



Spring 2001
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Newsletter of the International Association for Pattern Recognition Inc
(An affiliate member of the International Federation for Information Processing)



Image and Vision Computing - New Zealand 2001 IVCNZ'00

The eighth Image and Vision Computing New Zealand Conference took place at the University of Waikato, Hamilton, New Zealand, November 27-29, 2000. There were 75 participants coming from nine countries in the Pacific/Asia region. The conference consisted of a single stream of sessions including eight oral sessions, two poster sessions and two keynote talks. Prof Robyn Owens, University of Western Australia, Australia, gave the first keynote talk entitled 'Understanding Sign Language' and Assoc Prof John Barron, University of Western Ontario, Canada, gave the second keynote talk entitled 'Optical/Range Flow to Measure 3D Plant Growth/Motion.' Both talks were of a very high standard and generated much interest.

Continued on page 3

I SEE

Sooner or later, everyone asks: 'What *is* it that you do?'. 'Well', I say, 'suppose you connect a television camera to a television set and point it at an object, then you can see the object on the screen. But suppose you connect the camera to a computer, then you might be able to program the computer so that it describes the object the camera is looking at. I try to write that sort of program'. Not a very complete description but anything more detailed and you begin to see eyes glazing over.

What we all try to do is to program our computer vision system so that it will take appropriate actions based on the information it derives from the scene. The action may be merely to print out a description or it may be more mechanical, such as in a pick-and-place robotic device or in an automatically guided vehicle. Thus in many cases, computer vision is substituting for human vision and it is this commonality of purpose which has led the majority of developers to look closely at how human vision works in order to obtain ideas as to how to design the computer analogue. Physiological and anatomical studies have contributed to the body of knowledge about mammalian vision and have strongly influenced the approach which attempts to analyse scenes in terms of oriented edge elements in various groupings.

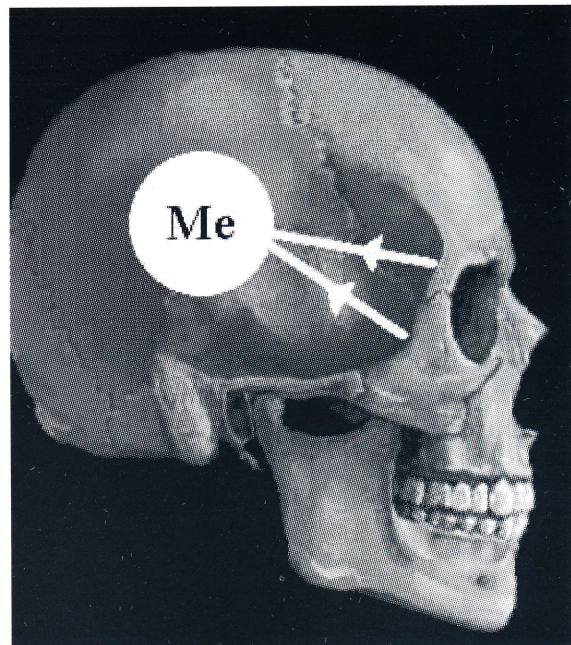
Attractive though it is to adopt an almost introspective approach to the design of computer vision systems, is it necessarily the right thing to do? What actually happens when we *see* something? Rods and cones detect the light imaged on our retina and after a little pre-processing, the optic nerve carries information about pixels to the visual cortex. Here, it would seem, layer upon layer of groups of neurons react, for example, to edges in the image and then to combinations of edges (small structures) present in the image. What happens after this becomes increasingly obscure but we do know that the high degree of interconnection between the neurons is in some way responsible for comparing the image in the eye with stored models so that recognition can take place.

The temptation at this point is to assume that the knowledge that there has been recognition is somehow reported to a central part of our brain which is a) aware what is going on and b) ready to direct the brain to take action. We instinctively feel that this centre of awareness is the real *us*. However, this viewpoint is not shared by those that seriously study the brain; they conclude that there is no such central *us* and that the decision making is spread over large areas of the interconnection network of the brain. Awareness, as such, plays no part in the decision making process.

Personally, I find this counter-intuitive and most unsatisfying. The one thing I am sure of is that I am aware of many things, especially of those things that I can see. I also like to think, even if it is not true, that this awareness helps

me to make informed decisions about my actions. I certainly do not believe that any computer I have built has the quality of awareness that I experience so I doubt whether my brain and a computer have all that much in common.

But many questions remain unanswered, whichever viewpoint you take. For example, at which stage in human vision does awareness click in? It seems unlikely that we respond consciously to small spots of light on individual retinal cones and no-one has any awareness of edge detecting neurons firing. On the other hand, it is possible to see and appreciate a minute star image or to distinguish between small vertical or horizontal lines, situations in which one would expect only early stages of processing to respond. Information of this sort presumably is sent directly to higher levels of the brain so that the action taken can be based on the visual information taken in the context of the present and of stored data from the past.



There is another possibility. If we cannot pin down which part of the brain gives us this intense feeling of awareness, then perhaps every part of the brain is, to some extent, aware. Maybe the stimulated cone is part of *us* so that we are immediately and directly aware it is being stimulated, without any reference to elsewhere in the brain.

In the physical world, we accept the concept of *action at a distance*. Information can be transmitted from point to point by a variety of fields. Some of these have only been discovered (hypothesised?) in the last few decades and would be inconceivable to our great-grandparents. It is not completely stupid to suggest that we might one day find out that one part of our brain which is aware can communicate with another part without transmitting information through nerve fibres. Should this be so, then our understanding as to how the human brain processes visual information might need drastic revision and we might, hopefully, begin to adopt a more fruitful approach in the design of computer vision systems.

IVCNZ'00 continued from page 1

The oral sessions covered a broad range of image and vision computing topics, including modelling/representation, feature extraction, image reconstruction/restoration, shape reconstruction, recognition/segmentation, 3D scene/stereo analysis and applications. Particularly notable sessions were those on image restoration/reconstruction and shape reconstruction in which some excellent and exciting papers were presented.

All poster presentations were judged by the conference participants and the best three posters winning the most votes were awarded prizes. All oral and poster presentations led to a paper in the proceedings, of which a few further copies are still available from the conference organisers (contact M. Cree, m.cree@waikato.ac.nz).

A feature of IVCNZ is the participation of graduate students and this trend was continued at IVCNZ'00 with many students presenting posters and some giving oral presentations. With money left over from last year's IVCNZ conference, the student conference registration price was kept low, with some students, who had presented papers and had funded their own attendance at the conference, receiving a complete refund of fees.

The IVCNZ steering committee considers the IVCNZ conference an important forum for budding new image scientists to present their work and be inspired by quality research.

The conference dinner, shown on the front cover, was held at Vilagrad Wines, where we enjoyed a very pleasant and sociable evening amongst friends and colleagues.



The next conference, IVCNZ'01, is to be held 26-28 November 2001 at the University of Otago, Dunedin, New Zealand. Traditionally IVCNZ has been held in the centres of Auckland, Palmerston North, Wellington and Christchurch only, and it is of great relief to the IVCNZ steering committee that Hamilton and Dunedin have been added to the list of possible conference venues!

*Michael Cree
Convenor IVCNZ'00,
Hamilton, New Zealand.*

FROM

THE



Within the TC-11 community, there has been a concern that the theoretical aspects of the research were somewhat under-represented. After a lively discussion within the technical committee, a new title for the TC has been proposed. The proposition was submitted to the governing board, which approved it by majority vote. The new title of TC-11 is "**TC-11: Reading Systems**". This title is broad enough to capture all areas (traditional OCR, pen-based computing in hand-held computers, up to text recognition in live video) but yet at the same time it does not conflict with the work performed in the communities which are represented by other Technical Committees. The ExCo is very pleased by the quality of the scientific discussion within the technical committee, which shows the vitality of the field and the commitment of the TC's members. See the homepage of TC-11 for more information: <http://hwr.nici.kun.nl/iapr/tc-11/>

Another technical committee which is in the middle of a renewal process is TC-3, which is preparing to be substituted by two more focused technical committees. We encourage the TC members to continue the ongoing discussion to prepare this evolution. There are also discussions on the creation of a new technical committee on discrete geometry. So we hope that we will have interesting news to report in the next issues as well.

Since the last newsletter, two GB members have been replaced, as a result of decisions within their national societies. The new representative for Portugal is Prof. Marques, who replaces Prof. Muge. One of Taiwan's two GB members is also new: Prof. Hsu replaces Prof. Tsai. Let us use this opportunity to thank Prof. Muge and Prof. Tsai for their service to the IAPR community, and to welcome the two new GB members, whose coordinates can be found on the IAPR homepage.

There is also some sad news. Prof. Juergen Schuermann, Fellow of the IAPR, and recipient of the ICDAR Lifetime Award in 1999, passed away on January 19, 2001, from an advanced state of cancer; (obituary page 9). A pioneer in the field of character recognition, handwriting recognition and document analysis has thus left us. We express our deepest condolences to his family.



A PLEA FROM AFRICA

The following extracts from correspondence are reproduced with permission from the authors. Reactions or suggestions from our readers would be welcome.

*From Professor Ross C.L. O'Neil,
Inst. of Experimental Physics, Equatorial
Observatory, P.O. Box 1445, Nyahururu, KENYA
To Dr Gabriella Sanniti di Baja*

3rd January 2001

Dear Madam,

I was interested to read your remark in the Winter 2001 IAPR Newsletter that from the African Continent only South Africa is represented in IAPR and that you have some concern about this.

As you know the reason that Africa is not represented in many fora (not just IAPR) is MONEY! We are the "Gross Income a Dollar a Day" part of the Human Family and your expenditure on one meeting of say RECPAD represents the entire scientific budget of a country such as Kenya which comprises 30 million people! Access to Internet is not FREE and the cost of telephone bills let alone a Pentium desktop with Bill Gates pricing for software is out of the question for us. Finding a postal address nowadays for correspondence to such as yourself has become a problem as those in positions such as yours seem oblivious of the fact that we cannot access the e-mail world. The only reason we can carry out ANY scientific research is that Mathematics requires only a stick and a smooth piece of sand. The whole scientific circus of American driven "publish or be damned" is akin to the availability of AZT to those stricken with AIDS. It is available but not available!

I would be most interested in your views as to how we can be part of IAPR on a gross income of a dollar per day?

Yours sincerely,
Ross C.L. O'Neil
Professor of Physics

The reply from Gabriella Sanniti di Baja:

January 23, 2001

Dear Professor O'Neil,

Thank you for your letter of January 3, 2001 that I received a few days ago. I apologise if I could not find any time to answer before.

Of course, I'm aware of the uneven distribution of resources in the world: money/power/health to developed and already rich countries, and poverty/problems/diseases to the less developed part of the world. And I don't like it, both as Gabriella Sanniti di Baja and as the IAPR President. But both Gabriella and the IAPR President have no means to solve the above problems.

Unfortunately, also some IAPR Member Societies and their individual members suffer for the uneven distribution of resources. Many of our researchers cannot get any financial support for their research activity, their institutions cannot subscribe to scientific journals nor allow their employees to attend conferences. However, Scientific Associations from less developed countries exist in the IAPR (e.g., Cuba, where the gross income per day is possibly very much similar to the one in your country). IAPR membership has certainly an enormous financial effort for less developed countries, but is possibly the only way to remain in some sort of contact with the rest of the scientific community.

IAPR is sensible to financial difficulties of its members. At the moment, the Executive Committee is searching for possible ways to offer scholarships or travel stipends to a few researchers from less developed countries in order they can attend the ICPR (which is the main IAPR conference). Maybe this is just a little

drop in the ocean, but the ocean is done by drops and we should be optimist for the future.

If in my message in the IAPR Newsletter I mentioned the African Continent as a possible source of new IAPR Member Societies, it is mainly because I have met at many conferences in different parts of the world, researchers from North African countries: Egypt, Morocco, Tunisia. I know that there are many researchers active in Pattern Recognition in those countries and that, sometimes, they organise international conferences. Isn't then reasonable for me to wish that a North-Africa association could join the IAPR? If such an association will apply for membership, then Kenya could join it. In this way, the IAPR dues for membership could be divided among many local associations and, maybe, become acceptable also for a "Gross Income One Dollar a Day" country.

I'm sorry that you did not find my postal address on the Newsletter, but only the email address (for your convenience, my complete address is enclosed below). Indeed, the Newsletter is sent to IAPR Members and, as far as I know, all the current Member Societies (if not all their individual members) have access to email. Email connection certainly costs, but also stamps cost and from some countries it takes an extremely long time before mail is delivered to the final destination (as I personally experienced for letters sent from, e.g., countries in the former Soviet Union). On the other hand, on the Newsletter (that I'm glad to see you had the chance to read and, incidentally, would be glad to know how/where you did it) you could find the address

of the IAPR Secretariat from which, as you see, I could easily get your letter.

I hope to hear again from you. In the meanwhile I send you my best regards and wishes.

Yours sincerely
Gabriella Sanniti di Baja
IAPR President



FINALLY, A COMMENT TO THE EDITOR
from Professor O'Neil

One is always being told that rather than criticise a situation one should propose an alternative one! Therefore I propose that some index of payment capability of a country (as science is dependent in many aspects on the concept of the 'Nation State') be instituted. The U.N. has many indices of such capability. International journals, societies and the like should scale their fees to that index. If the average salary in Britain is, say, \$40 a day and in Kenya \$1 a day then we poor devils in Kenya should be charged 1/40th. of charges in Britain for international services. Perhaps this could be a proposal in committee at the IAPR?

It is not that the spirit is unwilling but the pocket is weak. If the IAPR can publicise the skewness of scientific opportunity on this planet I shall have succeeded with my letter.

TIREDNESS U.S. STYLE

Yes. I'm tired!

For a couple of years I've been blaming it on iron, poor blood, lack of vitamins, air pollution, saccharin, dieting and a dozen other maladies that make you wonder if life is really worth living.

But now I find out, it isn't any of those things.

I'm tired because I'm overworked.

The population of the USA is 900 million.

380 million are retired. That leaves 520 million to do the work.

300 million are at school which leaves 220 million to do the work.

199 million are employed by central Government leaving 21 million to do the work.

Six million are in the Armed Forces which leaves 15 million to do the work.

Take from that total the 14,800,000 people who work for State and City Government and that leaves 200,000.

There are 188,000 in hospitals so that leaves 12,000 to do the work.

Now there are 11,988 folk in prisons and that leaves just two people to do the work.

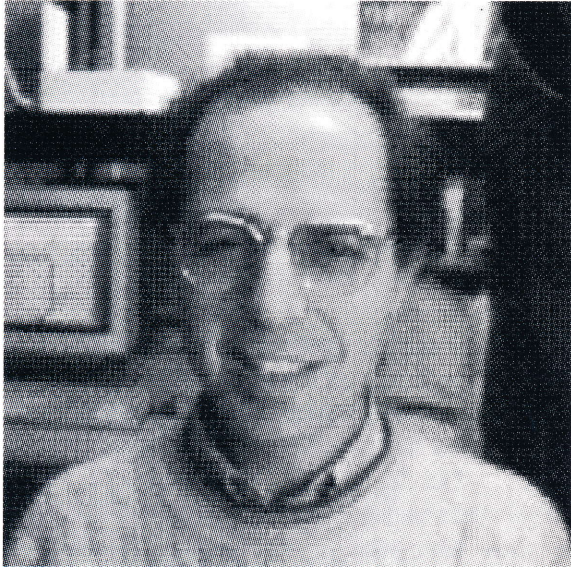
And you're sitting there reading this.

No wonder I'm tired.

(With thanks to Rudolf Hanka and Pavel Pudil.)

TECHNICAL COMMITTEE 3

Neural Network - Chair: Marco Gori



and

Machine Learning - Chair: Petra Perner



The focus of the TC3 subgroup *Neural Network* is on classification problems rather than general function approximation etc. Comparisons and benchmarking of classification methods, concentrating on machine learning and neural networks, is the main theme of the subgroup *Neural Network*. A reference list of available benchmarking databases and some test results is included in the home page of this current TC3.

The TC3 Subgroup *Machine Learning* was established in November 1999 after the first Workshop on Machine Learning and Data Mining in Pattern Recognition MLDM'99. The intention is to stimulate research in machine learning and data mining for image processing, image interpretation and computer vision. Since that time the subgroup has been grown up to 42 registered members. Other researchers have asked us to open the focus of the group to problems not only covering image-related topics. Therefore, we are viewing the topic of the group now in a much broader context of machine learning and data mining so that all kinds of application are welcome but special preference will be given to multimedia related applications. The specific topics are: inductive learning including decision tree and rule, induction learning, conceptual learning, case-based learning, statistical learning, neural net based learning and organizational learning and evolutionary learning, probabilistic information retrieval.

WebPages of the subgroup have been installed under <http://www.ibai-research.de> link TC3 that contain information about the subgroup, publications of the group, events and a list of the group members. In the future, there should also be information on ongoing machine learning projects on these WebPages. We also installed a newsletter, which is sent out on an irregular basis to the subgroup members. Currently, the TC supports the preparation of the second Workshop on Machine Learning and Data Mining in Pattern Recognition MLDM2001 organized by the Institute of Computer Vision and Applied Computer Sciences.

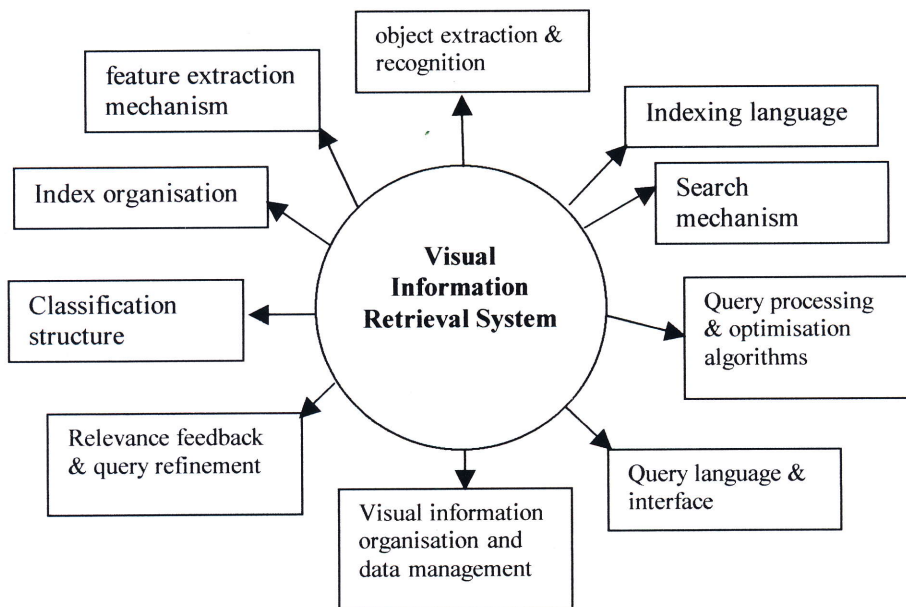
Recently, there are activities going on to split TC3 into a TC3 Neural Networks and Computational Intelligence and a new TC, Machine Learning and Data Mining.

The IAPR Executive Committee urges all TCs to keep in touch with colleagues within the community by regularly updating their websites and by publishing articles in this Newsletter detailing their recent activities and initiatives.

The Editor will be delighted to publish such articles and suggests that you accompany them with photographs, sketches or diagrams as illustration. Photographs should be sent as **jpeg** files.

TECHNICAL COMMITTEE 12

Multimedia and Visual Information Systems



Future Plans

The importance of the visual information search problem has given rise to a large number of systems and prototypes being built to perform such a search. While different systems clearly have their particular strengths, they tend to use different sets of data and queries to highlight the advantages of their algorithms. Consequently, a degree of bias may exist, which makes it difficult to make meaningful comparisons concerning the relative superiority of different algorithms. In order for the field of visual information search to make further progress, a need therefore exists for a standardised benchmark suite to be developed.

It is the plan of TC-12 to establish such a benchmark suite, which will allow the strengths and merits of different methodologies to be identified, compared, and validated. By having uniform sets of data, queries and measures of performance, research progress can be more easily recognised and charted, and the resultant synergy is expected to bring significant benefits.

It is expected that the benchmark suite will exercise and test different components of a system, some of which are indicated in the figure above. A competent system will require different components to be individually

competent, as well as their inter-working together in an efficient manner. Establishing such a benchmark will be an incremental and extensible process, and for it to be successful, it is undoubtedly essential to have the endorsement and support of the international research community.



Clement Leung
Victoria University of Technology
Melbourne, Australia
clement@matilda.vu.edu.au



GETTING IT WRITE

A little more than three years ago, one of the most prestigious of the UK national newspapers, the *Guardian*, designated Ian Mayes as their Readers' Editor, probably the first appointment of this kind anywhere. The *Guardian*, or *Grauniad*, as one of the satirical magazines had dubbed it, had a reputation for making printing errors on a grand scale, much to the annoyance or amusement of its generally well-educated readership. It is probable that the *Guardian* was no worse than others in this respect but once the suggestion had been made that its sub-editors were either half asleep or, perhaps, secretly sabotaging their employer, the *Guardian's* output was daily inspected minutely by readers in an attempt to be the first to spot the latest indiscretion.

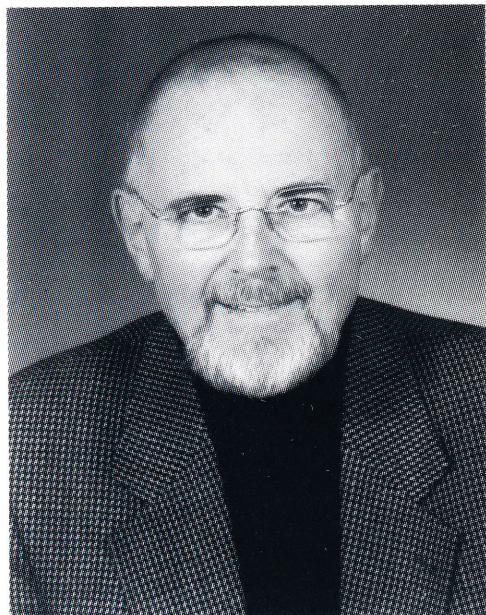
Sensibly and possibly bravely, the Readers' Editor set out to publish a column in which the errors were admitted and corrected as soon as they were detected. *Corrections & Clarifications* is a book by Ian Mayes (published by Guardian Newspapers Ltd) in which he has collected together some of the more amusing corrections, together with articles discussing them in relation to the *Guardian's* publishing policy. Mr Hayes has kindly allowed us to reproduce the following extract from his book. As many readers of this *Newsletter* spend much of their time writing and trying to avoid linguistic errors (especially when English is not your first language), we thought you might appreciate this nicely expressed advice.

'Here is a selection from an advice list for journalists that circulates in the United States. Its origin is unknown. The Pulitzer Prize-winning journalist William Safire may have had something to do with it~

1. Verbs has to agree with their subjects.
2. Prepositions are not words to end sentences with
3. And don't start a sentence with a conjunction.
4. It is wrong to ever split an infinitive.
5. Avoid cliches like the plague.
6. Also, always avoid annoying alliteration.
7. Be more or less specific.
8. Parenthetical remarks (however relevant) are (usually) unnecessary.
9. No sentence fragments.
10. Contractions aren't necessary and shouldn't be used.
11. One should never generalise.
12. Don't use no double negatives.
13. Eschew ampersands & abbreviations, etc.
14. Eliminate commas, that are, not necessary.
15. Never use a big word when a diminutive one would suffice.
16. Kill all exclamation marks !!!
17. Use words correctly, irregardless of how others use them.
18. Use the apostrophe in it's proper place and omit it when its not needed.
19. Puns are for children not groan readers.
20. Proof-read carefully to see if you any words out.'

IN MEMORIAM - JÜRGEN SCHÜRMAN

PROFESSOR. DR. JÜRGEN SCHÜRMAN, one of the pioneers in character recognition and the development of postal readers in Germany, died on Friday, 19 January 2001 at the age of 66.



He started in the early 60s at the research laboratory of AEG-Telefunken in Ulm where he trained computers to read bank money transfer forms. With his contributions in character recognition and sorting of documents he had a dominant impact on the worldwide success of the postal readers from AEG. In 1981 he was awarded a Honorary Professorship of the Technical University of Darmstadt for his successful work in industry. Until the end of 1997 he was head of the pattern understanding research group of the Information Technology Department of Daimler-Benz Research, embracing research in text understanding, speech understanding, image understanding, and signal processing. Together with his group and the respective development departments (of the former AEG-ElectroCom which now is operating under the name of Siemens-ElectroCom) he was since the early 60s closely involved in the development of document analysis systems. During this time, AEG-ElectroCom became the leading supplier in postal address reading and sorting equipment worldwide.

With another part of his research group he was also closely involved in speech recognition and speech dialog systems (together with DASA, Daimler-Benz Aerospace Systems) and a major partner of the German national speech understanding project Verbmobil which is successfully marketing speech recognition products emerging from this co-operation. In the third part of his research group and in close co-operation with other departments of Daimler-Benz Research (and Mercedes-Benz) he developed a prototypical driver assistance system based on vision and radar sensors. An operational traffic sign recognition system was presented as part of the PROMETHEUS final demonstrator.

MILESTONES OF HIS PROFESSIONAL CAREER

- 1960 Dipl.-Ing. in Telecommunication at TU-Berlin
- 1963 Joined the research staff of Telefunken Research Laboratories Ulm, Germany. Same organisation became part of Daimler-Benz Research in 1989
- 1968 PhD. at TU-Berlin (Thesis: "Die Anwendung der Regressionsanalyse auf das Zeichenerkennungssystem")
- 1970 Co-author, together with Günther Meyer-Broetz, of the first German Book on Pattern Recognition ("Methoden der automatischen Zeichenerkennung", Oldenbourg, München)
- 1974 Started teaching Pattern Recognition at the Technical University of Darmstadt
- 1977 Author of the book "Polynomial Classifiers for Pattern Recognition", Oldenbourg, München
- 1981 Honorary Professor of the Technical University of Darmstadt
- 1993-97 Member of the Technical Committee of the DAGM (German Association for Pattern Recognition, the organization representing Germany in the IAPR)
- 1994 Associate Editor, Pattern Recognition, IAPR, Pergamon Press
- 1996 Author of the book "Pattern Classification: a unified view of statistical and neural approaches", John Wiley, New York
- 1997 General Chair of the 4th ICDAR, International Conference on Document Analysis and Recognition, in Ulm, Germany
- 1997 Member of the Editorial board, International Journal of Document Analysis and Recognition, IJDAR, Springer
- 1998 IAPR-Fellow award at the ICPR in Brisbane Australia, for his contributions to character recognition and polynomial classifiers, and for the service to IAPR
- 1999 ICDAR-Lifetime Award

In the last 35 years Professor Schürmann had a leading and dominant influence on pattern recognition in Germany and his work has found worldwide attention. He was very active in the German pattern recognition society (DAGM), at IAPR and as the general chair of ICDAR'97. His sharp intellect and his contributions in many discussions earned high respect and appreciation. He was very successful in transferring theoretical findings into practical applications and in marketing products. Most remarkable are his last book on "Pattern Classification" and his contributions on polynomial classifiers and his in-depth investigations of the relationships between neural networks and classical statistical pattern classification.

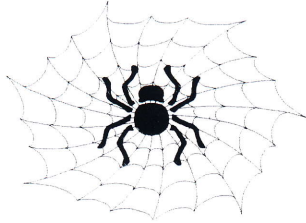
With great sadness we experience the loss of a renowned researcher and of a charming, charismatic person. His broad knowledge and his advice will be missed by all of us.

*Prof. Dr. H. Burkhardt, University of Freiburg
President, German Association for Pattern Recognition*



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FORTHCOMING SPONSORED MEETING

**2nd European Workshop on
Advanced Video-Based Surveillance Systems
4 September 2001
Kingston on Thames UK**

The application of Computer Vision, Artificial Intelligence and Data Communication techniques to the construction of sophisticated and robust visual surveillance systems.

This one day workshop aims to bring together academic researchers from the fields of engineering, computer vision and artificial intelligence with industrial developers working in the field of visual surveillance.

There is a great diversity of scientific problems that must be solved including reliable image capture and detection, efficient use of communications bandwidth, knowledge acquisition and classification, intelligent storage and querying, as well as intelligent interfaces. Applications for this technology include transport safety, security of public space, crime prevention and commercial analysis. Moreover, some projects are designed to deliver an increase in operator efficiency, while others are expected to operate autonomously.

Topics to be covered in the workshop include:

- Detection and tracking of pedestrians and vehicles
- Recognition of specific and generic objects
- Modelling and recognition of actions, gestures and behaviour
- Coding for low bandwidth systems
- Fusion of data from multiple sensors
- Database storage and retrieval of surveillance data
- System training and learning
- Context-based video retrieval

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Web: www.kingston.ac.uk/avbs2001

Submission deadlines are past but the organisers look forward to seeing IAPR members as participants.

**Come and enjoy the heritage and beauty of Quebec City, Canada and attend
The International Conference on Pattern Recognition ICPR - 11-15 August 2002**

Images from Tourisme Québec



Escalade de Glace
Parc de la Chute-Montmorency



Place d'Armes



Ville de Québec



Le Vieux-Québec
la Redoute Dauphine



Valeé de la Jacques-Cartiers



Bonhomme Carnaval au Petit Champlain



FORTHCOMING IAPR CONFERENCES WORKSHOPS AND EVENTS

Check updated information on: <http://www.iapr.org>

2001	Event	Location	Deadlines	Contact
15-17 May PRIP'2001	6th International Conference on PR and Information Processing	Minsk Belarus	Abstract Final Manuscript <i>Deadline passed</i> 15/04/2001	Fax: +375 17 231 8403 http://www.bas-net.by/iec/conferen.htm
23-25 May GBR'2001	3rd Workshop Graph Based Representations	Ischia Italy	Abstract Final Manuscript <i>Deadline passed</i> 15/04/2001	amalfi@dis.unina.it gbr@amalfi.dis.unina.it
28-30 May IW/VF4	4th International Workshop on Visual Form	Capri Italy	Abstract Final Manuscript <i>Deadline passed</i> 10/04/2001	Fax: +39 081 5267 654 http://amalfi.dis.unina.it/iwvf4/
6-8 June AVBPA	Audio & Video Based Biometric Person Authentication	Halmstaed Sweden	Abstract Final Manuscript <i>Deadline passed</i> 10/04/2001	http://www.hh.se/avbpa avbpa@hh.se
11-14 June SCIA'2001	12th Scandinavian Conference on Image Analysis	Bergen Norway	Abstract Final Manuscript <i>Deadline passed</i> 05/04/2001	Fax: +47 5183 1750 http://www.his.no/scia2001/
2-4 July MCS'01	Multiple Classifier Systems 2001	Cambridge UK	Abstract Final Manuscript <i>Deadline passed</i> 05/04/2001	Fax: +44 (0)1483 259554 http://www.dlee.unica.it/mcs
6-7 July WPRIS	Workshop on Pattern Recognition in Information Systems	Setubal Portugal	Abstract Final Manuscript <i>Deadline passed</i> 15/05/2001	Fax: +351 21 841 8472 www.iceis.org
25-27 July MLDM'01	International Workshop on Machine Learning and Data Mining in PR	Leipzig Germany	Abstract Final Manuscript <i>Deadline passed</i> 15/05/2001	http://www.members.aol.com/balperner/mldm2.htm ibalperner@aol.com
3-5 Sept EMMCVPR 01	Third International Workshop on Energy Minimization Methods	Sophia Antipolis France	Abstract Final Manuscript <i>Deadline passed</i> 31/05/2001	Fax: +33 492 38 76 43 http://red.lx.it.pt/~emmcvpr Marie-Helene Zeitoun@sophia.inria.fr
4 Sept AVBS2001	2nd E Workshop on Advanced Video-based Surveillance Systems	Kingston on Thames, UK	Abstract Final Manuscript <i>Deadline passed</i> 25/05/2001	Fax: +44 (0)8547 7824 www.kingston.ac.uk/avbs2001
5-7 Sept CAIP'2001	9th International Conference on Computer Analysis of Images	Warsaw Poland	Abstract Final Manuscript <i>Deadline passed</i> 15/05/2001	Fax: 28 22 825 52 48 http://tiger.ire.pw.edu.pl/caip w.skarbek@ire.pw.edu.pl
7-8 Sept GREC', 01	Fourth IAPR International Workshop on Graphics Recognition	Kingston, Ontario Canada	Abstract Final Manuscript <i>Deadline passed</i> 15/06/2001	http://www.cs.queensu.ca/grec2001 blostein@cs.queensu.ca
10-13 Sept ICDAR'01	6th International Conference on Document Analysis	Seattle USA	Abstract Final Manuscript <i>Deadline passed</i> 30/06/2001	Fax: +1 206 543 3842 http://isl.ee.washington.edu/IAPR/ICDAR01 haralick@ee.washington.edu
26-28 Sept ICIAP 2001	11th International Conference on Image Analysis and Processing	Palermo Italy	Abstract Final Manuscript <i>Deadline passed</i> 31/05/2001	Fax: +39 091 6529124 http://dijkstra.cere.pa.cnr.it/ICIAP ardizzon@unipa.it
2002		2002	2002	2002
11-15 Aug 16 ICPR	16 th International Conference on Pattern Recognition	Quebec City Canada	Abstract Final Manuscript Dec 2001 May 2002	www.icpr2002.gel.ulaval.ca Fax: +39 02 7064 3288 centaur@itim.mi.cnr.it
22-26 April CGIV'2002	First European Conference on Colour in Graphics Image	Poitiers France	Abstract Final Manuscript To be advised To be advised	http://www.itim.mi.cnr.it/Staff/Schettini

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