information about the UK machine vision scene.

This being the season for conferences I was at ICIP and ICARCV in Singapore during the two weeks before BMVC. I was hoping that BMVC would recharge my batteries after two weeks of hectic parallel session, hotel-based conferences. I was not disappointed. The content and presentation of all the papers were to a high standard and the conference represented excellent value for money.

There were two invited speakers at the conference. The first was Prof. Robert Haralick from the University of Washington, USA who spoke on what is becoming an important issue in computer vision, namely how to characterise the performance of algorithms and systems. Emphasis was placed on error criteria and the need to be able to predict, with some certainty, the performance of an algorithm on different images. The second invited speaker was Prof. Giulio Sandini from the University of Genoa who discussed the work of his laboratory and its relationship with psychophysical evidence. Most of the research concerned motion analysis for obstacle avoidance and tracking.

The main body of the conference consisted of twelve sessions, containing around five presentations each, which covered the majority of the current interest in machine and computer vision. Current hot topics like face recognition and active vision were well represented, along with more traditional areas like segmentation and shape. Because of the single track format for the sessions, they were well attended and many papers generated healthy discussion. The two poster sessions consisted of ten papers each, many of which had one of the authors present to answer questions.

One property that has characterised past BMVC/Alvey conferences has been the presentation of many papers from single groups. This year Oxford, Reading and Manchester were well represented. Most of the other research groups in the UK were represented by one or two papers.

There were three prizes presented at the conference dinner which were chosen by members of the BMVA committee. The best academic paper was *Training models of shape from sets of examples* by Cootes, Taylor, Cooper and Graham from the University of Manchester. The best industrial paper was *Automatic face location to enhance videophone picture quality* by Trew, Gallery, Thanassas and Badique from Philips. The final prize was for best poster presentation which was split between two posters. The two posters were *Segmentation of music primitives* by Ng and Boyle of the University of Leeds, and *Using colour templates for target identification and tracking* by Brock-Gunn and Ellis of the City University.

The conference dinner was an interesting occasion. First it was a Tudor banquet so most dressed up in period costume (by just throwing on a coat over the regulation jeans and shirt). Second it was an unregulated eating session with no formal courses. Third there was dancing and juggling. The jugglers were slightly upstaged by Glen Robinson of Guy's Hospital who proceeded to juggle bread rolls. Much merriment was had by all — no doubt fuelled by the free beer and wine.

Overall then, an excellent conference demonstrating that UK research into machine vision is of the highest level.

Geoff West
Curtin University of Technology,
Perth, West Australia

IAPR Governing Board Meeting

THE IAPR Governing Board held its bi-annual meeting at the 11th ICPR. A large number of subjects were discussed and the meeting lasted from 6 p.m. to 2 a.m., with a short pause for refreshments. Below follows a shortened version of the minutes, to give you all an idea of what went on. Members from Australia, Austria, Belgium, Bulgaria, Canada, P.R. China, Czechoslovakia, Denmark, Finland, France, Germany, Hungary, Israel, Italy, Japan, Korea, Netherlands, Norway, Slovenia, Spain, Sweden, Switzerland, U.K., and U.S.A. were present, while Hong Kong, India, Poland, and Portugal were not represented.

The Chairman of the Membership committee reported that IAPR has been joined by Korea in 1991 and Poland in 1992, and that Czechoslovakia, Hong Kong, and Slovenia had applied for membership. She stated that the Membership committee recommended that their applications should be approved. A separate vote was taken for each country. All three applications were approved. The President congratulated the newly-elected members, and the representatives of Slovenia and Czechoslovakia were invited to participate in the rest of the meeting.

Prof. Peleg raised the question of the future organization of the IAPR, in view of the growing number of members and the growing number of Governing Board members. He suggested that some changes may become necessary.

The Executive committee proposed that members in financial or other difficulties should be allowed to become "sleeping members", without voting rights, but still recipients of some information. Their dues would not accumulate, and full membership status would be regained as soon as they start paying their dues again. The Treasurer pointed out that the main idea was to stop accumulating incollectable dues, without actually having to exclude members. A rather long discussion, where the names of affected members were withheld, terminated in the following decisions.

1. All members that have not at this time (1st September 1992) paid their dues for 1990 and 1991 will be excluded.
2. A corresponding contact should be maintained, if possible, with the excluded members.

The effect of these motions is that the former USSR Societies is excluded, as well as two individual members. (It may be mentioned here that the former East German society had already withdrawn from the IAPR.)

The Treasurer had distributed a written report. The Treasurer said that he insists on having a bill before paying out money, and that this together with communication problems have sometimes delayed the *Newsletter*. He also wanted the GB to approve two expenditures that were not in the budget, *i.e.*, the cost of the "Best Industrial Related Paper" award and

the costs for the IAPR Secretariat, that is now handled by "Membership Services". Every other expenditure is within the budget approved in Atlantic City. The two significant expenses are the *Newsletter* and the TCs.

The Membership Services contract was discussed. It was explained by the Executive Committee that the main purpose of the Secretariat was to give the IAPR a permanent point of contact. In the end the following motion was carried: The GB expresses that it is pleased with the Executive Committee's initiative to create "permanent" a point of contact for IAPR and that such arrangements should be left to the Executive Committee in the future.

The Treasurer then presented the budget for 1993. It was suggested that TC workshops getting IAPR loans should not only give the loan back, but also pay a percentage of the profit to IAPR. In that way not only the losses would be shared, but also the profits. The budget for 1993 was approved, with a sum of \$7000 for TC expenditures and \$13,000 for TC loans for the Treasurer to disperse without further GB approval. A budget for 1994 should be prepared and distributed for GB approval in about a year.

The Executive Committee proposed that the dues should be defined as a certain cost, e.g. \$1.50, per member society member in the future. It was pointed out that in rapidly growing societies this can create problems. The Korean and USA representatives pointed out that their membership figures are approximate and the members are not clearly defined. Several GB members expressed surprise at this. In the end it was resolved that the GB prefers that the present system should be kept.

The Chairman of the Publications and Publicity committee distributed a written report. The *Pattern Recognition Letters* editors reported that the journal is doing fine, and reminded the IAPR that we have eight editorial pages at our disposal in each issue. He suggested that TC activities should be reported here. The *Newsletter* editor regretted that the *Newsletter* had sometimes not been ready in time. His aim is to get more technical material into it in the future. The *Newsletter* editor was thanked for his work for IAPR.

The Chairman of the Publications and Publicity committee also reported that the proposal for individual mailing of the *Newsletter* from Czechoslovakia (circulated among the GB some months previously) had in general got a positive response. The service is not yet available for Japan, Korea, and USA, mostly because of the difficulties defining the actual IAPR members in these countries. Switzerland and Germany had declined. The cost for the *Newsletter* will not increase significantly because of the new distribution system.

The Chairman was finally happy to announce that with the help of the Secretariat the new IAPR flyer has finally been produced. Each GB member will get 200 copies to take home for distribution at conferences, workshops, and other suitable occasions. More copies are available for the asking.

The Technical Committee (TC) Chairman had distributed a 16 page written report, covering all the aspects of the TC activities. He suggested that the TC Chairman's main function should be to act as a communications centre. The President suggested that any reports on planned TC activities should immediately go to the *Newsletter* editor. He also suggested that the next TC Chairman should study the report carefully and act on the many good ideas in it.

Prof. Peleg presented the status of the preparations for the 12th ICPR in Jerusalem. A preliminary "Call for papers" was distributed. The conference fee will be about \$ 600 and the hotel cost \$ 40-100 a night. The scope of the sub-conferences will be slightly changed. A fifth track for industrial applications, to encourage industrial participation may be included.

Two proposals had been made for the 13th ICPR in 1996, from Austria (Vienna) and Britain (Brighton). The vote for the 13th ICPR was made by secret ballot. The result was that the 13th ICPR will be organized by the Austrian Association for Pattern Recognition and be held in Vienna.

The Chairman of the *ad hoc* Industrial Liaison committee distributed a written report. He moved that funds shall be solicited from industry for the "Best industrial related paper" award, and that the award should be permanent and thus included in the Bylaws. A majority voted for the motion, which was thus approved. The proposal that this *ad hoc* committee should be made permanent was discussed. No conclusions were reached, due to different opinions on how the tasks of such a committee should be defined. The vote will be held later by mail ballot.

The Chairman of the *ad hoc* Education committee distributed a written report. The GB recommended to the next President to create a new *ad hoc* Education committee with the same membership as the present one.

A written proposal for the creation of an IAPR commission for support and cooperation in Pattern Recognition with Central and Eastern European members of the IAPR had been distributed. The President asked how this proposal could be implemented without costing substantial amounts of money. He suggested an appeal in the *Newsletter* for the types of support detailed in the proposition. It was concluded that IAPR may sponsor some conference participation, strictly on a scientific merit basis.

The IAPR representative in IFIP had attended no IFIP meeting in the period and had thus not much to report. There was some discussion on the IFIP affiliation, but the consensus was that it should continue. It was suggested that IAPR should be active in at least some IFIP Technical Committee, e.g. TC5 or TC12.

The Chairman of the Awards committee distributed a written report. A proposal had been submitted to change the K. S. Fu award procedure, to ensure that the GB has a real choice to make between several candidates. The Industrial Liaison committee proposed that an IAPR fellowship should

be instituted. The proposals will go back to the new Awards committee for finalization. (It was getting very late . . .)

The Chairman of the Nominating Committee distributed CVs for all IAPR nominees. It was decided that the subsequent discussion should not be minuted. In the end the following persons were elected:

President :	Prof. Aggarwal, U.S.A.
1st Vice-President:	Prof. Tsuji, Japan
2nd Vice-President:	Prof. Kittler, U.K.
Treasurer:	Prof. Tanimoto, U.S.A.
Secretary:	Dr. Borgefors, Sweden
(Past President:	Prof. Duff, U.K.)

Gunilla Borgefors
Past and Present Secretary

King-Sun Fu Award 1994

THE INTERNATIONAL Association for Pattern Recognition (IAPR) is pleased to call for nominations for the 1994 King-Sun Fu Award in honour 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 recognized for his extensive contributions to the field of pattern recognition.

This 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 a suitably inscribed certificate and cash amount, the cost of which is borne by interest income from a special fund created for this purpose.

The award recipient shall be selected by the Award Committee, subject to approval by 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 nominators. 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 1994 award is intended to be presented at the 12th International Conference on Pattern Recognition Jerusalem, Israel, October 9–13, 1994.

The nomination should be completed on the Fu Award Nomination Form. Copies of the Nomination Form may be obtained from the Fu Award Committee Chairman. Nominations must be received by the Award Committee Chairman no later than 1st March 1994.

Dr. Martin D. Levine

Chairman of the Fu Award Committee
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Report on ALD-II, Astronomy from Large Databases II

THE COLLOQUIUM on *Astronomy from Large Databases II* was held during 14–16 September 1992. It was a follow-up to a meeting with the same title (*Astronomy from Large Databases: Scientific Objectives and Methodological Approaches*) held in 1987. The proceedings of both meetings were published by the European Southern Observatory¹. The IAPR was one of a number of supporters of this meeting. Subsequent to much of the material treated was, of course, pattern recognition in large data collections and in image databases.

If one considers the two terms of the title, "astronomy" and "large databases", then the aim of the conference was the directed link between these. Hence the objective was not so much to cater for new astronomical results, — there are many appropriate fora for this — nor to deal thoroughly with database technicalities. Rather the aim was to share experiences, and to focus interests, along the interface between these areas.

The meeting was structured so as to prioritize discussion. Twenty-odd invited talks were complemented by around 70 posters which were on display throughout. A number of talks covered database and archive usage on the part of extant projects (IUE, HST, ROSAT, HIPPARCOS, COBE, etc.). Reference was made to the myriad databases constituting a back-drop to such large projects. Panchromatic astronomy is certainly the order of the day. Subsequent talks included coverage of: classification-oriented front-ends for databases; current research and perspectives in the information retrieval community; data security issues; the astronomer's research environment; and other topics. Poster papers covered such themes as: statistical and pattern recognition studies; visualization; quality control of data; thesauri; sky survey databases; and many descriptions of functionality offered by particular projects. A feature of note regarding this conference was the fact that the role of libraries (paradigmatic large databases, of course, even if not always in electronic form) in

¹ *Astronomy from Large Databases II*, A. Heck and F. Murtagh, Eds., pp. 535, available from: Publications Office, European Southern Observatory, Karl-Schwarzschild-Str. 2, DW-8046 Garching, Germany. Price: DM 60.

astronomy was addressed. What is aimed at is nothing less than the increasingly better integration of data and information that the astronomer has to deal with, whether bibliographic, symbolic, numeric, or image.

M. Cr  z  , A. Heck and F. Murtagh

British Machine Vision Conference

20th-23rd September 1993

University of Surrey, Guildford, UK

The British Machine Vision Conference is the main UK conference for machine vision and related topics. The emphasis is on UK research being undertaken through national or international collaborative projects, providing a forum for the presentation and discussion of the latest results of investigations. Papers from other nations, especially those collaborating with UK groups, are also very welcome.

The Proceedings are published by Springer-Verlag and each delegate will receive a copy at the conference. A selection of the best papers will be published separately in a special issue of *Image and Vision Computing Journal*.

Contributions are sought on any novel aspect relating to machine vision and pattern analysis, including:

- image processing and feature extraction
- object recognition and scene analysis
- reconstruction of 3D shape
- advanced pattern analysis
- computational issues in perception
- robotic vision and sensor fusion
- practical applications
- model based coding
- architectures
- active vision
- motion analysis
- neural networks

Deadlines and format

Deadline for Paper Submission	26 th April 1993
Notification of Acceptance	9 th June 1993
Deadline for Camera-Ready Copy	9 th July 1993

Four copies of full papers not exceeding 10 pages (approximately 5000 words if no figures) should be submitted for review. Papers will be accepted either for oral presentation or for presentation as posters. All papers accepted will appear in the Proceedings. Papers will be reviewed by the BMVA Committee.

Papers should be submitted to the Conference Chairman:

Dr. John Illingworth

Department of Electronic and Electrical Engineering
University of Surrey
Guildford GU2 5XH
UK

Tel: 0483 509835

Fax: 0483 34139

Email: J.Illingworth@ee.surrey.ac.uk

Second Conference on Digital Imaging Computing: Techniques and Applications (DICTA'93)

8th-10th December 1993

Macquarie University, Sydney, Australia

DICTA'93 is the second biennial national conference of the Australian Pattern Recognition Society. The conference will concentrate on (but is not limited to) the following areas of image processing:

- Computer Vision and Object Recognition
- Motion Analysis
- Morphology
- Medical Imaging
- Fuzzy Logic and Neural Networks
- Image Coding
- Machine Vision and Robotics
- Enhancement and Restoration
- Industrial Applications
- Software and Hardware Tools

Papers are sought for presentation at the conference and publication in the conference proceedings. Submission for peer review should consist of an extended abstract 750-1000 words of doubled spaced text, summarizing the technical aspects of the paper and any results that will be quoted. Final papers should be limited to no more than 8 pages of text and illustrations in camera-ready form.

Deadlines and format

Abstract due	25th June 1993
Acceptance notified	27th August 1993
Final paper due	15th October 1993

Four copies of the abstract should be sent to:

DICTA'93

C/- Tony Adriaansen
CSIRO — Division of Wool Technology
PO Box 7
Ryde NSW 2112
Australia

Tel: 02 809 9495

Email: dicta93@ee.uts.edu.au

Forthcoming Conferences, Workshops and Events

Please notify the editor of any additions to this list.

DATE	EVENT	LOCATION	CONTACT ADDRESS [SPONSOR]
19-23 Apr 1993	International Symposium 'Operationalization of Remote Sensing'	Enschede, The Netherlands	Prof. J. L. van Genderen, ITC, P O Box 6, 7500 AA Enschede, The Netherlands
11-13 May 1993	Fourth International Conference on Computer Vision	Berlin, Germany	Hans-Hellmut Nagel, FhG-IITB, Fraunhoferstraße 1, D-7500 Karlsruhe 1, Germany (hhn@iitb.fhg.de)
18-21 May 1993	Vision Interface '93	Toronto, Canada	Jean-Jules Brault, Lab. Scribens, Dept. de Genie Electrique et de Genie Informatique, C. P. 6079, Succ. A, Montreal, Quebec, Canada H3C 3A7 brault@vlsi.polymtl.ca [CIPPRS]
25-28 May 1993	8 th Scandinavian Conference on Image Analysis	Tromsø, Norway	Kjell Arild Høgda, Forut Information Technology Ltd, P B 2806 Elverhøy, N-9001 Tromsø, Norway (scia@conan.uit.no) [IAPR]
14-16 Jun 1993	Image Processing: Theory and Applications	San Remo, Italy	IPTA'93 Secretariat, c/o DIBE, University of Genoa, Via Opera Pia 11A, Genoa, I-16145 Italy (ipta@dibe.unige.it) [AEI, EURASIP, IEEE]
21 Jun-3 Jul 1993	Fundamentals in Handwriting Recognition	Chateau de Bonas, France	Prof. Sebastiano Impedovo, Dept. Computer Science, University of Bari, Via Amendola, 173-70126 Bari, Italy (impailab@vm.csata.it) [IAPR]
12-13th July 1993	Geometric Methods in Computer Vision: Part of SPIE's Annual International Symposium on Optoelectronic Applied Science and Engineering	San Diego, California, USA	SPIE, San Diego '93, P.O. Box 10, Bellingham, WA 98227-0010, USA (abstracts@mom.spie.org or CompuServe 71630,2177)
13-15 Sep 1993	5 th International Conference on the Computer Analysis of Images and Patterns (CAIP'93)	Budapest, Hungary	D. Chetverikov, Computer and Automation Institute, Budapest, P.O.Box 63, H-1518 HUNGARY (h1180cse@e11a.hu) [IAPR]
20-22 Sep 1993	7 th International Conference on Image Analysis and Processing	Bari, Italy	Prof. Sebastiano Impedovo, 7 th ICIAP General Chairman, Dipartimento di Informatica, Università di Bari, Via Amendola, 173, 70126 Bari, Italy
20-23 Sep 1993	British Machine Vision Conference	Guildford, UK	Dr. John Illingworth, Department of Electronic and Electrical Engineering, University of Surrey, Guildford, GU2 5XH, UK [BMVA]
20-22 Oct 1993	Second IAPR Conference on Document Analysis and Recognition	Tsukuba Science City, Japan	Prof. Yasuaki Nakano, Dept. Information Engineering, Shinshu University, 500 Wakasato, Nagano, 380 Japan [IAPR] (icdar93@wakasato.cs.shinshu-u.ac.jp)
8-10 Dec 1993	Second Conference on Digital Imaging Computing: Techniques and Applications (DICTA'93)	Sydney, Australia	DICTA'93, Tony Adriaansen, CSIRO — Division of Wool Technology, PO Box 7, Ryde NSW 2112, Australia (dicta93@ee.uts.edu.au)
11-14 Jan 1994	9 th Conference on Pattern Recognition and Artificial Intelligence	Paris, France	AFCET-RFIA, 156 Boulevard Péreire, F-75017 Paris, France