Newsletter 22

Dear IAPR TC10 members and supporters...

This TC10 news will first give you some brief reports about the october events many of us attended. Then we will report about decision which were made during these weeks and announcements of interest to our community. LAST BUT NOT LEAST, there are some important questions about how to organize a collection of data and how to work towards real performance evaluation for our methods.

SSPR'94

Workshops, which gather less than 100 people, with a single track and more time for presentation of papers and for discussions, are often very exciting events, provided the quality of the scientific content is good. This has been the case of the series of IAPR International Workshops on Structural and Syntactic Pattern Recognition, traditionnaly held just before the ICPR. Many attendees of these workshops have experienced fruitful and pleasant days, and there are probably quite some collaborations between groups in different countries or regions which have been initiated during a coffee break at one of these workshops.

The 1994 SSPR workshop was held in Nahariya (Israel), with an excellent organization by colleagues from the Technion in Haifa, with Dov Dori and Alfred Bruckstein serving as workshop co-chairs.
The range of papers presented covered multiple aspects of pattern recognition, in terms of methods and of applications, but the focus was kept on structural and syntactic approaches. Several of those papers were focused on structural and syntactic methods in document analysis, and some of them were dealing with graphics recognition. Just as a sample, let me mention among the latter an interesting paper by Luo and Dinstein (Ben Gurion University, Beer Sheva, Israel), who have an interesting method for seprating graphics and text in scanned maps, even when text is touching the graphics. They base their method on directional morphological operators and the results are impressive.
The papers of this workshop will appear in a forthcoming book, "Shape, Structure and Pattern Recognition", edited by D. Dori and A. Bruckstein and expected to be published in April 1995.

ICPR'94

The week after SSPR, many of us were gathered in Jerusalem for the 12th ICPR. There also, the organization was very good and I think all attendees enjoyed the days they spent in Jerusalem. ICPR was as usually a big event with 4 parallel conferences over 4 days. But the overall quality was amazingly good and many interesting papers were presented. Some of the sessions were focused on our areas of interest, including:

- a session on applications in the "computer vision and image processing" track, where I noted in the graphics recognition area a paper from IRISA/INSA in France about segment detection in music scores analysis and a paper from the University of Calgary proposing a vectorization method called the Vision Knowledge Vectorizer.
- a session on methods and application in the "pattern recognition and neural networks" track with a paper from TNO in the Netherlands about finding arrows in utility maps, with good results.
- in another session of the same track, named "OCR in Document Analysis", Rangachar Kasturi presented an interpretation system for Telephone Company Central Office Equipment Drawings.
- still another session was devoted to "Documents, Maps and Drawings", and included a paper from the University of Maryland about legend-driven symbol recognition in maps and another from Toshiba R&D Center about vector and arc detection in engineering drawings.

This was of course only a small excerpt. Several posters dealt also with graphics recognition.

DAS'94

The third week in this fast pace of events, we were in Kaiserslautern for the Document Analysis Workshop. This was a very exciting workshop, with plenty of time for discussions, many excellent papers, working groups where various topics were discussed, and an excellent organization by our colleagues from DFKI (many thanks to Andreas Dengel and his team!). Graphics recognition was of course present at this workshop, through several papers, but also through a discussion group devoted to this topic. In addition to the proceedings, a forthcoming book, to be published by World Scientific and edited by Larry Spitz and Andreas Dengel, will contain the contributed papers, reports from the working groups and some other invited articles. I hope that the report from our working group about line drawings and music recognition will be interesting reading for those who couldn't attend...

VARIOUS ANNOUNCEMENTS

This was a brief (or maybe not so brief!) report from the scientific conference and workshop activities in october 1994. Before coming to

specific TC10 activities, here are some announcements, reminders and other pieces of information which can be of interest:

- The IEEE Computer Society Press will publish this month a book edited by Larry O'Gorman and Rangachar Kasturi, titled "Document Image Analysis" and containing introduction material to explain the different methods used in the field and discuss the advantages and disadvantages of various approaches, and 34 selected papers from the area. Contact the IEEE Computer Society Press or one of the authors for details. If you need addresses for the IEEE CS or for the authors, you can ask me.
- TC-11, which is our close companion technical committee, held its meeting in Jerusalem. A new chairman was proposed to the IAPR: congratulations to Guy Lorette who will certainly continue the good work of Rejean Plamondon. In addition to ICDAR and to DAS, which are co-sponsored by TC-10 and TC-11, TC-11 organizes an international workshop on frontiers in handwriting recognition. The 4th edition will be held in Taipei in December 1994, and in Jerusalem a proposal was made for the 5th to be held at the University of Essex (UK) in 1996 (probably in september).
- TC-2, which organizes SSPR, has also been a companion TC in several events. In Nahariya, we discussed where the next SSPR will be, in 1996. There are at the moment two proposals and the decision will be made shortly.
- The first DAS was definitely a success so we hope that there will be a next one. The time and place are not decided yet but some work is going on to come to a good proposal.
- At ICPR, the place for the 14th ICPR, in 1998, was chosen and announced. It will be held in Brisbane (Australia). I remind you that the 13th ICPR, in 1996, will be held in Vienna (Austria).
- The new president of the IAPR was also elected at ICPR and presented during the conference banquet. Congratulations to Joseph Kittler!

TC-10 ACTIVITIES

Now, let's come to specific TC-10 activities. First, I remind you about two important deadlines:

- the deadline for submitting to ICDAR'95 is in 14 days' time (Dec. 1st)... Don't forget it, it's the major event in document analysis and recognition!!!
- the deadline for submitting to the graphics recognition workshop GREC'95, to be held just before ICDAR, is in 44 days' time (Dec. 31st).

If there is anybody out there who hasn't received the call for papers for these two events yet, feel free to ask me for copies (in electronic format).

GREC'95

Some more information about the Graphics Recognition workshop: our idea is that this workshop should be an opportunity for the researchers in the field to meet, discuss, compare the methods and approaches and so on. The workshop should NOT in any way be in conflict with ICDAR, but a good complement. That's why we especially welcome abstracts of remarks and open topics. The general idea is that if you are working in the field of graphics recognition, you should be able to submit a research paper describing your present results to ICDAR and still submit ANOTHER contribution to GREC, the latter being more focused on the methods used for the graphics recognition of your system, on specific algorithms, and/or on present problems, open problems or other topics of interest. We want GREC to really be a WORKshop, in the "spirit" of SSPR90 and of DAS94, to take just some pexamples familiar to those who attended one of these events.

An additional incentive to promote this WORKshop atmosphere will be

THE DASHED-LINE DETECTION CONTEST

which will be held during GREC. The idea is the following, and was one key point of our working group at DAS94: there is a lot of work going on in graphics recognition, but it is quite difficult to EVALUATE how good a method is compared with another one. However, we all know that a rigorous approach to PERFORMANCE EVALUATION is a key to real progress toward working solutions which can be applied in real-world problems. Although we still have difficulties in defining good evaluation procedures for complete systems (I refer you to the interesting dialogue on "Performance Characterization in Computer Vision" recently published in CVGIP-Image Understanding), it is our hope that it may be possible to evaluate rigorously modules of a recognition system and that such an evaluation can at least help in evaluating the whole system (although there are also other problems, of course). So we discussed this quite a lot in Jerusalem and a proposal by Rangachar Kasturi and others was deemed to be very interesting: in connection with GREC'95, we will hold a contest on dashed line detection. Contestants will have to run a live demonstration of their program on a set of test images which will be available at the workshop. Precise specifications of the ground truth and of the evaluation procedure will of course be available.

If you already now know that you may be interested in participating in this contest, you can tell us. Send a mail to me or to prof. Kasturi (kasturi@cse.psu.edu). The complete rules of the contest will of course be available very soon and will be sent out on this mailing

list. Tell also other colleagues who may not be on this liost about the contest. We hope it will be a really exciting part of GREC!!

We expect this contest to be the first in a series. We already have ideas for the next contest. If you have suggestions, they are welcome. One idea is that it may be about vectorization when text is touching the graphics...

TOWARDS A COMMON DATABASE

This contest is just a part of a more general effort which we decided to start during our various discussions. It is the feeling among many researchers that in order to make further progress in our field, and not be satisfied with regularly publishing "new methods" on our own sets of data, we should strive towards means to COMPARING one method with another, EVALUATING their respective merits, and so on. Our colleagues in text-oriented document analysis and in handwriting recognition have already started this effort by gathering ground-truthed data which are made available to all researchers in the field. Let me just mention, as some examples among others, the University of Washington CD-ROMs with ground truthed document images, the UNIPEN effort by TC-11 to gather a database of on-line handwritten text, or the world-wide contest organized recently by the CCARH in Menlo Park, CA, on the recognition of printed music scores. WE ALSO NEED SUCH A DATASET FOR GRAPHICS RECOGNITION, i.e. technical drawings, business graphics, etc.!!! So I propose that TC-10 starts collecting data for such a database. If you are willing to contribute, could you send me a short mail where you tell me what kind of data you can provide. The ideal would of course be ground-truthed data, but as there are so many different representation models (CAD, GIS, etc.) and lots of contextual information, let us start by a simple "bootstrap": if there were a database with a representative set of scanned documents containing graphics of various kinds, everybody could publish the results of his/her methods (at least low-level, non-contextual methods) on the documents contained in this database, which would allow for real comparisons.

One important thing: we need uncopyrighted stuff, in order not to have legal problems when we make the data available via a ftp server, a WWW server or something like that. So if you want to contribute, make sure that there are no copyright problems with the data you provide. One idea, for colleagues working at univesities, could be to get in contact with departments such as electrical engineering, mechanical engineering, etc. to get drawings made by students. If you canb provide more than just the scanned drawing, for instance some CAD model, and IGES description, or whatever other ground-truth you have, it's of course still better.

I hope I will receive several replies to this call for contribution. I am willing to set up space on a server available by ftp, wais, gopher and WWW, where these data could be made available. If other people are also willing to provide server space and services (maybe a mail server, or whatever), could you contact me to work out the details?

TOWARDS COMMON, GENERAL SOFTWARE MODULES

Another idea which we discussed at DAS was the possibility to put together some software modules, at least for low-level tasks, written with strict rules and with well-specified data structures, which could be used as a common basis for the participating groups. This requires of course much more efforts than simply gathering data, so understandably, our reflection is less elaborated on this topic. One possible idea would be to base ourselves on the work done in the IUE (Image Understanding Environment) project, maybe to design some kind of "micro-IUE kernel" (I am not completely sure that this is a valid concept). If somebody has ideas about this point, I welcome him/her to share them with all of us...

Well, this mail has already become quite long, but I hope that you read through it all or at least that you read carefully the important points raised in the last sections. I expect as much feedback as possible from this mail.

Your TC-10 chairman,

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