

Newsletter of the International Association for Pattern Recognition Inc
(An affiliate member of the International Federation for Information Processing)

Bangalore

ICDAR'99

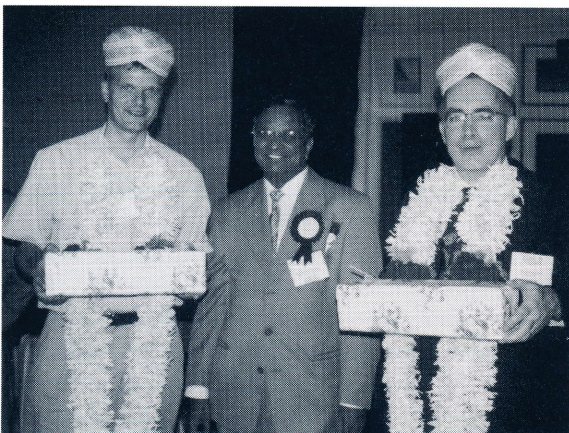
(Full report on page 3)



*The President Inaugurating
ICDAR'99*



A delegate tries her hand at pottery



*Karl Tombre and Jonathan Hull
with Rangachar Kasturi*



*Dance-drama by
Prabhat Artists*

GREC'99

The Third JAPR International Workshop on Graphics Recognition
September 26-27 1999 Jaipur, India

Atul K Chhabra - Chairman TC 10



The Third International Workshop on Graphics Recognition was held on September 26 and 27, 1999. The meeting took place in Jaipur, the 'pink city' of India - a city of grand palaces and busy bazaars, where one finds elephants and camels sharing the roads with cars and rickshaws. This provided a very interesting backdrop for the scientific workshop.

The workshop was organised by IAPR TC10. 55 persons from 15 countries participated in the workshop. The largest representation was from India and the United States (10 participants each), followed by France and Japan (6 persons each). Among the participants were 39 persons from universities or academic research institutes and 16 from industry.

GREC'99 was held a few days after the International Conference on *Document Analysis and Recognition* (reported on opposite page), which took place in Bangalore, India. For the people attending both ICDAR and GREC, the intervening days provided an opportunity to explore India. For the first time, there was a significant non-overlap among the workshop participants and ICDAR attendees. About 20 GREC participants came to India solely to attend the workshop.

GREC'99 consisted of six technical sessions - vectorization, maps and geographic documents, graphic document analysis, graphic symbol and shape recognition, engineering drawings and schematics, and performance evaluation. Each session began with a half-hour invited talk. The invited talks were followed by an average of six short talks per session. The sessions closed with half-hour panel

discussions where the authors fielded questions from the other participants. Several interesting new research directions were discussed at the workshop.

The protocol for the Third International Graphics Recognition Contest was presented on the first day of GREC'99. This included actual scanned images for the training and test sets (as opposed to synthetic images used in the second contest). We did not find time to complete the contest during the workshop. Therefore, the contest will be held off-line and the results will be presented at ICPR 2000.

The proceedings of GREC'99 can still be ordered through the web site, [<http://graphics.basit.com/iapr-tc10/grec99/>], there are several spare copies left. We are currently working on the post-workshop book in Springer Verlag's *Lecture Notes in Computer Science* series. This book will include revised or enhanced versions of selected papers from the workshop.

On an informal level, the workshop provided ample opportunity for participants to interact socially. Several people travelled together on sightseeing excursions before or after the workshop. During the workshop, there were many breaks and an evening of extravagant banquet for the participants to loosen up. The banquet was held in the lawns of a palace-turned-hotel. The dimly lit outline of the palace provided a nice backdrop. The participants were treated to an evening of Rajasthani folk dances and fireworks.

The next GREC workshop will be organised by Dorothea Blostein of Queen's University, Kingston, Ontario (Canada).

IN MEMORIUM - EDZARD GELSEMA - IAPR PRESIDENT

On the day this newsletter went to press it was with great sadness that we heard of the death of our President who had fought a brave and dignified fight against the overwhelming odds of cancer. We offer his family our deepest sympathy and we mourn the loss of a dear friend and colleague. A fitting tribute will appear in the next edition of this newsletter.

JCDAR'99

The Fifth International Conference on Document Analysis and Recognition
September 20-22 1999 Bangalore, India

Report Compiled by Rangachar Kasturi with contributions from B.M. Mehtre and G. Sanniti di Baja

The Fifth International Conference on Document Analysis and Recognition (ICDAR'99) was held in Bangalore, India, from September 20 to 22, 1999. About 250 delegates from 25 countries participated in this conference. The conference was inaugurated by the traditional lighting of a lamp by the IAPR President Edzard Gelsema. The technical program comprised of three parallel tracks. There were 21 oral presentation sessions, 6 poster sessions, 3 panel sessions and 2 plenary sessions. Plenary talks were presented by F.C. Kohli, Tata Research Center, India, David Stork, Ricoh, USA, Jean-Claude Simon of A2ia, France, and M.A. Lakshmi Thathachar, Academy of Sanskrit Research, India. A total of 96 oral papers and 93 poster papers were presented. Two features new at this ICDAR were the Open Research Forum (ORF) and short oral presentations to introduce each poster prior to poster sessions. The intent of the ORF was to encourage presentation of new research subsequent to the rigid regular paper submission deadlines and to discuss open research problems. The technical topics in various sessions included multimedia document processing, character recognition, document image processing, information retrieval, postal automation, graphics recognition, classification etc. The panellists and the participants discussed research advances and critical issues facing researchers in the following topics: Postal Address Automation, Multimedia Indexing and Retrieval, and Ground-Truthing: Real or Synthetic Data?

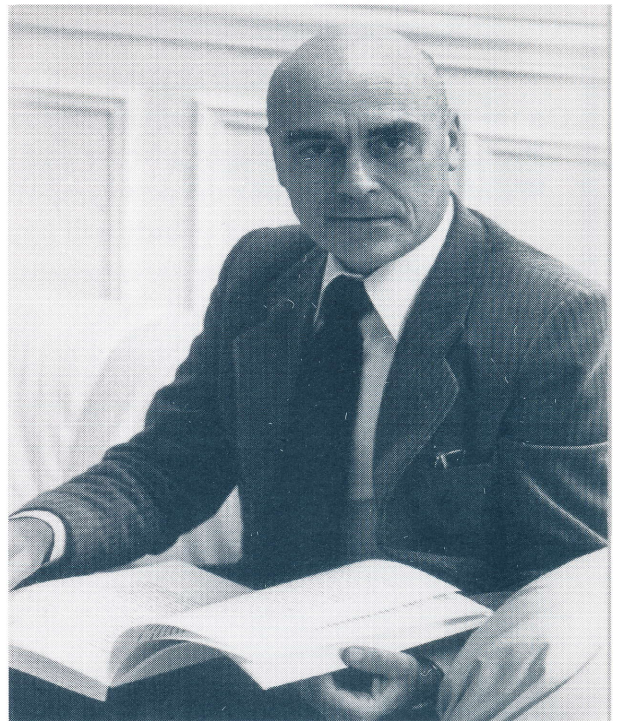
Several awards were announced during the banquet. The *Lifetime Achievement Award* was given to Jurgen Schurmann, and *Outstanding Young Researcher Award* was shared by Atul Chhabra and Tin Kam Ho. The Program Chairs, Jonathan Hull, Seong-Whan Lee, and Karl Tombre, and several other key contributors were also recognised by the General Chairs, Sargur Srihari and Rangachar Kasturi.

"If you did not attend ICDAR'99 in Bangalore you not only missed a good quality conference, but also the chance to experience some of the cultural heritage of India" said Gabriella Sanniti di Baja, one of the attendees. A virtual trip to different regions of India was in fact possible during the

Conference Banquet with the theme *Unity in Diversity*. Four stands representing the major northern, southern, western and eastern regions of India were set in the garden of the conference venue. Each stand offered food typical of that region as well as demonstrations of regional art such as pottery and hand painting. Walking between the stands, one could meet people wearing ethnic costumes, watch folk dances, and hear the music of the region and sounds of percussion instruments thereby increasing the feeling of actually visiting different villages. Encouraged by the organisers, some women wore traditional Indian costumes, including brand new saris bought just for the occasion. An evening of classical dance-drama performance was offered by Prabhat Kalavidaru, a drama troupe well known in the country. The performance included three pieces, with the one on Bhagavadgita particularly capturing the interests of the attendees. "As far as I could understand, the verses are very old, more than thirty centuries, but can still be interpreted as a practical guide to every day's life. The effect on me was that I felt to be at peace with my own conscience" concluded Sanniti di Baja after the show.

Many others expressed similar sentiments on their overall conference experience: "I enjoyed ICDAR'99 in all respects... The technical program was good, the availability of computers for reading email was great, the social program was nice (the folk dance performances were especially good), the food memorable (I still miss it)..." "Technical program as well as social program were excellent. I really enjoyed Indian food, from various parts of India, and the dance performance." "The conference was quite splendid both technically and arrangements-wise. Worthwhile, well-segmented program, with outstanding poster sessions." "We had some worry about water in India, but there was no problem after all. The mineral water which was available everywhere was good." "I found the informal conversations to be one of the most valuable aspects of the conference. Not only did I meet researchers whose work has influenced me, but I got to discuss major trends and ideas in the field, matters that don't normally fit in a purely technical session."

Obituary
JEAN-CLAUDE SIMON
former IAPR President
Winner of the 1998 K.S. Fu Prize



Professor Jean Claude Simon, one of the world's leading scholars and engineers in the field of computer pattern recognition during the last 30 years, died Wednesday, 16 February 2000 in Paris at the age of 76. Death was attributed to complications arising from some relatively routine surgery a few weeks earlier.

Professor Simon obtained his Ingénieur degree from the Ecole Polytechnique in 1944, and his Dr. ès Sc. Physiques from the Faculté des Sciences in Paris in 1951. From 1947 until 1949 he was a research assistant at the Laboratoire de Physique de l'Ecole Normale. In 1949 he joined CSF (which later merged with Thomson) and conducted industrial research in the area of electromagnetic propagation and diffraction, rising eventually to the position of Senior Scientist and Vice President. At CSF he pioneered in opening several important new lines of research in antenna design, including, in particular, the development of the famous "cigar antenna."

In 1967 he left CSF to accept a full-time position at the Université Pierre et Marie Curie in Paris where he shifted his attention to the field of informatics, initiating research dealing with the computer representation of spatial relationships and of automatic classification. He became interested in the problem of complexity. One of the fundamental ideas that he proposed was that the complexity of algorithms can be greatly reduced by the search for regularity and complementarity in the application space, a concept he later successfully applied to cursive handwriting recognition.

During the 1970s and 1980s he organized, usually under the sponsorship of NATO, a string of colloquia and seminars in the areas of computer image processing, pattern recognition, and related disciplines at the delightful Château de Bonas in the south of France. The colloquia had a far-reaching influence on developments in pattern recognition and image processing, and there is hardly a researcher in these fields worldwide today who at one time or another did not participate in one of these events.

In 1989 he retired from the university as Professeur Titulaire, Classe Exceptionnelle. A special colloquium entitled "Informatique: Nouveaux Concepts Scientifiques" was held in his honor in October 1990 in Paris, attended by former students, colleagues, and friends from virtually every country in Europe and North America.

Following his retirement from academic life, he founded a private company, A2iA, to develop computer software for automated handwriting recognition. The solution of this problem (the recognition of *cursive* handwriting as distinct from handprinting) had defied computer engineers since the mid-1950s. By taking some non-traditional approaches, developing new computer algorithms, and taking advantage of the power of modern computers, Professor Simon and his associates were able to make significant breakthroughs. The work eventually led to the development of commercial computer software for cursive handwriting recognition, with particular application to the automated recognition of the handwritten numbers on bank cheques.

Professor Simon published more than 100 papers in journals and conference proceedings dealing with various aspects of Pattern Recognition. He was the editor of five books based on the proceedings of NATO Advanced Study institutes of which he was the organizer. Among his particularly noteworthy papers were "Introduction au fonctionnement des ordinateurs," Masson, Paris, (1970), "Formes régulières et singulières; application à la reconnaissance de l'écriture manuscrite," *C.R. Académie des Sciences, Paris, t. 309, Série II*, (1989), and "Off-Line Cursive Word Recognition," *Proc. IEEE*, 80, (7), July 1992. In addition, he was the author of *Patterns and Operators* (1984), and the editor of a series of three books *From Pixels to Features I, II, and III*, published by North-Holland Publishers (1989, 1991, 1992). In 1980 he authored a report to the President of the French Republic on *L'Education et l'Informatisation de la Société*. He served as associate editor of several international journals, including *Journal of Pattern Recognition*, *Pattern Recognition Letters*, *Computer Vision, Graphics, and Image Processing*, and *Artificial Intelligence Tools*.

...continued from previous page

He was active in the establishment of the biennial *International Joint Conferences on Pattern Recognition* in the early 1970s as well as of the International Association for Pattern Recognition in 1976, serving as President of the latter from 1982 to 1984, a period of rapid growth for that organization. In 1986 he organized and served as General Chairman of the International Conference on Pattern Recognition in Paris.

Professor Simon received numerous honors, including two prizes of the French Académie des Sciences, the Prix du Général Ferrié of the French Société des Electriciens et Electroniciens, the Médaille Blondel, and the Grand Prix des Techniques de la Ville de Paris. He was an Officier de la Légion d'Honneur, a Chevalier des Palmes Académiques, an Honorary Fellow of the Honda Foundation, and a member of the Conseil Scientifique de la Fondation de France. In 1998 the International Association for Pattern Recognition, at its biennial convention in Brisbane, Australia, awarded him its highest honor, the K.S. Fu Prize, "for his contributions to the automated recognition of handwritten words and his life-long leadership in pattern recognition."

Professor Simon is survived by his wife Françoise, two daughters and four grandchildren. His broad knowledge, sharp intellect, and welcome advice will be very much missed by all those who had the good fortune to know him.

Herbert Freeman
Piscataway, NJ (USA)

CONFERENCE PUBLICITY IN THE IAPR NEWSLETTER

The subject areas of interest to IAPR members have grown to the point where a very large number of relevant conferences and workshops are held every year. It has become quite impossible to find space in the Newsletter to advertise and report on all of these meetings. At the same time, IAPR has a special interest in the meetings it sponsors and would like to assist them in any way it can.

The practical outcome of these two factors was a decision to limit publicity in the Newsletter to those meetings that IAPR sponsors. Other meetings are fully listed on the IAPR web site, including all the important information such as submission dates and contact addresses.

Meeting organisers are invited to consider the possibility of requesting IAPR sponsorship for their events. The cost is low and the advantage is an increased awareness of the meeting amongst the IAPR community. Sponsorship also implies IAPR approval of the meeting and IAPR will then not sponsor other meetings which might conflict.

Details as to how to obtain sponsorship and what it entails are published on the IAPR web site; (address opposite).



NOTICE BOARD

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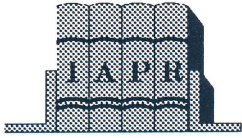
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**For all Members' address changes please check the
IAPR Web Site for full details**



BOOK REVIEWS

Statistical Optimization for Geometric Computation: Theory and Practice *K Kanatani*

1996 Elsevier Science B.V. ISBN: 0 444 82427 8

The author proposes that geometric fitting should be considered more extensively than it currently is. The main thesis of this book is more careful usage of the conventional least square method. Suppose we know that a point must be on a curve but instead we get another point p' which is near the curve. How can we find the proper point p which is on the curve? Obviously, we can find the nearest point p which is on the curve and consider it as our decision. This observation is the key element of the book. Another idea is that the curve locally can be substituted by a segment to simplify the projection procedure. However, the latter is less used in the book as most of the tasks considered involve linear restraints only.

One can say that *correction* has been performed since the point p' is changed to a *correct* point p on the curve. There are many tasks for geometric correction: two points must coincide but they do not; a point must be on a line but it is not; two vectors of orientation must be orthogonal but they are not; a point must be on a conic surface but it is not. In all cases, correction has to be applied. In the book it is proposed that first a system of equations has to be written which define a surface S in a multi-dimensional space. Then the data vector has to be projected onto this surface S . The multi-dimensional data vector can be thought of as a fuzzy ball since the co-ordinates are not assumed to be precise. Substituting the fuzzy ball by a fuzzy ellipsoid, the Mahalanobis distance and Mahalanobis projection are involved and this leads to extensive usage of the probability terminology.

Consider the simplest case. For example, we expect that two points (x', y') and (x'', y'') represent one point. Let us draw the equations $x_1 = x_2$ and $y_1 = y_2$ which define a 2D surface S in 4D space and then project the data vector (x', y', x'', y'') onto this surface. The result which we get in this way is not surprising, it is $\frac{1}{2}(x' + x'', y' + y'')$ (page 145).

A more complicated task comes when the equations have unknown parameters. For example, a line needs to be drawn through N points. A parameter - the normal vector to the line - is involved in the equations. All the results for all possible normal vectors can be found analytically ("*correction stage*") and then the best fitting line can be chosen ("*estimation stage*", page 211). This approach also yields the conventional result which is the mechanical principal axis of the set of the given N points (page 224).

The main tool of the book is linear algebra. I cannot agree with the statement that the "treatment is very different from

traditional statistics" (page 451). The author does not miss any chance to introduce new variables and write down any possible relationships, something that makes the book difficult to read and not very useful for finding answers to even simple questions. Terms like *manifold*, *tangent space*, *transversality*, *realistic decision*, *optimal decision* are used without need be. The author does not go into details of image processing techniques such as *edge detection*, *stereo matching*, *feature point tracking* and *shape from shading*. "This book does not deal with outlier detection at all" (page 25). Therefore, the scope of the book is rather narrow. But it can be recommended as a guide for correct and careful usage of the conventional least square method in image processing.

A Kadyrov, University of Surrey



Visual Motion of Curves and Surfaces

Roberto Cipolla and Peter Gilpin

Cambridge University Press 2000

ISBN 0-521-63251-X, 184pp

Much of what drives computer vision research is the desire to imitate the abilities of the human visual system. One such ability is the three dimensional interpretation of objects from their two dimensional images, and its purest expression is in the recovery of shape using only outlines or silhouettes. Shape-from-silhouette is in many ways a microcosm of the general vision problem: a task that humans perform readily but which has proved difficult to emulate computationally.

The authors of this book explore the state of the art in reconstruction from outlines. The first part is a thorough theoretical analysis of the problem. Despite its mathematical sophistication, this is nevertheless clear and readable, helped considerably by the fine tutorial on differential geometry which begins the book. This tutorial, and the introduction to the apparent contour which it precedes, serves as a useful reference in its own right. However, the reader who has had no previous experience of differential geometry will also require a more sedate introduction.

Welcome, too, is the emphasis on practical implementations of the theory. In this area of vision, theoretical analysis has traditionally proven difficult to transfer to real-world problems. The mathematics depends on quantities in the images which are poorly preserved in the passage from ideal to real systems; simply expressed, noise has been a problem. The second part of the book deals with the development of robust strategies for solving the problem. Addressing the cases of known, unknown, and constrained observer motion, algorithms are provided for the 3D reconstruction of smooth surfaces from a sequence of digitized images. Demonstrations on real images show that a blend of geometry and engineering can produce convincing results.

This short book is a useful combination of tutorial, review, and monograph, summarizing the state of and recent advances in an important field in computer vision.

Andrew Fitzgibbon, University of Oxford

15 ICPR



15TH INTERNATIONAL CONFERENCE ON PATTERN RECOGNITION
BARCELONA, SPAIN 3 - 8 SEPTEMBER 2000

<http://www.cvc.uab.es/icpr2000>

As you probably know, this ICPR'2000 will take place in Barcelona, Spain from 3 - 8 September. We would like you to participate in this important event which we hope is going to be a special experience for you. Barcelona is a lovely city, well prepared for big and small congresses, which combines top professional organisation of congresses and excellent opportunities for entertainment and tourism.

We have organised the congress to be an excellent opportunity to share the latest advances in the fields of Pattern Recognition, Neural Networks, Computer Vision, Image Processing, Speech Recognition and Applications. We want ICPR'2000 to be a special conference, not only because the year 2000 is the change into the next century, but also because the areas that the conference covers are continuously in development, contributing substantially to the expanding and growing world of technology and science. This is the real benefit for any of the subjects with which we deal. We also want ICPR Conferences to stay in fashion, to be at the top of the list, and we want them to merge into different sectors, continually to develop and the best way to make this happen is to do each ICPR with a special "personal" touch to them. For these reasons, apart from the regular presentation of papers, we have prepared a series of Invited Conferences with the following titles:

Alex Pentland

Next Generation Computer Systems.

Takeo Kanade

Virtualized Reality - 4D Modeling.

Chris Bishop

Variational Inference for Pattern Recognition.

Brian Wandell

Color Appearance: Computational Models and Neural Mechanisms.

Hermann Ney

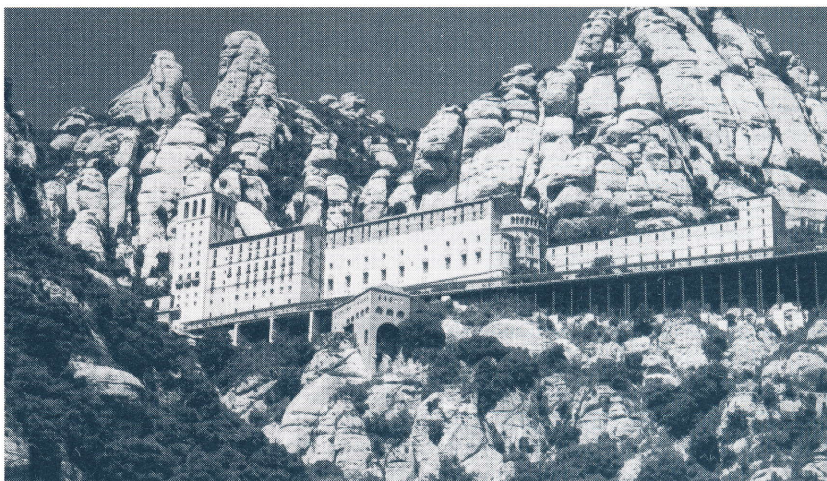
Stochastic Modelling: From Pattern Recognition to Speech Recognition and Translation.

Semir Zeki

The Visual Brain as a knowledge-acquiring system.

Byron Dom

From Pattern Recognition to Text Mining.



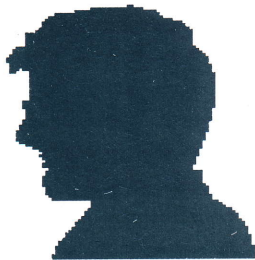
Montserrat Monastery

But this is not all, in order to make the Conference even more interesting we are organising a series of provocative and survey Invited Papers, that will also cover diverse areas of ICPR. These Papers will be very relevant for people who want to know the state of the art and the future of the latest advances in the field.

We have also prepared a very special Social Programme to show parts of Barcelona that you would not see unless taken there personally by a local. To be honest, in order to fulfil everybody's choice, we have not had to do much; Barcelona in itself does most of this work, we only have to pick the places you can choose from, and nothing is going to be missing. You'll see! Do not forget your swimming suit, September its is a good month to bathe in the Mediterranean Sea.

Finally, we are specially proud to announce that we have received nearly 1500 papers for the Paper Submission, which is a lot of papers! Registration information and the hotel booking in the ICPR'2000 web site <http://www.cvc.uab.es/ICPR2000>

Alberto Sanfeliu, Juan José Villanueva - ICPR'2000 General Co-Chairs



PROFILE TC 16

Algebraic & Discrete Mathematical Techniques in Pattern Recognition and Image Analysis

TC16 was proposed by the Russian Federation "Association for Pattern Recognition and Image Analysis" and created in 1996 (at the meeting-of the IAPR Governing Board in Vienna, 13 ICPR). The main goals of TC16 are discussion of actual and prospective lines of research and exchange of the results in Algebraic and Discrete Mathematical Problems and Techniques inspired by Pattern Recognition and Analysis. The means which TC16 uses to achieve the goals are more or less standard for IAPR TCs: the organisation of workshops and conferences, the preparation of publications (survey articles, tutorials, etc.), the design of databases, and others. It is considered also very important to give the Algebraic and Discrete Mathematics community involved in Pattern Recognition and Image Analysis an opportunity to know each other better and to meet each other.

The main points of TC16 activity to date are in brief:

Extension of the membership of the Committee (which now includes 53 members from Europe, the Russian Federation and the USA)

Meetings of TC16 have taken place in a) Herrsching, Germany, September 1998; b) Novosibirsk, Russian Federation, October 1998; c) Valday, Russian Federation, March 1999 and d) Moscow, Russian Federation, November 1999

The Proceedings of the 5th German-Russian open workshop on Pattern Recognition and Image Understanding, Herrsching, Germany, September 1998 (TC16 was involved in the organization of the workshop) were published - *Pattern Recognition and Image Understanding: 5th open German-Russian workshop* [B.Radig ... (ed.)]. - Sankt Augustin: Infix, 1999. Full papers of the workshop were published as special issue of *Pattern Recognition and Image Analysis. Advances in Mathematical Theory and Applications* [I.Gurevich, H.Niemann, B.Radig, Yu.Zhuravlev (ed.)] (1999, V.9, No.4)

TC16 was involved in the organisation of the conference "Pattern Recognition and Image Analysis. New Information Technologies" (ROAI-4-98) (Novosibirsk, October 1998). The Proceedings of the ROAI-4-98 were published as special issues of *Pattern Recognition and Image Analysis.*

Advances in Mathematical Theory and Applications [I.Gurevich, V.Kirichuk, Yu.Zhuravlev (ed.)] (1999, V.9, No. 1, 2). The selected full papers of the workshop were published as special issues of *Avtometriya* (1999, No. 6, 2000, No. 1)

TC16 was involved in the organisation of the conference "Mathematical Techniques for Pattern Recognition, Moscow, November 1999) (MTPR-9). The Proceedings of the MTPR-9 were published (in Russian). The selected full papers of MTPR-9 will be published as special issue of *Pattern Recognition and Image Analysis. Advances in Mathematical Theory and Applications*

The list of break-through research topics in the algebraization of image analysis and recognition was updated and is under discussion..

A survey on image algebras was prepared for publication

The Russian members of TC16 participate in the development of the structure and content of the Russian Federation State Research Program *Prospective Information Technologies for 2001 - 2005* (for the Russian Federation Ministry of Science and Technologies). We plan to distribute the concept of the program among IAPR societies for discussion. The concept will be also published in *Pattern Recognition and Image Analysis. Advances in Mathematical Theory and Applications* with IAPR societies' comments.

We plan to conduct meetings of TC16 during 15ICPR (Barcelona, September 2000) and during the 5th International Conference on Pattern Recognition and Image Analysis. New Information Technologies (PRIA-5-2000) (Samara, The Russian Federation, October, 2000), of which TC16 is involved in the organisation.

The maintaining of a WWW homepage for the TC16 is planned.

The main lines of scientific interest of TC16 in the nearest future will be focused on the following topics:

- a) image algebras, image superalgebras, graded image algebras;
- b) image models of non-statistical nature;
- c) algebraic models of pattern recognition and image analysis algorithms;
- d) algebraic approach to PRIA knowledge representation and processing;
- e) algebraic and logical techniques application in image databases and knowledge bases.

We invite the IAPR community to take part in TC16 activities; please contact us via email:

Yuri Zhuravlev - zhur@ccas.ru.
Igor Gurevich, - igourevi@ccas.ru

From The **E X CO**

President's Health. If you look at the previous Newsletter issues, you will note alternating news on our President's health conditions. We are sorry to have to tell you that Professor Gelsema is seriously ill and unlikely to be able to carry out any IAPR functions, at least for a while. During the past 18 months Professor Gelsema has been working unceasingly for the IAPR notwithstanding his illness, but now he needs all his strengths to take care of his health. We miss his ability to lead the IAPR and wish him to recover soon. IAPR activities will continue under the responsibility of the 1st Vice President, Professor Horst Bunke,

Professor Simon's Sudden Death. It's with heartfelt sympathy that the whole IAPR community offers its condolences to the family and friends of Professor Jean Claude Simon, who passed away on February 16, 2000. Professor Simon contributed significantly to the success of IAPR. He was IAPR President (1982 - 1984), chair of Standing Committees (Publications & Publicity, 1976-78, Nominating Committee, 1984-86) and received the K.S. Fu Prize in 1998, during the 14th ICPR in Brisbane. His death is a severe loss for the IAPR community.

Membership. We are pleased to inform you that almost all Member Societies provided the English version of their Constitution and Bylaws. At the time of writing, only 4 Societies, out of 36, have not yet provided their C&B (one missing constitution should already be on the way to the Secretariat). This is a good result for an association with 36 Member Societies. Unfortunately, the results are not as good as regards the lists of individuals.

TC3 During the ExCo held in Bangalore (September 1999) the status of the various TCs was reviewed. For TC3 it was decided to strengthen Machine Learning part by appointing a co-chair for that particular area and Dr. Petra Perner from Leipzig agreed to be TC3 co-chair with Dr. Visa. Petra's area of interest is machine learning with an emphasis on symbolic approaches. We are confident that this will help to increase activities and visibility of TC3.

Barcelona ICPR. A record has been reached for ICPR with about 1500 submissions. The reviewing process is making good progress and some 900 papers are expected to be accepted. A large fraction of these will be in the form of poster papers. The ICPR scientific program promises to be interesting and rich. It is expected to include eight invited talks in plenary sessions and a number of "invited" papers in regular oral sessions. Several tutorials and contests are being planned. A number of social events including the banquet are being finalised. The IAPR Governing Board meeting will be held on September 5 and among the issues to be discussed is the selection of venue for the 2004 ICPR.

PROFILE

TC 5



Dear Friends and Colleagues

As the new chair of IAPR TC5 (Technical Committee on Performance Evaluation), let me introduce myself. I received my BS, MS, and Ph.D. in 1979, 1981, and 1984, all in Computer Science, from the University of Maryland, College Park, Maryland. My Ph.D. thesis advisor was Prof. Azriel Rosenfeld. In 1984, I joined the Department of Computer Science at the University of Maryland, Baltimore Campus, as an Assistant Professor. In 1985, I joined the Department of Computer Science and Software Engineering at Seattle University, Seattle, Washington, where I was promoted to Associate Professor in 1991 and to Professor in 1997.

I am currently the holder of the Thomas J. Bannan Endowed Chair in Engineering from the School of Science and Engineering at Seattle University. I am an affiliate faculty with the Department of Electrical Engineering at the University of Washington since 1989, and have served on the graduate faculty there since 1991.

My research areas include image processing and pattern recognition, document image understanding, document image database design, and performance evaluation of document image analysis and recognition systems. My experience in the area of performance evaluation include the creation of the three document image groundtruth databases - UW-I, UW-II, and UW-III; and I helped lead the first (GREC95) and the second (GREC97), international Graphic Recognition System Contests on Engineering Drawings.

I am soliciting ideas and/or interests among colleagues in the IAPR community who would be interested in planing/organizing/participating/leading contests of the performance of recognition systems in areas of their research interests. For example, such a contest can be the performance evaluation of recognition systems that perform document layout analysis. The input to such recognition systems would be document images and output of the systems would be the locations of words, text-lines, paragraphs, and text-columns on the input images. A set of groundtruthed document pages is currently available, as well as the software that performs the evaluation. Ideally, this contest can take place as soon as during the ICPR2000. If you are interested, please contact me:

Email address:

yun@george.ee.washington.edu



IT'S DIGITAL SO IT MUST BE GOOD

Digital computing has been so successful and is so widespread that we no longer seriously consider the possibility of analog computing. Even our television services are in the process of being made digital, although no one seems to know quite why. *It's digital, so it must be good.*

Analog computing was once popular but has never been very practical. Some of the early systems comprised complex assemblies of servomotors, potentiometers, plugboards and weighty power supplies. Programming was a nightmare. It is not therefore surprising that the development of digital computing and the demise of analog systems caused most of us to sigh with relief. In fact, in a very short time, the majority of the calculations that analog machines performed could be carried out just as well, if not better, by digital computers.

Even so, the more complex calculations were always best made by analog devices which were not computers at all in the more usual sense of the word. Flood and sea erosion prediction involved making scale models of tide basins and actually flooding them with real water; aerodynamic properties of aerofoils were measured in wind tunnels and ship characteristics were tested on scale models in long water tanks. I started my research career in a laboratory shared with a so-called electrolytic tank which, if I remember correctly, was used to simulate magnetic fields surrounding scale models of magnet sections.

Generally speaking, our world at supra-molecular scales is neither discrete (as opposed to continuous) nor binarised (in that its properties can't often be parameterised in terms of all or nothing, yes or no). Decisions are seldom clear-cut and will usually be made on the basis of a balance of probabilities. Extreme precision and error-free judgement are not human characteristics and, in truth, don't seem to be a necessary part of everyday life. It might therefore be

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argued that in building systems to simulate human behaviour, such as vision or hearing, we are employing a completely wrong type of technology. Is it self-evident that it is necessary to divide an image into millions of uniform small pixels in which intensity and colour are represented by a finite range of integers, then feeding this data into digital computers of virtually unlimited precision in order to abstract meaning from the image?

My knowledge of mathematics is pathetically feeble but I can see. I believe the lenses in my eyes perform Fourier Transforms but that is only a way of describing an analog process in mathematical terms. The development of photography would have got nowhere if early cameras had been designed to *calculate* images rather than to form them with a lens.

Perhaps some of the latest ideas about neural networks and artificial retinas are moving us in the right direction, i.e., away from the assumption that the only way to crack the problems in PRIP is to build larger and larger digital computers with higher and higher power and precision. A very early vision research paper (Lettvin, Maturana, McCulloch and Pitts, Proc IRE 47, 1959) was entitled *What the frog's eye tells the frog's brain*; actually not very much but it did enable the frog to jump out of the way when a shadow fell on it and it helped it to spot lunch flying past. The point is that the relatively crude frog vision system, comprising assemblies of inaccurate, unreliable, analog components, let the frog extract sufficient meaning from the visual world for it to survive (most of the time). In contrast, our computer-based systems start with extremely complex and precise digital calculations and then somehow try to reduce the results into relatively simple deductions about the environment. This doesn't seem to me to be very clever. Is it time to sit back and think afresh?

The Editor welcomes responses to the Forum articles which will be published on the IAPR web site and in future editions of the newsletter. He also welcomes contributions to this column on any IAPR related topic you may like the opportunity to discuss in print.

FORTHCOMING SPONSORED MEETING

5TH INTERNATIONAL CONFERENCE on PATTERN RECOGNITION and IMAGE ANALYSIS: NEW INFORMATION TECHNOLOGIES Samara, The Russian Federation 16 - 22 October, 2000

Host institutions are The Scientific Council "Cybernetics" of RAS (Moscow), the Institute of Image Processing Systems of the Samara State Aerospace University of the Ministry of the Russian Federation and Information Research and, Ltd. (Moscow).

The conference will include:- the conference itself;- tutorials;- exhibition of image analysis and pattern recognition software products developed in the years of 1999 - 2000 in the framework of the Russian State Scientific Program "The Prospective Information Technologies";- detailed presentation of research and development in the field carrying out by the leading computer science research institutes of the Samara Scientific Center of the RAS;- meeting of Technical Committee 16 of IAPR "Algebraic and Discrete Mathematical Techniques in Pattern Recognition and Image Analysis";- social program.

Main topics of interests:

- Mathematical Theory of Pattern Recognition
- Mathematical Theory of Image Processing, Analysis, Recognition and Understanding
- Mathematical Theory of Speech Processing, Analysis, Recognition and Understanding
- Models, Methods and Tools to Represent the Initial Data for Pattern Recognition, Image and Signal Analysis
- Automation of Selection of Algorithms for Solution Pattern Recognition, Image, Speech and Signal Analysis and Understanding Problems
- Automation of Development, Testing and Adaptation of Information Technologies for Pattern Recognition, Image, Speech and Signal Analysis and Understanding
- Software and Information Technologies for Analysis and Estimation of Data, Represented as Images and Signals
- Databases and Knowledge Bases for Pattern Recognition and Image Analysis
- Special-purpose Architecture, Software and Hardware Tools to Support Information Technologies for Pattern Recognition, Image, Speech and Signal Processing and Analysis. Neural Networks and Methods for Data Processing, Analysis and Interpretation. Algorithms, Software and Information Technologies for Geographic and Cartographic Information Systems. GIS Technologies. Information Technologies for Biomedical and Biotechnological Systems. Computer Vision. 3-D analysis and systems. Computer Graphics, Visualization and Virtual Reality. Optoelectronic Systems for Image and Signal Processing and Analysis. Applied Problems

Working languages of the conference are Russian and English; translation will be totally provided for non-Russian language.

Submission:

Extended abstract should include a summary (not more than 10 lines), introduction, problem statement, approach and techniques, results, example, interpretation, conclusion, references. Text should be in one column, Times New Roman size 10. 1.5 spaced between lines

Return by e-mail a Registration Form to Conference Secretariat, Moscow JULY 31, 2000

Send by e-mail an extended abstract of a paper to Conference Secretariat (address below).

Send by e-mail an abstract of an exhibit description to Conference Secretariat (address below).

Abstract Deadline: 1 July 2000
Camera Ready Copy: 1 Sept 2000

Registration and Participation Package:

Non IAPR members (everything included)	\$800
IAPR members (everything included)	\$700
Student package (everything included)	\$500

Package includes:

Entrance to the conference, seminars, tutorials exhibition.
One copy of Proceedings, hotel accommodation, meals.
Social programme fee is paid by cash at the conference desk.

Visas:

Participants of PRIA-5-2000 need a visa to enter the Russian-Federation. The organisers of PRIA-5-2000 guarantee that the Federation does not have any visa regulations which would the application of Article 10.5 of the IAPR Bylaws. The Federation policy on visas is not in conflict with IAPR policy.

Conference Secretariat:

Enquires concerning PRIA-5-2000 should be directed to:

2000 Secretariat "Cybernetics"
40, Vavilov Str., Moscow GSP-1
117968 Russian Federation.

Fax: +7-095-135-9033

Email: igourevi@ccas.ru

Local Secretariat:

RAS, 151, Molodogvardeiskaja str
Samara 443001
Russian Federation.

Fax: +7-846-232-2763

Email: roai@smr.ru

Further details: Conference web site:

<http://www.ipsi.smr.ru/roai>



FORTHCOMING IAPR CONFERENCES WORKSHOPS AND EVENTS

Check updated information on: <http://peipa.essex.ac.uk/iapr/>

2000	Event	Location	Deadlines	Contact
17-20 April ISVC	International Symposium on Image/Video Communications	Rabat Morocco		http://www.fsr.ac.ma/ISVC
11-12 May RecPad 2000	11th Portuguese Conference on Pattern Recognition	Porto, Portugal	Final Manuscript: 24/03/2000	Fax: +351 22 2087310 recpad2000@ineb.fe.up.pt , http://ineb.fe.up.pt/recpad2000
21-23 June IWMCS 2000	First International Workshop on Multiple Classifier Systems	Cagliari, Sardinia	Final Manuscript: 30/04/2000	Fax: +39 070 675 5900 rol@diee.unica.it http://www.diee.unica.it
30-31 July VGXI	SPIE's Vision Geometry XI	San Diego USA	Final Manuscript: 03/07/2000	Fax: +49 40 42838 5117 lateck@math.uni-hamburg.de http://www.math.uni-hamburg.de/home/lateck/
1 Sept PRRS	1st International Workshop on Pattern Recognition in Remote Sensing	Andorra	Final Manuscript: 30/06/2000	Fax: +44 1483 34139 m.petrov@ee.surrey.ac.uk http://www.ee.surrey.ac.uk/Personal/M.Petrov/workshop.html
3-8 Sept 15ICPR	15th International Conference on Pattern Recognition	Barcelona Spain	Final Manuscript: 14/04/2000	Fax: +34 93 325 27 08 icpr2000@cvc.uab.es http://www.cvc.uab.es/ICPR2000
16-22 Oct PRIA-5-2000	5th International Conference on Pattern Recognition and Image Analysis	Samara Russia	Abstract: 01/07/2000 Final Manuscript: 01/09/2000	Fax: +7 095 135 9033 igourev@ccas.ru http://www.ijsi.smr.ru/ra1
28-23 Nov MVA2000	Seventh Workshop on Machine Vision Applications	Tokyo Japan	Abstract: 31/05/2000 Final Manuscript: 20/09/2000	Fax: +81 3 3401 1433 ki@is.u-tokyo.ac.jp http://www.edt.go.jp/ed/gazo/rva2000/
13-15 Dec DGCI 2000	9th Discrete Geometry for Computer Imagery	Uppsala Sweden	Abstract: 28/04/2000 Final Manuscript: 01/09/2000	Fax: +46 18 55 34 47 ingela@cb.uu.se http://www.cb.uu.se/~dgci2000
2001	2001	2001	2001	2001
11-14 March ICAPR'2001	International Conference on Advances in Pattern Recognition	Rio de Janeiro Brazil	Abstract: 15/03/2000 Final Manuscript: 15/10/2000	Fax: +44 1392 264066 s.singh@exeter.ac.uk http://www.utp.br/icapr2001
15-17 May PRIP'01	6th International Conference on P R and Informational Processing	Minsk Belarus	Abstract: 15/01/2001 Final Manuscript: 15/02/2111	Fax: +375 17 231 8403 prp01@newman.bas-net.minsk.by http://www.bas-net.by/iec.conferen.htm
13-15 June PRP-VII	Pattern Recognition in Practice	Vieland Netherlands	Abstract: 01/11/2000 Final Manuscript: 01/05/2001	Fax: +31 10 408 9477 prp@ml.fgg.eur.nl

The views presented in this newsletter represent the personal views of the authors of the respective articles and not of their host Institute nor IAPR