



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

NEWSLETTER

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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.

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From the Editor's Desk

WITH THE RECENT CHANGES of officers following the 10th ICPR, the rôle of *Newsletter* editor has passed on from Josef Kittler. I am sure we would all like to thank Josef for his sterling work in producing the *Newsletter* for the last four years and wish him every success in his new position, in charge of publications and publicity.

Being the first *Newsletter* under new editorship, a brief word on its production is perhaps called for. Josef used Prof. Donald E. Knuth's (plain) T_EX to prepare previous issues of the *Newsletter*. For this edition, I have moved to Leslie Lamport's L^AT_EX macro package, using a special 'style file' to give the familiar appearance. (The style file, `iapr.sty`, is available from good T_EX archives.) The title material and photographs were digitised on a Agfa scanner and converted to encapsulated POSTSCRIPT, merged with the text using James Clark's DVITOPS, and printed on a Linotronic 300 phototypesetter at 1270 dots/inch. POSTSCRIPT fonts are used throughout. Thanks are due to Peter Abbott of the Aston University Computing Service for his help with the digitising the photographs.



Prof. M. J. B. Duff, IAPR President

From the President

WHEN THE GOVERNING BOARD did me the undeserved honour of electing me President and, indeed, earlier, when I was asked if I would accept nomination for the post, it did cause me to think very hard as to whether there would be any positive contribution I could make to the Association's activities. Obviously, having served as Secretary for the last six years, under three former Presidents, I have had an unusually good opportunity to observe the Association at work and to note both its strengths and its weaknesses. There really would be no excuse for me if I could not at least point to the problems and make a few suggestions as to how things might be improved.

As my immediate predecessor, Marty Levine, indicated in his Presidential Message in the March 1989 *Newsletter*: 'IAPR needs to attract more participants to its activities, and in particular the biennial conference'. With this in mind, the 10th ICPR in Atlantic City was designed as a composite event comprising four semi-independent conferences, each on particular themes. A report in the previous *Newsletter* discusses the 10th ICPR and all concerned would be grateful for your views on whether or not this experiment was a success, especially as it is currently proposed to structure the 11th ICPR in a similar fashion.

However, the biennial conference is only part of the story. It could be argued that the reason IAPR does not attract enough participants to its other activities is because there aren't any! In fact, the Association (apart from some of its officers and committee chairmen) does a pretty good imitation of Rip van Winkle, at roughly two yearly intervals.

This is, of course, overstating the case, but not greatly so. In reality, the Association does a lot to encourage the organisation of workshops and conferences through its thirteen

Technical Committees, each of which concentrates on a particular section of the Association's spectrum of interests. The 'encouragement' is mainly in the form of publicity and sponsorship, but a small amount of financial help has also been given from time to time. IAPR's rules were changed a few years ago to allow an organisational nucleus in each TC to be concentrated in one locality, thereby facilitating discussion and administration; this seems to have had a good effect and many of the TCs are now increasingly active.

The institution of the K. S. Fu Award has stimulated a considerable interest and the Award will become an important feature of the Association's tradition.

IAPR's two publications are arguably, after the conferences, the main points of contact between IAPR and its members. *Pattern Recognition Letters* is well established and well-respected and the *Newsletter* offers an important medium both for advertising and reporting on functions. Its circulation is approaching 15,000 and it therefore reaches, presumably, a very large fraction of all those working in Pattern Recognition and its associated disciplines. We are all grateful to the retiring Editor, Josef Kittler, for all his excellent work in the last four years, and also to Adrian Clark who is taking on the task from this edition onwards.

So, What Next? There is apparently an old army saying: never volunteer. Be that as it may, it is certainly true that vague, general appeals in the *Newsletter* for volunteers to come forward and transform IAPR have always failed to produce any results whatsoever. It is almost as difficult to persuade anyone to write and comment on, complain about or praise any of IAPR's various activities. On the other hand, it has been my experience that individuals, when approached personally, have nearly always expressed a willingness to help. With this in mind, I have exercised the Presidential prerogative and, in appointing the new batch of committee chairmen, have asked each of them to look particularly at certain projects which seem to me to be worthwhile. All the new officers have been similarly 'commissioned'. I am grateful to all of them for so readily agreeing to try to carry out these tasks and I hope you will also be interested to hear what we have in mind.

The First Vice-President, Stefano Levialdi, has generously (and perhaps unwisely!) agreed to take on any job he is given and I have asked him, in effect, to share my workload as President. In particular, I am hoping he will draw on his extensive and varied experience in the field of Pattern Recognition in many countries and in its many aspects to propose and follow up new ways in which IAPR can serve our community. I also hope his knowledge of South America might help us to find members in that part of the world.

The Second Vice-President, Masakazu Ejiri, is a senior scientist working in Industry and therefore well-placed to con-

sider what we can do to make IAPR more attractive to industrialists, since it seems that many feel the organisation is too 'academic' in its appeal. This is a difficult task and I look forward eagerly to hearing his ideas in due course.

Our Secretary, Gunilla Borgefors, will inevitably be busy for these next two years but she has agreed also to chair the Membership Committee. This is a useful combination of two posts since prospective new members are equally likely to expect to deal with either official in setting up their arrangements. I would ask any of you that have good connections amongst researchers in countries which are not yet in IAPR to contact Gunilla and put her in touch with the appropriate people.

I am pleased to say that Jake Aggarwal, our Treasurer, has agreed to serve for a second term and to reorganise the accounts structure to provide separate accounting for each of the TCs. This will open the door to a more constructive funding policy and will allow us to begin to consider the possibility of IAPR underwriting workshops and conferences which would otherwise have no chance of being held.

In the Standing Committees, Shmuel Peleg has accepted the invitation to continue as Chairman of the Constitution & Bylaws Committee, and will make further attempts to unravel some of the mysteries and inconsistencies in our regulatory documents. Josef Kittler moves from editing the *Newsletter* to chairing the Publications & Publicity Committee (where there is a proposal to sponsor another technical journal and, suggested by Bob Haralick, an idea that a collection of 'best past papers' from ICPRs should be published; this committee will also try to update and redesign the IAPR publicity flyer). The two K. S. Fu Award winners have kindly agreed to serve on the Awards Committee, as has Pierre Devijver. I have asked Pierre to accept responsibility for initiating a scheme for further IAPR Awards to be presented on a regular basis to members of our Association who have given particularly valuable service at one time or another. Additional members of this committee will be appointed and the Chairman named later in the year. Pierre will also continue as the IAPR representative to IFIP in order to maintain continuity in our connection with this sister organisation. Siegfried Pöpl has been asked to chair the Conferences and Meetings Committee and I have suggested that this committee should extend its traditional rôle (which used to be confined to assessing the bids for hosting the ICPRs) in a variety of ways. I feel sure that this committee should be concerned with the more full sponsorship of workshops and conferences organised by the TCs, as mentioned earlier, and I would also like it to explore ways of evaluating the ICPRs each time they are held. There is also a great need for a mechanism for maintaining a register of events in our field and for providing some form of co-ordination to avoid unnecessary clashes. This sounds like a lot of work, so I hope Professor Pöpl will be able to per-

suade some of you to join him on his committee to share the load.

The only remaining committee is the Nominating Committee. Membership of this committee is proposed by the President and appointed by the Governing Board. It has been the custom for this committee to be chaired by the Past President and Marty Levine has expressed willingness to act in this way. This committee will be set up later, nearer the time when nominations for the next Executive Committee have to be invited.

Finally, although it has been the practice to ask the first Vice-President to co-ordinate the Technical Committees, it seemed sensible to ask Mikio Takagi to continue to do so for another term, building on the hard work he has already put into this operation during the last two years. Nearly all the TC Chairmen have been appointed or re-appointed and most are well into planning their arrangements for the next two years. We are going to ask each of them to provide at least two reports for publication in the *Newsletter* before the next ICPR and will also try to get it established that IAPR sponsorship of any kind for a workshop or conference will only be given with the understanding that the event concerned will be written up for publication in the *Newsletter*!

If you have managed to read all this, thank you for staying with me. I look forward to hearing more from you all during 1990-92. The summer holidays are nearly over (except for our newest members in Australia); it's time to start prodding IAPR to stop it falling asleep until the next ICPR.

Michael Duff
IAPR President

Some Statistics from the ICPRs

AFTER TEN ICPR CONFERENCES it is an opportune time to sum up some aspects of these conferences. In

YEAR	CITY	COUNTRY
1973	Washington DC	USA
1974	København	Denmark
1976	Coronado, CA	USA
1978	Kyoto	Japan
1980	Miami Beach, FL	USA
1982	München	Germany
1984	Montreal	Canada
1986	Paris	France
1988	Roma	Italy
1990	Atlantic City, NJ	USA
1992	Den Haag	Netherlands
1994	Jerusalem	Israel

Locations of Past and Future ICPRs

the first table, I have listed the venues for all the past ICPRs, plus the next two. I'm sure there must be people who have actually visited all of them! It may seem strange that the first two occurred in consecutive years: the reason was that the ICPRs were shifted one year so as to not occur in the same years as the IJCAIs.

The next table shows where the conference papers came from. Papers have usually been attributed to the country of the first author. In the early conferences some authors did not give their country of origin; in those cases the paper was attributed to USA, as that seemed to be the case. The countries are listed in order of total number of contributions (guess who is first?). The totals of papers and posters is interesting: the number grew from 81 (not bad for a first conference) to a maximum of 390 in 1984, Montreal. The reason the number has decreased since is not that less papers have been sent in, but that standards have risen and reviewing has been made tougher. Never have so many papers been rejected as in the 10th ICPR. This table both shows where our field has been stable over the years, such as USA, Japan, France and Italy, and which new countries have emerged, such as China and Israel. (But what has happened in Germany since 1986?) It will be apparent from this how important the venue actually is (we should expect many Dutch papers in 1992. . .).

It would have been nice to give statistics not only on accepted papers, but also on where the participants came from. However, I have only been around since Munich, and have no older participant lists. Also, at least twice since then such lists were not distributed (to the chagrin of the organisers, who will not be named).

*Gunilla Borgfors
Secretary*

K. S. Fu Award for 1990

THE K. S. FU AWARD was presented to Professor R. L. Kashyap at the 10th ICPR in Atlantic City. Professor Kashyap is currently Professor of Electrical Engineering at Purdue University and has been Associate Director of the NSF-supported Engineering Research Center on Intelligent Manufacturing Systems since its inception in 1985 at Purdue.

Professor Kashyap had his early education in India, obtaining both Bachelor's and Master's degrees in electrical engineering from the Indian Institute of Science. He received his Ph.D. from Harvard University in 1966. Subsequently he joined Purdue University. Professor Kashyap has made several far-reaching contributions to the field of pattern recognition, some of which will be mentioned here.

In the mid-sixties, R. L. Kashyap developed a class of algorithms which can always determine the boundary between



Prof. R. L. Kashyap, 1990 K. S. Fu Award Winner

two sets of multi-dimensional patterns if one exists and give indications otherwise, leading to the so-called Ho-Kashyap algorithms which have been regarded as a fundamental contribution in the area of pattern recognition and discussed extensively in all textbooks. Later, he investigated the concept of learning in supervised pattern classification and related it to the idea of stochastic approximation and other estimation procedures. This topic is now undergoing a resurgence under the names of neural networks and stochastic annealing.

Later he focussed on the development, analysis, estimation, and synthesis of parametric models for two-dimensional images and showed how model-based methods lead to better solutions for image processing tasks like image compression, image restoration, synthesis of textures, and so on. This work, co-authored with his students Challappa, Khotanzad, etc., is widely cited.

He has made fundamental contributions to the development of robust methods for the solution of image processing problems, robust in the sense that the performance of the methods does not deteriorate when there are deviations from ideal conditions, such as the image not exactly matching the model or the noise being only approximately Gaussian. His journal paper co-authored with Professor Eom was perhaps the earliest one on this topic, a subject which is receiving widespread attention, as evidenced by the special research meetings devoted to it.

His most recent research deals with the use of the pattern recognition paradigm to the solution of interesting problems in the domain of discrete manufacturing, which is traditionally based on empirics. The demands for complex, integrated manufacturing systems had led to basic research on finding a more stable foundation for solving manufacturing problems, so-called 'science-based manufacturing.' Professor Kashyap's research at the Intelligent Manufacturing Sys-

COUNTRY	1973	1974	1976	1978	1980	1982	1984	1986	1988	1990	TOTAL
USA	52	52	81	55	134	63	154	65	62	150	868
Japan	13	14	17	89	40	52	52	55	60	40	432
France	2	15	14	22	28	25	34	58	37	23	258
West Germany	4	13	10	12	23	77	23	22	8	11	203
China	0	0	0	1	7	6	14	40	86	10	164
Canada	0	6	4	7	8	12	37	16	19	26	135
UK	0	12	7	4	9	8	11	6	8	8	73
Italy	4	7	5	8	4	8	10	10	10	6	72
Sweden	0	4	4	5	9	4	3	8	7	5	49
Netherlands	1	4	4	3	6	8	6	6	3	3	44
Finland	0	0	1	2	3	6	6	13	7	4	42
India	0	2	0	4	3	5	5	7	2	3	31
USSR	2	5	1	5	3	4	3	4	3	0	30
Israel	0	0	0	0	2	1	2	3	11	10	29
Switzerland	0	1	0	0	0	4	9	4	0	4	22
Belgium	1	1	3	3	2	2	3	2	1	2	20
Denmark	0	2	1	1	1	3	0	2	2	1	13
Poland	0	0	1	1	0	6	2	2	1	0	13
Hungary	1	2	1	1	1	1	1	2	2	0	12
Spain	0	0	1	1	1	3	2	2	1	0	11
Taiwan	0	0	0	0	1	0	6	3	0	1	11
Norway	0	0	1	0	1	0	1	2	1	2	8
Bulgaria	1	0	0	0	0	1	2	1	1	0	6
East Germany	0	1	0	0	2	2	0	1	0	0	6
Austria	0	0	0	0	0	1	0	2	1	2	6
Greece	0	0	0	0	0	2	1	2	0	0	5
Australia	0	0	1	2	0	0	0	1	0	0	4
Hong Kong	0	0	0	1	0	1	0	0	0	0	2
Morocco	0	0	0	1	0	0	0	0	1	0	2
Saudi Arabia	0	0	0	1	0	0	0	0	0	1	2
Portugal	0	0	0	0	0	1	0	0	0	1	2
Vietnam	0	0	0	0	0	0	0	2	0	0	2
Singapore	0	0	0	0	0	0	0	0	1	1	2
Brasil	0	0	0	1	0	0	0	0	0	0	1
Mexico	0	0	0	1	0	0	0	0	0	0	1
Iran	0	0	0	0	1	0	0	0	0	0	1
Yugoslavia	0	0	0	0	1	0	0	0	0	0	1
Rumania	0	0	0	0	0	0	1	0	0	0	1
Chile	0	0	0	0	0	0	0	1	0	0	1
Czechoslovakia	0	0	0	0	0	0	0	1	0	0	1
South Korea	0	0	0	0	0	0	0	0	1	0	1
Egypt	0	0	0	0	0	0	0	0	0	1	1
Syria	0	0	0	0	0	0	0	0	0	1	1
Total	81	141	157	231	290	306	388	343	336	316	2589

Numbers of Papers from the First Ten ICPRs

tems Center at Purdue indicates that the pattern recognition paradigm, coupled with AI techniques, can indeed provide the quantitative foundation. Some examples of the manufacturing research which he has carried out with his graduate students and professional colleagues are:

- extraction of manufacturing features from the design of a part, so that a process plan can be developed for manufacturing the part;
- the development of diagnostic expert systems which can address novel fault situations;
- development of complex 3-D representation methods for parts which have to be manufactured by casting, etc..

Professor Kashyap has directed over twenty-five Ph.D. dissertations at Purdue. He has authored one book and over three hundred publications, including ninety archival journal papers.

He is the recipient of many honours, including election to the status of Fellow of the Institute of Electrical and Electronic Engineers (IEEE) and the Institution of Electronics and Telecommunications Engineering, India. He is an area editor for the journals *CVGIP: Graphical Models and Image Processing* and *The Journal of Intelligent and Robotic Systems*. He has been guest co-editor of *IEEE Transactions on Software Engineering* (1988) and *IEEE Computer Magazine* (1989). He received the best research paper award at the National Electronics Conference in 1967.

Anil K. Jain
Michigan State University

The IAPR Directory

Please notify the IAPR Secretary, Dr. G. Borgefors, of any changes or corrections to this directory.

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Prof. A. Rozenfeld

Conferences and Meetings

Prof. J. S. Pöpl

Constitution and Bylaws

Prof. S. Peleg

Membership

Dr. G. Borgefors

Nominating

Prof. M. D. Levine

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Prof. E. Backer (PRL editor)
Prof. E. S. Gelsema (PRL editor)
Dr. A. F. Clark (Newsletter editor)

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	Chairman	Prof. M. Takagi
TC1	Statistical Pattern Recognition Techniques	Dr. T. Taxt
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TC3	Neural Networks	
TC4	Image Understanding Techniques	Prof. R. Jain
TC5	Benchmarking and Software	Prof. T. Matsuyama
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TC7	Applications in Remote Sensing	Dr. J. C. Tilton
TC8	Applications in Industry	
TC9	Biomedical Pattern Recognition	Prof. M. H. Loew
TC10	Graphics Recognition	Prof. R. Kasturi
TC11	Applications in Text Processing	Prof. R. Plamondon
TC12	Automatic Speech Recognition	Prof. P. Laface
TC13	Pattern Recognition in Astronomy	Dr. F. Murtagh

National Member Associations

Australia	Australian Pattern Recognition Society	A1	42	Mr. A. J. Maeder
Austria	Austrian Association for Pattern Recognition	A1	75	Dr. W. G. Kropatsch
Belgium	Pattern Recognition Contact Group of the SOGESCI	A1	≈ 45	Dr. P. A. Devijver
Bulgaria	Bulgarian Association for Pattern Recognition	A1	≈ 67	Dr. V. Valev
Canada	Canadian Image Processing and Pattern Recognition Society	B	≈ 220	Prof. R. Plamondon, Prof. C. Y. Suen
P. R. China	Pattern Recognition and Machine Intelligence Committee of the Chinese Association of Automation	A2	≈ 100	Prof. Qingyun Shi
Denmark	Danish Pattern Recognition Society	A1	≈ 50	Prof. K. Conradsen
FRG	Deutsche Arbeitsgemeinschaft für Mustererkennung	B	≈ 450	Prof. H. Niemann, Prof. J. S. Pöppel
Finland	Pattern Recognition Society of Finland	B	203	Prof. E. Oja, Prof. M. Pietikäinen
France	Pattern Recognition and Artificial Intelligence Group of AFCET (Association Francaises pour la Cybernetique Economique et Technique)	B	≈ 300	Prof. J.-P. Haton, Prof. S. Castan
DRG	Fachausschuss Automatische Bildverarbeitung	A2	150	Prof. R. Klette
Hungary	Section of Artificial Intelligence and Pattern Recognition of the John von Neumann Society for Computer Science	A1	≈ 60	Dr. D. Chetverikov
India	Indian Unit for Pattern Recognition and Artificial Intelligence (IUPRAI)	A1	≈ 55	Prof. D. Dutta Majumder
Israel	Israel Association for Computer Vision and Pattern Recognition	A2	≈ 180	Dr. Y. Yeshurun
Italy	Working Group for Pattern Recognition of the Italian Association for Automatic Computation	A2	≈ 120	Prof. V. Di Gesù
Japan	Information Processing Society of Japan	B	≈ 400	Prof. M. Nagao, Prof. M. Takagi
Netherlands	Nederlandse Vereniging voor Patroonherkenning en Beeldverwerking	B	≈ 205	Prof. E. Backer, Prof. E. S. Gelsema
Norway	Norwegian Society for Image Processing and Pattern Recognition	A2	117	Mr. S. Grinaker
Portugal	Associação Portuguesa de Reconhecimento de Padrões (Portugese Association on Pattern Recognition)	A1	≈ 30	Prof. J. P. Marques de Sá
Spain	Spanish Society for Pattern Recognition and Image Analysis	A2	77	Prof. A. Sanfeliu
Sweden	Svenska Sällskapet for Automatiserad Bildanalys (SSAB) (Swedish Society for Automated Image Analysis)	B	340	Dr. G. Borgefors, Prof. G. Granlund
Switzerland	The Swiss Association for Pattern Recognition	A1	33	Prof. M. Kunt
U. K.	British Machine Vision Association	B	≈ 400	Prof. M. J. B. Duff, Dr. J. Kittler
U. S. A.	IEEE Computer Society	C	≈ 1,000	Prof. J. K. Aggarwal, Prof. H. Freeman, Prof. R. M. Haralick, Prof. J. Sklansky
USSR	Scientific Council on Pattern Recognition and Scene Processing of the USSR Academy of Sciences	C	1,187	Dr. P. P. Koltsov, Prof. Yu I. Zuralev

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