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

NEWSLETTER

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From the Editor's Desk

The previous edition of the *Newsletter* was, as an experiment, distributed by air freight. This appears to have resulted in much speedier distribution to most parts of the world. Indeed, the experiment has been so successful that it will continue to be distributed by air in future. I hope that this will ensure that announcements of conferences *etc.* will reach everyone in good time in future.

Copy Deadlines

Last dates for editorial copy:

Volume 14 Number 2	20th June	1991
Volume 14 Number 3	1st September	1991

Circulation: 14,900 copies

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.

Keeping in Touch Electronically

Why Bother? Why should one bother to use electronic mail, to read network news or to access archive servers? Electronic means for rapid communication are becoming more and more important in the research community. This is true even for domains that are not primarily computer-oriented. The basic reasons for using such means are the ease of communication they provide, as well as the ability to share various forms of resources.

This note presents some facilities for keeping in touch electronically. The information given here is accurate and complete to the best of our knowledge; we apologise for errors, omissions and out-of-date information.

Electronic Mail. One may like electronic mail or hate it, but the fact is that this form of communication is finding its niche. E-mail can replace lots of phone calls and a significant amount of "snail-mail". On the positive side, e-mail greatly simplifies exchange and dispatching of small pieces of information. It is much easier to e-mail your eighteen colleagues *I am going to lunch at 1200* or *Meeting postponed* than to tell them directly. It avoids the stress of direct contact, as well as the difficulties in reaching someone on the phone.

On the negative side however, it is not as easy to pretend to have lost or not received an e-mail than it is with a letter! Also, e-mail is fast and sometimes accelerates too much the pace of business. Finally, an e-mail cannot be refused; even worse, the sender has means of knowing that his or her mail has been read.

Electronic News. While the traditional researcher picks up the daily paper, the hooked-up one browses through the several hundred USENET newsgroups. Despite the plethora of postings, even the passive reader will often find valuable pieces of information: one person's junk is often another's gem.

For the active consumer, the news system can provide a valuable service. Typical exchanges relate to theoretical concepts, new products and reports, sources for image data, job opportunities, conferences, *etc.*. There are also everlasting discussions on topics such as *Can a computer think?* or *What are neural nets really good for?*. The range of news groups is very wide, from `comp.ai.philosophy` to `rec.music.synth`. For the computer vision and pattern recognition community, some of the interesting (technical) news groups are: `comp.ai`, `comp.ai.neural-nets`, `comp.ai.vision`, `comp.dsp`, `comp.graphics`, `comp.graphics.visualization`, `sci.optics`, `comp.robotics`, `news.announce.conferences`.

List Servers and Digests. List servers offer a service in between e-mail and the news. They are kinds of private bulletin boards, to which one must subscribe in order to participate. Messages are either directly broadcasted to all subscribers to the list, or edited into a digest by the moderator of the bulletin board system (BBS). They offer some advantages over the news: access to Usenet is not required since communication is through e-mail; messages are more relevant; the audience that is reached is directly involved in the domain.

In order to subscribe, one must send an e-mail to the Subscription address; messages themselves have to be sent to the Submissions address. The following lists are most relevant to our interests:

Medimage digest (Nahum Gershon, medical imaging).

Subscription: send the message

`subscribe medimage` ⟨your name⟩

to either of

`listserv@graf.poly.edu`
`listserv@polygraf.bitnet`

Submissions: `medimage@graf.poly.edu`, or `medimage@polygraf.bitnet`.

The Pixel digest (Adrian Clark, image analysis and synthesis). In addition to information specific to each domain, this list aims to increase communication between graphics and vision specialists. It is endorsed by the British Machine Vision Association and the Euro graphics Working Group on relationships between image analysis and synthesis.

Subscription: `pixel-request@essex.ac.uk`

Submissions: `pixel@essex.ac.uk`

Vision List digest (Phil Kahn, computer vision; also in the newsgroup `comp.ai.vision`).

Subscription:
`vision-list-request@ads.com`

Submissions: `vision-list@ads.com`

Although biologically oriented, the following BBS often provide interesting information:

CVNet and LiveEye (Peter Kaiser): two BBS devoted to biological vision and colour science.

CVNet moderated distribution: general announcements.

Subscription: `cvnet@yorkvm1.bitnet`

LiveEye unmoderated distribution. Subscription: send

`sub live-eye` ⟨your name⟩

to

`listserv@yorkvm1.bitnet`

Submissions: `live-eye@yorkvm1.bitnet`

LovNet (Paul Beckmann, Gordon Legge, Stephen Whittaker): low vision, *e.g.* optometry, ophthalmology, physiology, psychology, bio-medical engineering, vision rehabilitation.

Submissions: `lovnet@eye.psych.umn.edu`

Software Archive Servers. There are numerous ways of acquiring free software: source code in the news (*e.g.*, `comp.sources.misc`), retrieval by e-mail, direct transfer using the FTP protocol. Here are some examples of sites providing extensive amount of free software (see also the newsgroup `comp.archives`).

Software of general interest:

Netlib a gold mine for mathematical, numerical analysis and graphics software. Retrieval: e-mail. Query: send `send index` to `netlib@research.att.com`

Rice archive server various programs and data from the Unix world. Retrieval: e-mail. Query: send `help` to `archive-server@rice.edu`

Statlib statistical software. Retrieval: e-mail. Query: send `send index` to `statlib@lib.stat.cmu.edu`

Image analysis, computer vision and computer graphics software:

Vision list archives
various data and imaging software. Retrieval: FTP. Query: FTP to `ads.com`, login as `anonymous`, look in the directory `pub/VISION-LIST-ARCHIVE` and its sub-directories.

The Pixel archives text and digest archives, descriptions of different file formats, imaging and graphics software. Retrieval: NIFTP very shortly. Query: contact A. Clark, `alien@essex.ac.uk`.

Sites where image data are available often appear in the network news. Also, a comprehensive list of anonymous FTP sites and their contents can be obtained by e-mail (send `help` in the Subject line or message body to `archie@cs.mcgill.ca`) or telnet (to `quiche.cs.mcgill.ca`, login as `archie`); address questions to `archie-l@cs.mcgill.ca`.

Bibliographical servers. There are quite a few free data bases offering automatic bibliographical searches. They retrieve entries based on keywords provided by the user; logical combinations of keywords as well as regular expressions in search strings are often possible. Here are some examples of servers:

Graf-bib graphics references, 1976 to 1986. Retrieval: e-mail. Query: send `help` (Subject line) to `graf-bib-server@decwrl.dec.com`.

Lido AI literature. Retrieval: e-mail. Query: send `lidosearch help info english` (Subject line) to `lido@cs.uni-sb.de`.

Vision list archives Vision list back issues and A. Rosenfeld's bibliographies, 1984 to 1989. Retrieval: FTP. Query: FTP to `ads.com`, login as `anonymous`, look in `pub/VISION-LIST-ARCHIVE` and its subdirectories.

Conclusion. Communication between scientists is essential and these various electronic means for keeping in touch respond to a real need. They are however so pervasive that one must be wary of being drowned under the abundance of information!

Finally, remember that there is no such thing as a free lunch: someone somewhere is paying for the data transfers you request.

Acknowledgements To all those who take care of these various bulletin boards and archive sites.

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Disappearing societies

I have tried to update the addresses for the IAPR member societies, which has not been done for a while. First I wrote to the addresses where the Newsletters are sent, believing that address to be important and current. In the cases where that did not help, I wrote to the governing board member(s) for the country, which got me some more answers. But after seven months and several tries I have yet to make contact with a number of societies. (Although some of you may have answered during the two weeks late autumn when I was apparently cut off from foreign e-mail.) The lack of response worries me in two ways: How to contact the society? Where are the Newsletters going?

The non-answering societies are:

- Deutsche Arbeitsgemeinschaft für Munstererkennung, GERMANY (west pre-1990)
- Israel Association for Computer Vision and Pattern Recognition, ISRAEL
- Associaco Portuguesa de Reconhecimento de Padres, PORTGAL
- Scientific Council on Pattern Recognition and Scene Processing of the USSR Academy of Sciences, SOVIET UNION

Could anybody reading this and having the following information on the societies please send it to me as soon as possible:

- The official address of your country's member society
- Telephone and Telefax numbers
- E-mail address (if any)
- Number of Newsletter copies wanted
- The address for the Newsletter copies

Gunilla Borgefors
IAPR Secretary

Are We Getting Anywhere?

I had occasion recently to take part in a meeting discussing trends in computer component development, the idea being to try to make informed guesses as to what would be around and useful in thirty years time. With this in mind, it seemed sense to look back thirty years as well. What did we see as the future in the early 1960s? As far as I was concerned, I was at that time trying to build semi-automatic and fully automatic devices for making measurements on charged particle tracks in nuclear emulsions and the first paper I wrote on this topic (in 1959) did not even mention the word 'computer'; we had to build our own electronic or electromechanical devices if we wanted to compute.

Nevertheless, at about the same time, Frank Rosenblatt had designed his Perceptron, Stephen Unger had just published two papers on a two-dimensional mesh of processing elements (a precursor to the Connection Machine), W.S. McCulloch et al had set people thinking with their well-known paper 'What the frog's eye tells the frog's brain' and Marcel Golay had filed a patent describing a lymphocyte counting device (using an image analysing principle, involving local neighbourhoods, which was to be used in many subsequent machines). Thinking back to those days, I have the distinct impression that many of us believed that solving the technical problem of how to achieve fast data processing would almost inevitably lead to effective automatic vision systems, possibly by modelling the systems on what, as it turned out, were very sketchy ideas as to how mammalian vision actually worked.

Pick up any journal today that carries articles on image analysis, vision or whatever and you see much impressive mathematics, beautiful computer-generated images (especially from the fractal camp), sixteen new ways of extracting edges and a shaky old robotic trolley staggering shortsightedly around a factory floor. The question I would like to ask is: are we winning? To be completely cynical, is it a fair assessment to conclude that almost all practical applications of automated vision are at the 'almost good enough' level which means, in effect, 'not good enough'?

Our Association could render a valuable service by acting as a sort of shop window for real achievements in our field. Surely there must be some projects which have resulted in systems which work outside the laboratory in which they were developed, and not just on Tuesdays! Should we not be cataloguing these gems in our collection so that all the world can stand and admire? To be a little more serious, I would like to suggest that someone or some group should make a determined attempt to compile a register of well-engineered solutions to practical problems in applied automated image analysis/vision. Perhaps such a thing exists already; if so, I and I imagine others would like to hear about it. If not, then we need volunteers. I am sure the Editor would be happy to publish any ideas you may have about this matter.

Prof. Michael Duff
IAPR President

An International Standard for Image Processing and Interchange

How many readers have been given a tapeful of images for some important work, only to find that no information has been supplied about the tape format? In such cases, the effort involved in ensuring that the tape has been read correctly and converted into one's own file format is usually at least as great as the effort involved in processing it. Equally irritating, how many times have you received a program from someone, only to find it uses an image processing library which you do not have? You might be surprised — and hopefully pleased — to learn that many of these problems could disappear in the near future due to work on an international standard for Image Processing and Interchange (IPI).

Initial work has been proceeding for over two years now, but the project really started in earnest at a recent International Standards Organization (ISO) meeting in Norwich, UK. The standardisation effort is to take place under the ægis of ISO SC24 ("Computer Graphics") and will be the first standard in this area to cover both an Application Programmer's Interface (API) and an Image Interchange Format (IIF). Both the API and the IIF will be based on a Common Imaging Architecture (CIA). The time is not yet opportune to discuss the content of the standard in detail, but an outline of some aspects is appropriate. (However, the reader should be aware that even these may change as the standard develops.)

Part I, the CIA, will describe a general model for the processing of imagery (an 'architectural' model), including aspects such as the effects of regions in both source and destination images. The CIA will also define models for image data-types and several non-image data-types such as histograms. It will also indicate the 'specialisations' necessary to tie down the other parts of the standard. For example, an image will be presented as an N-dimensional object, but the current API will only support images of up to five dimensions (three spatial, time and spectral).

Part II, the API, is based on the Programmers' Imaging Kernel (PIK) being developed in the USA. This API will support most common operations on images, of both the image-to-image (*e.g.*, FFT) and the image-to-non-image (*e.g.*, histogram) varieties. Some facilities for manipulating non-image data-types will also be included. Both image and non-image data-types may be based on several basic representations — integer, floating-point, complex, *etc.*. The API is designed to support operations on pixel data, and explicitly excludes 'image understanding' operations, which typically involve non-pixel representations.

There are likely to be several levels of conformance to the standard, and the API in particular, but the mechanism for achieving this has not yet been discussed. It is worth noting that a number of PIK and PIK-like image processing packages are now available; these give a reasonable idea of the functionality that the API will offer, though the packages themselves will probably require significant modification to conform to the standard.

The final part of the standard will describe the IIF. There are many widely-used image formats already in existence, some of which are *de facto* standards in particular applications areas (*e.g.*, FITS in the astronomical community) or are already standardised (there is an ANSI image tape format standard for electronic pre-press). Of course, recent standards from JPEG and MPEG, among others, involve some compression, and the IIF is likely to incorporate their recommendations.

At the abovementioned Norwich meeting, editors for the various parts of the standard were appointed:

I Adrian F. Clark, University of Essex, UK

II William K. Pratt, Sun Microsystems, USA

III Rainer Hofmann, Fraunhofer Group, Germany

and a timetable for the development of the standard was laid out. Most of the standard will be written, distributed for comment, and edited in 1991; trial implementations and further editing will take place during 1992–3. The final International Standard is timetabled for early 1994. (Be warned, however, that such timetables almost invariably slip somewhat.)

What will the impact of the standard be? Its effect will obviously be greater in some areas of interest to the IAPR than others: for example, greater functionality is likely to be available to support image restoration and reconstruction than computational vision, simply because the former includes a larger proportion of pixel manipulation. However, be assured of one thing: *the standard will affect you,* particularly as add-on hardware which interfaces to the programmer via the API becomes available. Hence, it is important to have as wide a consideration of the drafts of the standard as possible. If you would like to be involved, contact your national standards body or, if they are unable to help you, the author of this article.

Adrian F. Clark
University of Essex

A Message from the Bulgarian Association for Pattern Recognition

The Bulgarian Association for Pattern Recognition(BAPR) was founded on 5th March 1990 and registered as a non-profit association. Professor V. Sgurev is the president of BAPR and Dr. V. Valev and Dr. R. Kunchev its are vice-presidents.

The main goal of the Association is to develop Pattern Recognition theory and application in Bulgaria. The membership is currently about 70 scientists working in ten institutions. Their research activities cover to a certain extent those included in the scope of the IAPR technical committees. The main BAPR activities are as follows:

- organization of monthly seminars
- popularizing the results obtained in the field of Pattern Recognition
- publishing a bulletin of BAPR

You have probably heard that at present Bulgaria is undergoing a hard economic crisis. For this reason we would kindly ask IAPR members to help us by:

- contacting IAPR-affiliated organisations, associations and societies in order to develop joint projects in the field of Pattern Recognition
- inviting Bulgarian specialists in the field of Pattern Recognition for research visits and lecturing
- granting scholarships for young, talented students and postgraduate students in the field of Pattern Recognition
- supporting financially the participation of the Bulgarian representatives in IAPR international events

Correspondence should be addressed to:

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Recent TC7 Activities

On June 14–15, 1990, Technical Committee 7 (Applications in Remote Sensing) held a workshop on "Multisource Data Integration in Remote Sensing" at the University of Maryland, College Park, MD, USA. The 25 participants deemed the workshop to have been a great success, largely due to the highly stimulating technical discussions the workshop provided.

A 164-page proceedings of the workshop was published as NASA Conference Publication 3099. Copies of the workshop proceedings are now available from the proceedings editor, free of charge, while the supply lasts. If you would like a copy of the proceedings, please send your request to:

Dr. James C. Tilton
Mail Code 936
NASA GSFC
Greenbelt, MD 20771
U. S. A.
Email: tilton@chrpisis.gsfc.nasa.gov

TC7 is planning to hold another workshop in 1992 in conjunction with IAPR's International Conference on Pattern Recognition (ICPR) which will be held during 30th August – 4th September 1992 in The Hague, The Netherlands. A planning meeting for this workshop will be held during the 1991 International Geoscience and Remote Sensing Symposium (IGARSS'91) in Espoo, Finland. This meeting is tentatively scheduled for the evening of Tuesday 4th June 1991. The exact time and location of this meeting will be announced at IGARSS'91.

Correction to "A Proposal for the Activation of an European Coordinating Committee of the IAPR"

In the previous edition of the *Newsletter*, the Netherlands was accidentally omitted from the list of European Chapters of the IAPR. Indeed, the Netherlands plays an active part in the IAPR (with over 200 members and two representatives on the Governing Board, Prof. E. Backer and Prof. E. S. Gelsema).

Vito Di Gesù
Dipartimento di Matematica ed Applicazioni
University of Palermo
ITALY

Digital Image Computing: Techniques and Applications

Melbourne, Australia
4 – 6 December 1991

DICTA-91 is the 1991 biennial national conference of the Australian Pattern Recognition Society. The event will provide an opportunity for any persons with an interest in computer vision, digital image processing and analysis, and any other aspects of pattern recognition to become informed about contemporary Australian developments in the area, to exchange ideas, to establish contacts, and to share details of their own work with others.

The conference will concentrate (but is not limited to) the areas of general techniques and particular applications. Techniques cover new methods which have been developed or extensions of existing methods for solving general problems in digital image computing, and discussion of problem classes and software and hardware tools which assist in their solution. Applications include surveys of problems arising in particular applications areas, solutions for specific problems in such areas, and software and hardware tools appropriate to such areas.

Papers are sought for presentation at the conference and publication in the conference proceedings. Submissions for peer review should consist of at most three A4 pages of single-spaced text, summarising the technical aspects of the paper and any results that will be quoted. Final papers will be limited to eight pages of text and illustrations in camera-ready format. Dates for submission are as follows:

2nd August 1991	abstract due
30th September 1991	acceptance notified
1st November 1991	final paper due

Four copies of the abstract should be sent to:

Australian Pattern Recognition Society DICTA-91
c/o Department of Computer Science
Monash University
Clayton 3168 VIC
AUSTRALIA
Email: aprs@bruce.cs.monash.edu.au

Special Issue of Machine Vision and Applications on Document Image Analysis Techniques

The objective in document analysis systems is to create a higher-level description of paper-based documents by computer recognition of characters, symbols, and lines, establishing spatial and semantic relationships and determining overall structure. Applications include automatic processing of business documents such as filled-in forms, checks, letters, charts, and graphs; conversion of paper-based engineering drawings and maps for input to computer databases; input of technical manuals and journals for ease of storage, retrieval and modification; automatic handling of mail pieces including location and recognition of address fields; classification of fingerprint images for efficient storage and search; recognition of non-textual symbolic information such as musical notes, shorthand scripts, *etc.*; man-machine interfaces for ease of input of beautified versions of drawn sketches, diagrams, symbols, and character font artwork.

The general procedure and sequence of methods used in document image analysis may be classified as following: *data capture and pre-processing, segmentation and layout analysis, feature extraction and matching, text and graphics recognition,* and *interpretation.* **Machine Vision and Applications:** *An International Journal* has planned to publish a special issue (Volume 5, number 3, August 1992) on **Document Image Analysis Techniques**. Manuscripts describing novel algorithms and techniques in each of these topics within the context of a document analysis application are sought for inclusion in this special issue.

Instructions for Submitting Manuscripts. Manuscripts should be prepared in accordance with the *Instructions for Authors* published in **Machine Vision and Applications**. Papers must not have been previously published or currently submitted for publication elsewhere. Deadlines are as follows:

1st July 1991	abstract of the manuscript
1st October 1991	four copies of the full manuscript

Manuscripts should be submitted to one of the guest editors:

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Special Issue of IEEE Computer on Document Image Analysis Systems

The objective in document image analysis is to create a higher-level description of paper-based documents by computer recognition of characters, symbols, and lines, establishing spatial and semantic relationships, and determining overall structure. **Computer** has planned to devote the June 1992 issue to **Document Image Analysis Systems**. Manuscripts are sought for applications in the following areas:

Business Document: recognition of forms, charts, and graphs; extraction of fields; signature verification.

Engineering Drawings and Maps: separation of text from graphics; recognition of lines and symbols; interpretation of content.

Textbooks and Technical Manuals: analysis of layout; recognition of text and figure regions; establishing appropriate links for non-sequential retrieval.

Automated Postal Processing: segmentation of address blocks; recognition of characters and postal codes.

Fingerprint Recognition: classification of patterns; locating features for efficient storage and search.

Man-Machine Interface: for computer input and beautification of hand-drawn sketches, diagrams, symbols, and fonts.

Music and other Symbolic Forms: recognition and interpretation of other symbolic forms, including music, shorthand, *etc*.

Papers should describe complete systems. Any description of specific algorithms and techniques, especially those that characterise a particular system, are welcome, but only in the context of complete system descriptions. Preference will be given to those papers describing working systems and novel research prototypes.

Instructions for Submitting Manuscripts. Manuscripts should be no longer than 32 double-spaced, typewritten pages (including figures and references). No more than twelve references should be cited. Papers must not have been previously published or currently submitted for publication elsewhere. Manuscripts should have a title-page that includes the title of the paper; full name, affiliations, mail and electronic addresses, and telephone numbers of all authors; an abstract of about 300 words; and a list of keywords that identify the central issues of the manuscript content.

Deadlines

1st May 1991	300-word abstract
1st July 1991	fourteen copies of the full manuscript
1st December 1991	notification of decisions
1st February 1992	final version of the manuscript
June 1992	date of special issue

Questions regarding the special issue should be directed to:

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