



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

NEWSLETTER

Editor

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Volume 6
Numbers 2, 3
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FROM THE EDITOR'S DESK

Dear Colleagues,

Due to various circumstances, including summer vacations, I am issuing a double edition of the Newsletter. One important event was the Second Scandinavian Pattern Recognition Conference in July in Copenhagen. Besides the fact that it was a conference superbly organized by a committee led by Prof. P.W. Becker and full of papers with substantial content, it provided an opportunity for the executive committee of the IAPR to get together and evaluate the current activities of the association and outline the work for the coming year. Following this editorial, you can read excerpts from the minutes kindly provided by Dr. P. Devijver. My own perception of the most exciting activities fall into two areas: One is the inexpensive image processing hardware which allows even smaller universities and colleges to get into image processing research. Because of this I expect some new and fresh ideas coming from the usually young and unestablished researchers. The other observation I made is that one sees a tremendous effort of moving from software

implementations to special purpose hardware implementation of various image processing algorithms. This, of course, causes us to reevaluate many established image processing and pattern recognition algorithms so that they will become amenable to hardware implementation. Again I feel that this effort will have a very healthy influence on our progress because it will a) put into a real time processing test some of our established algorithms and b) once at least some of the low level processing is implemented in hardware, this fact will allow us to concentrate on some of the higher level issues like modeling and recognition.

I am looking forward to hearing your comments about these and other related issues. Have a nice Fall!

Sincerely yours,

Ruzena Bajcsy

INTERNATIONAL ASSOCIATION FOR PATTERN RECOGNITION

EXCERPTS

Minutes of the Ninth Meeting of the Executive Committee of IAPR

Hotel Eremitage, Lyngby (DK)
July 14, 1983

Present were: Simon (President), Kohonen (Vice-President), Freeman (Treasurer), Devijver (Secretary), Levine (Chm. 7ICPR), Bajcsy (Newsletter editor), Danielsson (Chm. Membership committee), Rutovitz (Chm. Awards comm.).

Invited: Fu (USA), Becker (DK).

Opening: Simon opens the meeting at 06.10 pm.

Technical Committees

- The question is raised of whether or not the principle of returning to IAPR 10% of the gross receipt (at ICPR Conferences) should apply to meetings and workshops organized by TCs. Freeman believes that the situation is somewhat more complex. In the case of ICPR conferences, they are organized by national societies on behalf of IAPR. The national societies take all the financial risks and therefore are entitled to all the financial benefits. In return for IAPR's promotion for these conferences, however, it was agreed in Kyoto, that IAPR would receive ten percent of the gross registration receipts. In the case of meetings or workshops organized by a TC, he thinks the situation is really very different. These presumably will be meetings organized directly under IAPR sponsorship and therefore all the financial surpluses should go to IAPR. The point he wishes to make is that IAPR should either receive all the surplus, if it is the sponsor of the meeting, or the same ten percent if the meeting is sponsored by some other society. He suggests that the point be left open until a specific request for such a meeting is received from a TC. The general feeling is that the decision on this issue should be postponed until some experience has been gained with this kind of meeting.
- At J. Sklansky's request, it is agreed, by unanimous vote, to change the name of TC-9 from

Applications in Bioengineering and Medicine to Biomedical Pattern Recognition.

- Simon reports that, due to apparent lack of interest from J. Mundy, he has appointed A. Rosenfeld as chairman of TC-8 (Applications in Industry).

ICPRs

- Levine reports on the preparation of 7ICPR. The conference shall take place at *Queen Elizabeth hotel*—as originally planned—where reservations have been made which will permit us to have up to five parallel sessions. Registration fee will probably be of the order of **US \$160**. Cost of accommodation at the Queen Elizabeth hotel is expected to be approximately **US \$69** for single occupancy and **US \$77** for double occupancy.
- Simon reports that the dates for the 8th ICPR to be held in *Paris* will be *October 28-31, 1986*.

Membership

- Danielsson reports that an application for membership was received from *Hungary* in October 1982, but the information provided at that time about the Hungarian national organization did not match the requirements of the IAPR Constitution. Additional information was received in July 1983 which presently allows the membership committee to propose that the Hungarian organization be accepted by the Governing Board as the twentieth national member of IAPR.

The Hungarian national organization is the *Section of Artificial Intelligence and Pattern Recognition of the John Von Neuman Society for Computer Science* with a membership of 25 (category A). The proposed Hungarian national representative is *Dr. G. Kozman, Center Research Institute for Physics, POB 42, Budapest H.1525*.

- The IAPR secretary is directed to organize a mail ballot on the Hungarian application at his earlier convenience.
- Simon reports that he made a one month visit to the USSR in the early spring of 1983. He discussed possible application of USSR to IAPR with several scientist leaders (e.g., Academicians *Dorodnicyn* and *Velikhov*, who is Vice President of the USSR Academy of Sciences in charge of computer science in general). The main apparent difficulty seems—

presently—to lie in the absence of a national organization for Pattern Recognition in USSR. Nevertheless, contacts will be maintained and Simon is to meet the USSR delegates in September again in connection with the coming IFIP Congress.

- Danielsson reports that he made several unsuccessful attempts toward Norway. Poland should also be considered. Levine will contact scientists from Egypt.

IAPR-North Holland agreement on PRL

- The n-th iterate of the agreement has just been received from Backer. Devijver briefly underlines the most interesting articles, e.g., two possibilities of fairly reduced subscription rates and the power of IAPR to designate up to five advisory editors. Levine and Freeman express the wish that Executive Committee members be given a chance to reexamine the whole matter at leisure before the approval is requested from the Governing Board by mail ballot. The secretary is requested to take quick action on this matter, the intent being to have simultaneous ballots on the agreement and the Hungarian application.

Selection of accounting firm

- For technical reasons, the following resolution is submitted by Freeman:
 "Resolved that the Executive Committee approves the selection of the accounting firm of *Barnes, Feiden, Greenberg and Rothstein, Certified Public Accountants, 112 State Street, Albany, NY 12207 (USA)* as the auditors for IAPR for calendar years 1983 and 1984."
- The resolution is accepted by unanimous vote of those present.

Other affairs

- Freeman makes the recommendation that the IAPR Executive Committee be assisted by a legal advisor, as are most "equivalent" societies. Devijver warmly supports the idea. Freeman will get cost estimates and report to Simon on this matter.
- Freeman intends to recommend, at some future Governing Board meeting, two modifications to the IAPR fee structure. The first one is to raise the fee of individual members which is unusually low

(\$10.). The second one is to change the variable fee of category A organizational members (\$1 per member) into a fixed fee (as is the case for categories B and C members). The purpose of this change would be essentially to ease the treasurer's bookkeeping. The Executive Committee approved the second of these proposals.

Closing: Simon adjourns the meeting at 08.28 pm.

Respectfully submitted

Pierre A. Devijver
 IAPR Secretary
 Brussels, August 29, 1983

Follow-Up To Minutes of the ninth meeting of the Executive Committee of IAPR

- A mail ballot dated September 5, 1983 has gone out to all members of the IAPR Governing Board concerning the application for membership in the IAPR from the "Section of Artificial Intelligence and Pattern Recognition of the John Von Neuman Society for Computer Science, Hungary" (see item 4 above).
- At the same time a mail ballot and draft of the proposed agreement between IAPR and North-Holland Publishing Company concerning sponsorship by IAPR of the journal *Pattern Recognition Letters* (see item 5 above) went out to all members of the IAPR Governing Board.

Members should return approved ballots at their earliest convenience to

Dr. Pierre A. Devijver
 Philips Research Laboratory
 Av. van Becelaere 2, Box 8
 B - 1170 Brussels, Belgium

**CORRECTIONS TO VOLUME 6, NO. 1,
MARCH 1983**

Page 2:

The name of TECHNICAL COMMITTEE (TC) 12 is:

*Applications in Speech Recognition
and Synthesis*

In the EXECUTIVE COMMITTEE OF THE IAPR, The Second Vice-President is *Prof. N. Nagao*, not *Hagao* and the Secretary is *Dr. P.A. Deviijver*, not *Divijver*.

Page 4:

In the ADDRESS DIRECTORY *Prof. P.W. Backer* should be *Prof. P.W. Becker*

Page 6:

Prof. J-C. Simon's telephone numbers are as follows:

Office: 329 1221, ext. 4723 or 4757

Home: 360 7936 or 360 5801]

Note:

A very regrettable omission was made from the **IAPR NEWSLETTER, Vol. 5, No. 4, December 1982**. *Prof. E.S. Geselma* of the Free University of Amsterdam is coeditor, along with *Prof. E. Backer* of the **Pattern Recognition Letters**. He is, in fact, the initiator of the journal as well as its managing editor.

**JAPANESE DOMESTIC ACTIVITIES
IN PATTERN RECOGNITION
AND IMAGE PROCESSING**

**Institute of Electronics and
Communication Engineers of Japan**

**Interest Group on Pattern Recognition
and Learning**

May 1983

**DETECTION OF SURFACE ORIENTATION
AND MOTION**

Ken-ichi Kanatani

Dept. of Computer Science, Gunma University

**3-D MOTION ANALYSIS OF A CAMERA MOVING
ON A PLANE BY A MOTION STEREO METHOD**

T. Kitahashi, M. Oda

Toyohashi University of Technology

**INFERRING MOTION OF CYLINDRICAL OBJECT
FROM SHADING**

Minoru Asada and Saburo Tsuji

Dept. of Control Engineering, Osaka University

**AN EFFICIENT THINNING ALGORITHM FOR
LARGE SCALE IMAGES BASED
UPON PIPELINE STRUCTURE**

Akira Nakayama, Fumitaka Kimura

Yuuji Yoshida, Teruo Fukumura

Faculty of Engineering, Nagoya University

**SUPPORT SOFTWARE FOR MANAGING DATA
FILES IN IMAGE PROCESSING EXPERIMENTS**

Hideyuki Tamura, Katsuhiko Sakae, Naokazu Yokoya

Electrotechnical Laboratory

**A RECOGNITION METHOD OF CONNECTED
SPOKEN WORDS BY AUGMENTED
CONTINUOUS DP ALGORITHM**

Sei-ichi Nakagawa

Dept. of Information and Computer Sciences

Toyohashi University of Technology

**BORDER FOLLOWING ALGORITHMS FOR
ANALYZING THE TOPOLOGICAL STRUCTURE
OF DIGITIZED BINARY IMAGES**

Satoshi Suzuki

Graduate School of Electronic Science and Technology,

Shizuoka University

Keiichi Abe

Faculty of Engineering, Shizuoka University

**FEATURE PARAMETER EXTRACTION OF
NEURONAL CELLS' SHAPE**

Kiyoki Yokoyama, Naohiro Ishii, Nobuo Suzumura

Nagoya Institute of Technology

Kenichi Naka

National Institute for Basic Biology

**A NOTE OF CLASSIFICATION OF
MULTISPECTRAL IMAGES**

Norihide Nattori, Naohiro Ishii, Nobuo Suzumura

Nagoya Institute of Technology

RECOGNITION OF SIMILARLY SHAPED
ALPHANUMERIC AND KATAKANA CHARACTERS
USING THE QUANTIFICATION THEORY

Toshio Tsutsumida, Kazuaki Komori

Yokosuka Electrical Communication Laboratory, N.T.T.

RECOGNITION OF HANDPRINTED
KANJI CHARACTERS BY
DYNAMIC DIRECTIONAL MATCHING

Naoki Tanaka, Mitsuru Shiono

Osaka University

Hidehiko Sanada, Yoshikazu Tezuka

Okayama University of Science

A METHOD OF CHARACTER EXTRACTION FROM
HORIZONTALLY/VERTICALLY PRINTED
DOCUMENT IMAGES

Teruo Akiyama, Seiichiro Naito, Isao Masuda

Musashino Electrical Communication Laboratory, N.T.T.

AN EFFICIENT INPUT METHOD OF DRAWINGS
BY DETECTING CHARACTERISTIC PATTERNS

Xinggang Lin, Shigeyoshi Shimotsuji

Michihiko Minou, Toshiyuki Sakai

Faculty of Engineering, Kyoto University

CLASSIFICATION OF 9 KINDS OF CHARACTERS
BASED ON THE STATISTICS OF LEGAL PATTERNS

Tetsuo Matsuse, Michihiko Minou, Toshiyuki Sakai

Faculty of Engineering, Kyoto University

A BORDER-FOLLOWING ALGORITHM FOR
THREE-DIMENSIONAL BINARY IMAGES

Tetsuya Matsumoto, Shigeki Yokoi

Faculty Engineering, Nagoya University

Junichiro Toriwaki, Teruo Fukumura

Toyohashi University of Technology

June 1983

A SYSTEM TO RECOGNIZE AND CRITIQUE
HAND-WRITTEN JAPANESE CHARACTERS

David Baskerville, Hidetoshi Shirai

Dept. of Mathematical Engineering,

Faculty of Engineering, Univ. of Tokyo

LINE FILTERING AND ITS APPLICATION TO
STROKE SEGMENTATION OF
HANDPRINTED CHINESE CHARACTERS

Shunji Mori, Tsugako Sakamura

Electrotechnical Laboratory, Tokai University

RECOGNITION OF HANDPRINTED CHARACTERS
BY EXTENDED FEATURE EXTRACTIONS

Hoshio Izui, Hiroshi Harashima, Hiroshi Miyakawa

Faculty of Engineering, The University of Tokyo

RECOGNITION OF HANDPRINTED CHARACTERS
BY FEATURE EXTRACTED
WITHOUT THINNING PROCESS

Toshio Izui, Hiroshi Harashima, Hiroshi Miyakawa

Faculty of Engineering, The University of Tokyo

A MODEL FOR THE RECOGNITION OF
TACHISTOSCOPICALLY PRESENTED
KANJI CHARACTERS

Kazuhiko Yokosawa, Eiji Yodogawa

Musashino Electrical Communication Laboratory, N.T.T.

ALGORITHMS FOR HISTOGRAM CALCULATION
AND MEDIAN FILTER ON **SIMD** COMPUTERS

Tadayoshi Nakayama, Shigeki Yokoi,

Jun-ichiro Toriwaki, Teruo Fukumura

Faculty of Engineering, Nagoya University

NONSTATIONARY ANALYSIS BY
THE BACKWARD PREDICTION ERROR
OF LINEAR PREDICTION MODEL

Tohru Kiryu

Dept. of Information, Faculty of Engineering

Niigata University

Taizo Iijima

Dept. of Computer Science

Tokyo Institute of Technology

POLARIZED LINEAR PREDICTIVE ERROR CODING
REFLECTING DIFFERENCE AMONG
CATEGORIES--**POLPEC-III**--

Masato Akagi, Taizo Iijima

Dept. of Computer Science,

Tokyo Institute of Technology

EXPERIMENTS AND ANALYSIS OF AUTOMATIC
VERIFICATION OF SEAL-IMPRESSIONS

Katsuhiko Ueda, Yoshikazu Nakamura

Dept. of Electrical Engineering, Nara Technical College

EXPERIMENTS OF SIGNATURE VERIFICATION
USING THE FEATURES ON LOCATION
AND OUTWARD FORM OF CHARACTERS

Yoshikazu Nakamura, Katsuhiko Ueda
Dept. of Electrical Engineering, Nara Technical College

SEMANTIC FIXED-POINT EQUATION
OF PATTERNS

Shoichi Suzuki
Dept. of Management Information
School of Information, Bunkyo University

VOWEL RECOGNITION BASED ON THE USE OF
PVS AND E FEATURES

Rong Yu, Masayuki Kimura
Faculty of Engineering, Tohoku University

July 1983

FEASIBILITY STUDY ON ONLINE CHARACTER
RECOGNITION OF CURSIVE WRITINGS
USING FEATURE OF WRITING PRESSURE

Yukio Sato
Dept. of Electrical Engineering,
Nagoya Inst. of Technology
Takao Ichihara
Fuji Electric Company

FORMING SQUARE-STYLE OF BRUSH-WRITTEN
CHINESE CHARACTERS WITH A COMPUTER

Xianrong Zhang, Hidehiko Sanada, Yoshikazu Tezuka
Faculty of Engineering, Osaka University

DATA COMPRESSION OF HANDPRINTED
CHARACTER PATTERN BY FEATURE POINTS

Shogo Ayame, Yoshihiro Kitamura
Hidehiko Sanada, Yoshikazu Tezuka
Faculty of Engineering, Osaka University

A METHOD OF SUBPATTERN EXTRACTION FROM
HANDPRINTED **KANJI** CHARACTERS

Naoki Tanaka, Hiromi Aota
Hidehiko Sanada, Yoshikazu Tezuka
Osaka University
Mitsuru Shiono
Okayama University of Science

3-D MEASUREMENT OF LINE-LIKE OBJECTS
USING SHADOW INFORMATION

Heng-Li Guo, Masahiko Yachida, Saburo Tsuji
Dept. of Control Engineering, Osaka University

CLASSIFICATION OF NON-STATIONAL
CHARACTERISTICS
BY THE LINEAR PREDICTION MODEL

Tohru Kiryu
Dept. of Information, Faculty of Engineering
Niigata Univ.
Taizo Iijima
Dept. of Computer Science
Tokyo Institute of Technology

Computer Vision

July 1983

FLEXIBLE READER FOR SKETCH

Shou Tsunekawa, Yoshiyuki Yoshino
Kazuhiro Mori, Akio Okazaki
Toshiba Research and Development Center

A DESIGN OF FULL-PARALLEL LINEAR-TIME
IMAGE PROCESSING ALGORITHMS
BASED ON DIVIDE-AND-CONQUER
PROGRAMMING TECHNIQUE

Hiroshi Umeo
Osaka Electro-Communication Univ.
Faculty of Engineering

A MODEL-BASED RECOGNITION OF
GLOSSY OBJECTS USING THEIR
POLARIZATIONAL PROPERTIES

K. Koshikawa, Y. Terashi, Y. Shirai
Electrotechnical Laboratory

X-RAY IMAGE ENHANCEMENT
BY HIGH-PASS FILTERING

Yasuzo Suto, Yoshiyuki Umemura, Haruo Kato
Medical Engineering Laboratory, Toshiba Corporation

ENTROPY OF PICTURE
(CORRELATION ENTROPY)

Ikuo Fukui, Tatsuya Nakamura
Mechanical Engineering Laboratory

IFIP ARTICLES

The International Federation for Information Processing is a multinational federation of professional and technical organisations (or national groupings of such organisations) concerned with information processing. From any one country, only one such organisation--which must be representative of the national activities in the field of information processing--can be admitted as Full Member. In addition a regional group of developing countries can be admitted as a Full Member. On January 1, 1983, 48 national organisations were Members of the Federation, representing 48 countries.

The aims of **IFIP** are to promote information science and technology by:

- fostering international cooperation in the field of information processing;
- stimulating research, development and the application of information processing in science and human activity;
- furthering the dissemination and exchange of information about the subject;
- encouraging education in information processing.

Since IAPR is an affiliate member of IFIP, we are pleased to present some recent work, in excerpt form, done on IFIP's behalf. The articles from which the material was taken are the fourth and fifth in an occasional series describing the technical work of IFIP undertaken by its Technical Committees and Working Groups covering the whole spectrum of Information Technology. The author of both is the well-respected British journalist, *Kenneth Owen*, who was until recently the Technology Editor of **The Times**, London.

Formal Methods in an Informal World

(This article describes the activities of Technical Committee (TC) 8, which is concerned with Information Systems.)

To encompass these elements [informal or soft information (conversations, rumours, things seen or heard in the news media, ideas jotted down in memoranda and handwritten notes) into comprehensive, responsive systems--to design formal systems suitable for an informal world--is a major challenge facing the designers of information systems today.

...TC 8's area of interest is, in essence, information

systems in organizations in general. And an information system consists of the combined formal and informal streams of information that make an organization work... In the view of ...*Professor Alex Verrijn Stuart* [of the Institute of Applied Mathematics and Computer Science at the University of Leiden in the Netherlands, TC 8's current chairman]..., very few if any major decisions are taken on the basis of information contributed by information systems in the narrower (formal) sense. Such systems provide *operational* information (as distinct from management information), such as materials orders or salary payments, which in a sense is very trivial--although the system may be very complex in the way it works. Information stored in databases may be consulted (though probably not to the extent that the system designers believe), but true policy decisions in organizations are rarely if ever made on the basis of such computer-held information.

"This being the case, information systems technology in the strict sense just does not contribute to decision-making, as we professionals in the field have been claiming or believing should have been the case. I don't consider this a sad reflection on the acceptance of the goodies we have to offer--but I consider it a reflection on our ability as researchers to really find out what is the information that is useful."

Another research interest, for TC 8 as for its chairman, concerns the language in which the design of information systems is expressed.

Can an information system design be expressed in such a way that it makes sense both to the expert (accustomed to abstract symbols) and to the user (probably through graphical symbols)?

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Formal Aspects

Working Group 8.1 (Design and evaluation of information systems) is very much concerned with the formal, *hard* aspects of information systems...

Chairman of WG 8.1 is Professor *Arne Solvberg* of the Department of Computer Science at the University of Trondheim, Norway, who describes the group's two-part concern as follows:

"First to provide methods which enable the non-expert users of information systems to participate in defining the required functional capabilities of the systems. This is the starting-point: a statement of what one wants. From that statement, the second step is to derive a program solution to the problem. Thus 8.1 is concerned with providing methods for transforming that statement, requirement definition or specification into the program solution."

One major difficulty in the design and maintenance of information systems, Professor Solvberg has pointed out, is the lack of coherence between the requirement definition activity and the implementation and operation activities. This is partly due to the "cultural collision" between people who are concerned with analysis "in the large" and those who are concerned with programming "in the small".

Bridging this gap is the design methodology, of which there appear to be very many examples...

At the suggestion of *Dr. William Olle*, an independent consultant who is European Secretary to the main TC 8 committee, the working group initiated a "Comparative Review of Information Systems Design Methodologies" (CRIS) programme at a conference held at Noordwijkerhout in the Netherlands in May 1982. The aim of this conference was to take stock of a range of existing methodologies, both generally and as applied to a common problem...

"Some of the contributors to the CRIS-1 conference are quite clearly in the business of trying to create a theory. But the CRIS venture itself is not; it is trying to take stock, to compare methodologies, and then to see whether a practical set of guidelines within the

current state-of-the-art can be extracted from that comparison. But, while individual contributors are engaged in furthering the state of the art, CRIS is not a research project."

Informal Aspects

...the second working group, WG 8.2 adds a further ingredient by considering the interaction between information systems and the organization. Or more precisely, the relationships and interactions between four components—information systems, information technology, organizations, and society. Chairman of WG 8.2 is *Frank Land*, Professor of Systems Analysis at the London School of Economics and Political Science, London, England.

"We're very much concerned, as the whole of the technical committee is, with the process by which information systems are implemented", says Professor Land, "but our view of it is much more concerned with the impact of the methodology on the organization. In the CRIS exercise it emerged that there was convergence in the methodology but divergence in the product, and that to us is of enormous interest. It's not so much the methodology which counts, as the way that methodology is applied and the way it fits the problem area."

Equally important is the impact of the organization, and the type of organization, on the information system which is used in it...

"Our methodologies are design methodologies but in a sense they have an added ingredient", Professor Land notes. "Ultimately the success of a system is dictated by whether it is approved by those who use it, rather than by its technical virtues."

Professor Land sketches a block diagram to place the *information system* in context. An individual *actor* or manager receives his information about the real world via three routes—directly, from the formal or designed information system, and from an *information information system*. And he responds to the signals from these three sources through his own *window* of perceptions and associations. The aim is to develop systems which harmonise both formal and informal elements to provide a balance. And, says Professor Land, there is evidence to suggest that organizations which have substantial informal elements perform better than organizations which try to stifle them.

...up to now too much emphasis has been placed on the technology, and relatively little on what the impact of the technology might be and how to measure that impact. Where systems have gone wrong, the cause has

usually *not* been the technology. It has been the relationships between people (between users and specialists); the way the system has been implemented; and the relationships between the user and the technology.

Decision Support

The subject of decision support systems is addressed with TC 8 by Working Group WG 8.3, whose chairman is Professor *Leif Methlie* of the Institute for Information Systems Research at the Norwegian School of Economics and Business Administration in Bergen. Decision support in this context involves the application of information technology to enhance the effectiveness of decision-makers in tackling unstructured problems which cannot be predicted in advance.

Dr. *John Hawgood*, an independent UK consultant who is European Secretary of WG 8.3, describes the aims of the group as bringing together work that has been done in a number of different fields in order to apply it to the design and application of decision support systems. Three general scientific directions are converging into the field of decision support: these are computer science and information technology; artificial intelligence and cognitive psychology; and operational research and organizational theory.

As an initial target, WG 8.3 is concentrating on decision support for *management* in order to give a sharper focus to its work...

An essential part of the true decision support system is that it contains *soft* knowledge which is not intrinsically structure. Before such knowledge can be used in a decision support system, some structure has to be found for it, and to find such structures is a key part of WG 8.3's work. This soft knowledge is subjective data culled from many sources, such as newspapers, letters, and broadcasts.

In the sense that this knowledge does not refer only to a limited domain, it is wider than the knowledge bases customarily used in expert systems. It can include anything which affects the organization from the outside world. "We would certainly include as a very important part of a decision support system", says Dr. Hawgood, "the rules of thumb and the generalisations from experience which managers can impart to each other as training or as counselling."

The rule-based concepts of artificial intelligence would normally be used in decision support systems--but only as one part of the complete system. Also relevant are conventional database techniques and the operational research type of models. All three of these components,

together with some more loosely structured way of dealing with the outside world, are necessary.

"The most important information", Dr. Hawgood says, "consists of the goals of the different parts of the organization; the overall goals of the organization itself; and how success in reaching these goals is measured." This aspect of WG 8.3's work comes under its ***Knowledge representation and organizational theory*** sub-group.

Knowledge representation for decision support systems is the subject for a WG 8.3 working conference which is to be held in Durham, England, in July 1984. The three main themes to be addressed are how to represent organizational knowledge for decision support systems; how to structure managers' *soft* knowledge; and how to make decision support systems adaptive and friendly.

Health Informatics: The Vital Work of IMIA

(This article describes the activities of the IFIP Specialist Group IMIA--the International Medical Informatics Association of IFIP.)

IMIA (International Medical Informatics Association) grew out of the former Technical Committee 4 (TC 4) of the International Federation for Information Processing (IFIP)... IMIA now has the status of an IFIP Special Interest Group; it acts as a focus for the effective combination of medicine and informatics, drawing its membership from national professional societies in both fields.

Dr. *David Shires*, Professor of Family Medicine at Dalhousie University in Halifax, Nova Scotia, Canada, has been President of IMIA for the past three years. He sees IMIA's main role as that of coordinating national activities and distributing information as widely as possible.

IMIA was involved, together with the World Health Organization and the Intergovernmental Bureau for Informatics, in sponsoring a highly successful congress on medical informatics and developing countries which was held in Mexico City in 1982. Dr. Shires identifies three topics in particular that emerged from the congress: the application of microcomputers in developing countries, manpower training, and the development of infrastructures for informatics.

In each of these areas there is a need for expert guidance, and IMIA plans to hold a conference in Algiers next year at which the aim will be to produce specific guidelines on at least one of these topics...

Another strand of this concern is a proposal that an IMIA working group on medical informatics in developing countries should be set up... (It) would concentrate on three main subjects: curricula in medical informatics, planning aids, and primary care systems.

IMIA's overall programme of activity has two main streams. One is the sum of the working groups' own programmes of specialist conferences, tailored to their own members' interests and producing as output a series of conference proceedings. The second is directed towards the organization of the World Congress on Medical Informatics (Medinfo), a massive triennial event at which the entire medical informatics scene is reviewed in considerable detail.

Seven working groups have been formed to date, concerned respectively with:

- Information science and medical education.
- Application of new technology to health informatics.
- Electrocardiography (ECG) applications,
- Data security and confidentiality.
- Computers in the doctor's office.
- The role of informatics in the classification and coding of health data.
- Informatics and nursing.

Medinfo

The fourth World Congress on Medical Informatics (Medinfo 83) (was) held in Amsterdam during August 21-26, 1983...

Main session topics include(d) health and hospital information systems, clinical laboratory and departmental systems, imaging, general practice and ambulatory care, nursing applications, drug information systems, administration and finance, patient monitoring and intensive care, support of clinical decision-making, evaluation of health care, medical research support systems, epidemiology and statistics, education and training, data protection for health information systems, community health care and national health care systems, preventive and occupational care, the impact of microcomputers and other new technology, networks and distributed systems, software systems, free text processing, and modelling and simulation.

Through its working groups and through its

conferences, IMIA clearly casts its net very wide indeed. Rather than recite a long list, Dr. Shires quotes just two examples—one esoteric, one very much in the public arena. Coding and classification may sound mundane, but an informatics input to international discussions on this subject is highly significant. "A new version of the International Classification of Disease is expected to come out in 1995", the IMIA President notes. "The existing system is basically a statistical system and is very limited in the context of computing. We have the opportunity in the forthcoming version to retain the statistical benefits while enhancing greatly the usefulness of the classifications for computer applications."

Dr. Shires' second example concerns the implications of the developing computer networks. "In the coordination of networks and health care, it would be very useful for IMIA to serve some sort of monitoring role, so that these things don't get out of hand. The particular problem in health-care networks is basically that of data security, but problems of compatibility, structures, and the international exchange of information are also relevant..."

Nursing

...A new working group has been set up within IMIA to address this topic (the potential impact of computers on nursing), with *Miss Maureen Scholes*, Director of Nursing Service at the London Hospital, London, England, as chairman.

"Nurses involved in *direct care* see the computer as a possible solution to some of their problems of nursing records... "Nurses involved in *administration* see the computer as a highly useful management tool.

If nurses can combine the logic and precision of the computer with their own intuition and generosity, and if they have a sound knowledge base, Miss Scholes concludes, then the quality of nursing care can be improved.

Data Protection

IMIA'S Working Group 4 (WG 4) was set up in 1977 to address (the subject of data protection)... *Mr. David Kenny*, Regional Administrator of the North West Thames Regional Health Authority in the United Kingdom and chairman of WG 4, has pointed out that the many facets of the subject include doctor/patient relationships, privacy rights, computing technology, health care structures, social forces, legal issues, developments in medical care and resource requirements...

Those involved face four categories of problem.

There are **technical and operational** problems..., **legislative** problems..., **ethical** problems..., and problems of **organization**.

"The whole emphasis is shifting from quick ad hoc responses to more comprehensive and systematic risk analysis planning, the social engineering problems of user behaviour, and the need to improve the education and level of awareness of legislators, the public and the users. To that extent we are beginning a new game."

Key Questions

Dr. Donald Lindberg of the University of Missouri School of Medicine, who is the United States Trustee on the IMIA Board, highlights three topics as having particular importance at the present time.

First, the emergence of the technologies of artificial intelligence (AI)... "To use symbolic reasoning makes it more natural in medicine, and perhaps matches the medical empiricism."

Second, the process of educating medical people in medical informatics...

(The) third topic...is that of medical informatics in developing countries.

Perhaps the trickiest problem of all concerns the comparative evaluation of medical technologies. "This is really a conceptually difficult area, which perhaps hasn't had enough attention devoted to it", says Dr. Lindberg. "We're not even sure of the criteria that should be applied." The problem is to judge proposed systems in terms of cost-effectiveness, in a medical sense. "It's quite easy to develop cost-effectiveness measures with respect to the application of technology systems, but often very difficult to assess the benefits--to know the alternative courses of action and to put some sort of unitary cost figure on benefits which are non-financial."

Very often, the problem is highly controversial--whether to buy a very expensive piece of equipment that can keep a small number of people alive, for example, or to spend the money on more mundane health care that will benefit many more people. "Very often that is exactly the question", says Dr. Lindberg, "and I think the medical informatics people are quite convinced that that is a value decision which should *not* be left to the technologists. That is a matter of public policy.

"There are good, clean, formal mechanisms for evaluating Technology A versus Technology B to do a given job. The problem is how should you prioritise that job against the other possible jobs that can be done in medicine and welfare and public concerns. That's a question of value judgements, and we don't know how

formally to make those. These issues are often better resolved on a national level; I don't think IMIA ought to enter into these sorts of societal value judgements.

"The same question arises and makes difficult this developing countries issue. If there remains a problem in a hypothetical country X in obtaining a clean water supply and a proper sewerage system, and there is not transportation and no communication, should one be implementing an automated hospital information system? That has to be the judgement of the people who know and love the country best."

PRESS RELEASE

North-Holland has recently published a booklet entitled "*IFIP, its aims and its recent publications*". The brochure presents a detailed description of IFIP (International Federation for Information Processing), as well as full details on 55 books reflecting the interest-sphere of IFIP: Programming, Education, Computer Applications in Technology, Data Communications, System Modelling and Optimization, Information Systems, Computers and Society, Digital Systems Design.

IFIP publications are available to members of national information processing societies at a 25% discount.

Write for your copy of the brochure to: **North-Holland Publishing Company**, Attn: *Joop Dirkmaat*, P.O. Box 1991, 1000 BZ Amsterdam, The Netherlands.

Further information about **IFIP** and its activities may be obtained from the *IFIP Secretariat*, 3 rue du Marche, CH-1204 Geneva, Switzerland. Tel.: (022)28 26 49. Telex: 428 472 ifip ch.

PUBLICATIONS

Technical Reports

*Institute for Digital Image Processing
and Computer Graphics
Graz Research Centre, Wastiangasse 6,
A-8010 Graz*

Report Nr. 1:

Title: *AUTOMATED REGISTRATION OF
SCANNED SATELLITE IMAGERY
WITH A DIGITAL MAP DATA
BASE*

Author: *W. Kropatsch
F. Leberl*

Report Nr. 2:

Title: *DESBOD
-- SYSTEMSPEZIFIKATION (in
German)*

Author: *M. Ranzinger
W. Kainz
F. Leberl*

Report Nr. 3:

Title: *SEGMENTIEREN VON
DREIDIMENSIONALEN
COMPUTERTOMOGRAPHISCHEN
SZENEN UND RAUMLICHE
DARSTELLUNG DER
ERGEBNISSE (in German)*

Author: *H. Oswald*

Report Nr. 4

Title: *SATELLITE RADARGRAMMETRY*

Author: *F. Leberl
J. Raggam*

Report Nr. 5:

Title: *DESBOD
- GEODATENSTRUKTUREN I,
GEODATENERFASSUNG I (in
German)*

Author: *W. Kainz
M. Ranzinger*

Report Nr. 6:

Title: *REGISTRATION OF DIGITIZED
AERIAL PHOTOGRAPHY WITH A
DIGITAL MAP DATA BASE*

Author: *F. Leberl
H. Ranzinger*

Report Nr. 7

Title: *KENNTNISGESTUTZTE KANTEN
- UND LINIENERKENNUNG IN
SZINTIGRAMMEN UND
LUFTBILDERN (in German)*

Author: *P. Pessl*

Report Nr. 8:

Title: *EIN PROGRAMMSYSTEM ZUR
INTERAKTIVEN MODELLIERUNG
VON FLACHEN IM RAUM AUF
DER BASIS UNREGELMÄßIGER
DREIECKSNETZE (in German)*

Author: *W. Kropatsch*

*Hungarian Academy of Sciences
Central Research Institute for Physics
Budapest*

Title: *OPERATORI KEZIKONYV Az
Almasfuzitoi Timoldgyar Mero-
adatgyujto Folyamatiranyito
Programrendszerchez
KFKI-1983-34*

Title: *KVAZI-AUTONOM MODON
MUKODO ANALOG MEROLANC-
TASK*

Title: *KOZPONTI FIZIKAI KUTATO
INTEZET
1525 Budapest 114, Pf. 49*

Author: *Cser, J.*

Springer Series in Information Sciences

Editors: *K.-s. Fu, T.S. Huang, M.R. Schroeder*
 Volumes 1-11

The series is devoted to single- and multi-author graduate-level monographs and textbooks in the interdisciplinary field of transmission and processing of information, with special emphasis on acoustical and pictorial signal processing as well as pattern formation and recognition. Edited volumes are included if they stress significant developments in these fields.

Title: *CONTENT-ADDRESSABLE
 MEMORIES*
 Volume 1, 1980

Editor: *T. Kohonen*

Associative Memory, Content Addressing, and Associative Recall. Content Addressing by Software. Logic Principles of Content-Addressable Memories. CAM Hardware. The CAM as a System Part. Content-Addressable Processors. References. Subject Index.

Title: *FAST FOURIER TRANSFORM
 AND CONVOLUTION
 ALGORITHMS*
 Volume 2, 1982

Editor: *H.J. Nussbaumer*

Introduction. Elements of Number Theory and Polynomial Algebra. Fast Convolution Algorithms. The Fast Fourier Transform. Linear Filtering Computation of Discrete Fourier Transforms. Polynomial Transforms. Computation of Discrete Fourier Transforms by Polynomial Transforms. Number Theoretic Transforms. APPENDIX A: Relationship Between DFT and Convolution Polynomial Transform Algorithms. APPENDIX B: Short Polynomial Product Algorithms. References. Problems. Subject Index.

Title: *PITCH DETERMINATION OF
 SPEECH SIGNALS*
Algorithms and Devices
 Volume 3, 1983

Editor: *W. Hess*

In preparation

Title: *PATTERN ANALYSIS*
 Volume 4, 1981

Editor: *H. Niemann*

Introduction. Preprocessing. Simple Constituents. Classification. Data. Control. Knowledge Representation, Utilization, and Acquisition. Systems for Pattern Analysis. Things to Come. References. Subject Index.

Title: *IMAGE SEQUENCE ANALYSIS*
 Volume 5, 1981

Editor: *T.S. Huang*

Introduction and Survey: *T.S. Huang, R.Y. Tsai*: Image Sequence Analysis: Motion Estimation. *H.H. Nagel*: Image Sequence Analysis: What Can We Learn From Applications?-Image Sequence Coding, Enhancement, and Segmentation: *E. Dubois, B. Prasada, M.S. Sabri*: Image Sequence Coding. *T.S. Huang, Y.P. Huse*: Image Sequence Enhancement. *B.M. Radig*: Image Region Extraction of Moving Objects. *J.K. Aggarwal, W.N. Martin*: Analyzing Dynamic Scenes Containing Multiple Moving Objects.-Medical Applications: *W. Spiesberger, M. Tasto*: Processing of Medical Image Sequences.

Title: *PICTURE ENGINEERING*
 Volume 6, 1982

Editors: *K.-s. Fu, T.L. Kunii*

Pictorial Database Management. Picture Representation. Picture Computer Architecture. Office Automation. Computer-Aided Design. Computer Art. Index of Contributors.

Title: *NUMBER THEORY IN SCIENCE
 AND COMMUNICATION*
 With Applications in Cryptography,
 Physics, Biology and Digital
 Information]
 Volume 7, 1983

Editor: *M.R. Schroeder*

In Preparation.

Title: *ASSOCIATIVE MEMORY AND
 SELF-ORGANIZATION*
 Volume 8, 2nd edition, 1983

Editor: *T. Kohonen*

In Preparation. (Original edition entitled *Associative Memory*, published as Volume 17 of the series *Communication and Cybernetics*)

Title: *DIGITAL PICTURE PROCESSING*
An Introduction
Volume 9, 1983

Editor: *L.P. Yaroslavsky*

In Preparation.

Title: *PROBABILITY, STATISTICAL OPTICS, AND DATA TESTING*
A Problem Solving Approach
Volume 10, 1983

Editor: *B.R. Frieden*

Introduction. The Axiomatic Approach. Continuous Random Variables. Fourier Methods in Probability. Functions of Random Variables. Bernoulli Trials and its Limiting Cases. The Monte Carlo Calculation. Stochastic Processes. Introduction to Statistical Methods: Estimating the Mean, Median, Variance, S/N, and Simple Probability. Estimating a Probability Law. The Chi-Square Test of Significance. The Student *t*-Test on the Mean. The *F*-Test on Variance. Least-Squares Curve Fitting. Regression Analysis. Principal Components Analysis. The Controversy Between Bayesians and Classicists. References. Subject Index.

Title: *PHYSICAL AND BIOLOGICAL PROCESSING OF IMAGES*
Volume 11, 1983

Editors: *O.J. Braddick, A.C. Sleigh*

Proceedings of an International Symposium organized by The Rank Prize Funds, London, UK, September 27-29, 1982

PRODUCTS

Robotron Image Processing System A 6470

Representing a future-oriented form of information processing, digital image processing brings about new dimensions for scientific research.

With its image processing systems BVS A 6471-A 6473, VEB Kombinat Robotron is offering to you an essential means to solve your problems of digital image processing. The efficiency of BVS is able to meet the most advanced level of international user requirements. When designing, the latest requirements and findings of cosmic remote exploration were taken into consideration.

BVS is the result of cooperation in the field of research and development between the Academy of Sciences of the GDR, VEB Kombinat Robotron and the Soviet Remote Sensing Centre GOSNIZIPR.

Robotron's image processing systems with their three preferential versions stand for a balanced combination of

- latest computer technology
- special processors
- special terminals, and
- user-oriented software.

Thanks to the BVS it is possible to rationalize traditional jobs of research and development and industrial manufacture.

Our scope of service for BVS includes:

- consultations concerning utilization
- instructions and training
- assistance in the development or coupling of special user software or hardware
- supply and installation of the system
- service and start-up assistance

For more information, consult:

VEB Robotron-Vertrieb Berlin, DDR
1086 Berlin
Postfach 1295

CALENDAR OF EVENTS

Specialist Work-Shop Pattern Recognition in Photogrammetry

Grazer Congress
Schmiedgasse 2, Graz, Austria
September 27-19, 1988

International Society for Photogrammetry
and Remote Sensing-Working Group on
Pattern Recognition and Image Analysis

Organization

Working Group on Pattern Recognition and Image Analysis of Commission III of the International Society for Photogrammetry and Remote Sensing. Austrian Working Group on pattern Recognition in the Austrian Computer Society and the Austrian Society for Cybernetic Studies. Graz Research Center and Technical University.

Local Work-Shop Bureau

Work-Shop '83
Institute for Image Processing
and Computer Graphics
Wastiangasse 6
A-8010 Graz, Austria
Tel. Austria (0316)82 5 31-0
Telex 3-1265

Programme Coordination

F. Leberl, Graz, Austria
M. Faintich, St. Louis, USA

Meeting Place

Grazer Congress, Schmiedgasse 2,
A-8010 Graz
Tel 0316/75 5 43, Telex 03-1829

Proceedings

Papers will not be preprinted in a systematic manner. Instead papers will be published in a special issue of the official journal of the International Society for Photogrammetry and Remote Sensing, *Photogrammetria*, Elsevier Scientific Publishers, Amsterdam. F. Leberl and M. Faintich are guest-editors of the issue. It is planned to appear at the beginning of 1984. Registered participants will obtain

one free copy through the work-shop-bureau.

International Congress on Computational and Applied Mathematics

University of Leuven, Belgium
July 24-27, 1984

Directors:

Prof. F. Broeckx (U. Antwerpen)
Prof. M. Goovaerts (K.U. Leuven)
Prof. R. Piessens (K.U. Leuven)
Prof. L. Wuytack (U. Antwerpen)

The congress will be organized to celebrate the 10th anniversary of the *Journal of Computational and Applied Mathematics*.

The congress will concentrate on the **analysis of computational techniques** for solving real scientific problems.

There will be sessions on:

- constructive techniques for solving ordinary and partial differential equations
- computational complex analysis
- numerical quadrature and integral equations
- numerical software
- computational techniques in operations research and statistics

Scientific Committee

Baker, C. (England)
Buhlmann, H. (Switzerland)
Burkard, R. (Austria)
Collatz, L. (W. Germany)
Gourlay, A. (England)
Grosjean, C. (Belgium)
Hadjidimos, A. (Greece)
Meinguet, J. (Belgium)
Spijker, M. (Netherlands)
Werner, H. (W. Germany)

Sponsors

- NFWO (Belgian National Science Foundation)
- Ministerie van Nationale Opvoeding

Invited Speakers

Axelsson, A. (Netherlands)
Brezinski, C. (France)
Cullum, J. (USA)
De Boor, C. (USA)
Gautschi, W. (USA)
Gear, C. (USA)
Gragg, W. (USA)
Henrici, P. (Switzerland)
Jeltsch, R. (W. Germany)
Lyness, J. (USA)
Mori, M. (Japan)
Neuts, M. (USA)
Sloan, I. (Australia)
Van der Houwen, P. (Netherlands)
Wang Ren-Hong (China)
Yamamoto, T. (Japan)

Short Communications

A limited number of short communications (20 minutes duration) will be accepted for presentation. Participants who would like to present a paper should submit a title and a short abstract (at most 1 page) not later than December 1, 1983. A decision on the acceptance of these papers will be taken in December 1983 by the Scientific Committee.

Proceedings

It is intended that invited and selected papers will be published by North Holland Publishing Company in special issues of the Journal *CAM*.

Transportation

SABENA (Belgian World Airlines) is the official carrier of the Congress. Please contact your travel agency or the nearest SABENA office.

Accommodation

Accommodation for the conference is being provided at the *K.U. Leuven Summer hotel*. Accommodation comprises single study rooms; a limited number of double rooms are available.

Participation Fee

The participation fee(*) will be 300 US dollars per person. This includes full accommodation (room, meals, conference dinner, welcome drink, refreshments, coffee), the registration fee and the proceedings.

For accompanying persons an additional amount of 180 US dollars per person will be charged. This includes full accommodation.

(*)The participation fee will be reduced to 280 US dollars if payment is made before May 1, 1984. Withdrawals received before July 1 will get 75% fees refunded.

For more information, contact:

Prof. F. BROECKX
University of Antwerp
RUCA (TEW)
Middelheimlaan 1
B-2020 ANTWERPEN
Belgium

CALL FOR PAPERS

Association for Literary and Linguistic Computing Eleventh International ALLC Conference

Computers in Literary and Linguistic Research

2- 6 April 1984

Universite Catholique de Louvain
(Louvain-la-Neuve)

Organized by the Association for
Literary and Linguistic Computing

Sponsored by the Association for
Computers and the Humanities

Secretariat of the XI ALLC Conference:

Dr. Jacqueline HAMESSE
Institut Supérieur de Philosophie
Chemin d'Aristote, 1
B - 1348 LOUVAIN-LA-NEUVE
Belgium
Tel.: (0)10/41.81.81 (ext. 4798)

The **Eleventh International ALLC Conference on Computers in Literary and Linguistic Research** will be held at *Louvain-la-Neuve (Belgium)*, from the afternoon of *Monday 2 April* to the afternoon of *Friday 6 April 1984*.

The Themes of the Conference are the **Theories, Methods, Problems and Applications of Literary and Linguistic Computing**.

Papers are invited for presentation at the Conference, in particular from the following sectors: *Lexicology, Lexicography, Terminology, Lexical Data Bases and Computerized Dictionaries; Concordances, Indices, Text-Processing, Content Analysis; Authorship Studies, Stylistic Analysis, Textual Criticism; Literary Statistics, Metrics, Quantitative Linguistics; Historical Linguistics, Language-oriented Studies, Dialectology; Phonologic, Morphologic, Syntactic, Semantic Analysis and Natural Language Processing; Software and Hardware for Literary and Linguistic Computing.*

Anyone wishing to present a paper should send three copies of a typed abstract of approximately 1000 words to *Dr. Jacqueline HAMESSE* to be received before *31 September 1983*. The Programme Committee will then select suitable papers from the abstracts offered. Speakers will be informed by *31 December 1983* of the acceptance of their papers.

The ALLC reserves the right to consider papers presented at the Conference for publication.

During the Conference, it will be possible to organize panel discussions, working groups, etc. for the ALLC specialist groups or on other topics suggested in advance by participants. Anyone wishing to propose a meeting on a particular theme is requested to contact the Secretariat.

Accommodation

Special prices have been agreed with an hotel at *Louvain-la-Neuve*. Accommodations can be booked for the whole week (five nights), or for a shorter consecutive period at the rate of *FB 2000* per night. All meals are included in the accommodation charge.

Conference Fees

The Conference fees, including all social events (excursion, banquet Friday evening, etc.):

ALLC/ACH members	FB 3000
Non-members	FB 3750
Accompanying persons	FB 2500

All reservations must be accompanied by a deposit of *FB 2000*.

Deadlines

31 September 1983:

Proposals for papers and panels,
Abstracts (1000 words)

31 December 1983:

Acceptance of the papers

31 January 1984: Registration must be received

2 April 1984: Start of ALLC International Conference

6th International Symposium on Programming

*Toulouse, France
April 17-19, 1984*

Sponsors: French National Research Council (CNRS)
and University Paul Sabatier de Toulouse

5 copies of a first draft (about 10 pages) including title, author's name and abstract should be sent to:

Prof. B. ROBINET

Universite Pierre et Marie Curie
6th International Symposium on Programming
Aile 55-65
4 Place Jussieu
75230 paris Cedex 05 France
Tel. (1) 336.25.25 (ext. 52.51)
Telex UPMCSIX 200 145 F

Timetable

Notification by *January 14, 1984*.

Final camera-ready copy due *February 15, 1984*.

Afcet Informatique 2nd Conference on Software Engineering

Nice
June 4-6, 1984

Call for papers

The Second Conference on **Software Engineering** is being organized by the "**software engineering**" technical committee of AFCET-INFORMATICS.

Its aim is to provide a state-of-the-art survey of the current work on this topic, and to encourage technology transfer through the encounter of researchers and practitioners.

Under "Software Engineering" will be included all developments pertaining to the specification, analysis, design, coding, test, integration, distribution, operation or maintenance of computer programs; to the management of software projects (planning, team organization, monitoring of costs and schedules); to the definition and measurement of the qualities of software products; to the methods, languages, tools and environments directed at the improvement of these qualities; to the conceptual foundations of the study of software; to economical, ergonomical, psychological, legal and social problems connected with the constructions and distribution of software.

The following types of contributions are especially solicited:

- the description of practical experiments, including a precise analysis of the reasons for success or failure;
- presentations which bring up new and important concepts for software engineering;
- the description of applications whose novelty is less due to the concepts used than to their practical implementation;
- results of measurements of the properties of software;
- theoretical studies, if their aim is to help in the solution of practical problems.

The theme of communications may be related to any of the application domains of software engineering: scientific computing, business data processing, real time, information systems, process control, systems programming, word processing, CAD/CAM, CAI, etc.

Organization

Program Committee Chairman

E. Girard (CIMSA)

Vice-Chairmen

J.P. Malenge (IUT de Nice)
Organization

J. Ducloy (CNRS - NAL)
Tool fair

M. Galinier (Universite Paul Sabatier)
Tutorials

Program Committee Members

<i>E. Andre</i>	CNET
<i>J. Bezin</i>	Facule des Sciences de Brest
<i>J. Charvoz</i>	THOMSON CSF
<i>V. Donzeau-Gouge</i>	INRIA
<i>M.C. Gaudel</i>	CGE Laboratoire de Marcoussis
<i>M. Guering</i>	ESTEC
<i>D. Hermelin</i>	CNES
<i>S. Krakowiak</i>	IMAG
<i>M. Lissandre</i>	IGL
<i>B. Meyer</i>	EDF/DER
<i>C. Queinnec</i>	SEFT
<i>J. Raguideau</i>	CISI
<i>J.C. Rault</i>	Agence de l'Informatique
<i>O. Roubine</i>	CII-HB
<i>P. Wodon</i>	PHILIPS Laboratoire de Recherches

Secretariat

A.F.C.E.T. - 156, Bld Pereire 75017 PARIS

(1) 766 24 19

telex: EURTEL 29- 163 Code 235

Deadlines

- September 15, 1983
Potential authors and exhibitors to return registration form
- November 15, 1983
6 copies of the full text should reach AFCET
- January 15, 1984 Complete propositions for the tool fair must reach AFCET
- February 15, 1984 Notification of acceptance or rejection
- March 30, 1984 Final texts will be received by AFCET, typed according to the typing instructions sent by the conference secretariat
- March 1984 Mailing of the final program
- June 4, 1984 Conference

Potential authors are kindly asked to send a short summary (**10 lines**) to AFCET as soon as possible. The complete text (**15 pages, double spaced**) should reach AFCET **before November 15, 1983**. On the first page:

- title of the paper
- name of the author
- author's address
- author's telephone number and telex
- abstract (10 lines) and key words

Contact the Conference Secretariat for further information and **Instructions for authors** leaflet.

Official language: **French** but foreign contributors may propose their contribution in English.

Some papers will be published in **TSI**, the AFCET **Informatics** journal.

Metrics and Measurements Seminar

In connection with the conference a seminar on Metrics and Measurements for Software will be held in Nice during the same week.

Tool Fair and Tutorial

The conference will be complemented by a tool fair for the demonstration of useful software tools and by tutorials on relevant software engineering topics.

Seventh International Conference on Pattern Recognition

Montreal, Canada
July 30 - August 2, 1984

Call for Papers

The **Seventh International Conference on Pattern Recognition** will be held in *Montreal, Canada* from *Monday, July 30 to Thursday, August 2, 1984*. It will be held in cooperation with:

International Association for
Pattern Recognition (IAPR)
Canadian Information Processing Society (CIPS)
Canadian Image Processing and
Pattern Recognition Society (CIPPRS)

The Conference will be of interest to anyone involved in the field of pattern recognition. Tutorials on relevant topics will precede the conference.

The Program will consist of paper presentations and poster sessions. Subjects to be discussed include:

- *Image Understanding and Recognition*
- *Speech Understanding and Recognition*
- *Computer Vision*
- *Image Processing*
- *Robotics*
- *Pattern Analysis*
- *Pattern Classification*
- *Modelling of Human Perception*
- *Specialized Architectures*
- *VLSI Applications*
- *Interactive Systems*

- *Industrial Applications*
- *Biomedical Applications*
- *Remote Sensing Applications*

Submission of Papers

Prospective authors are invited to submit: **long papers** (6000 words, 25 minute presentation), **short papers** (3000 words, 15 minute presentation, or **abstracts** (250 words) for poster sessions. Long papers should contain material of exceptional merit.

The first page of each submission must contain: the type of paper (long, short or poster), the title, the authors' name(s), one mailing address, a 250 word abstract and five key words. Four copies of each paper are required. Deadline for paper submissions is **November 15, 1983**.

Authors will be notified concerning the acceptance of their papers by *February 15, 1984* and will receive kits for typing their manuscripts. All papers accepted for presentation will be included in the Conference Proceedings. Camera-ready copy of accepted papers must be received by April 1, 1984.

Submit **4 copies** of papers to:

Prof. Steven W. ZUCKER,
Program Chairman
ICPR Secretariat
3450 University Street
Montreal, Quebec, Canada H3A 2A7
Telephone: (514) 392-6744
Telex: 05-268510

International Symposium on Spatial Data Handling

August 20-24, 1984
Zurich, Switzerland

The computer-based handling of spatial data forms a common bond between researchers in a number of different disciplines. Geographers, cartographers, geologists, oceanographers, computer scientists and others are all called upon at one time or another to manipulate and display large data sets containing explicit coordinate information. Some common areas of concern include:

- Efficient encoding of spatial data (e.g., digitizing)
- Development of effective data structures and algorithms
- Management of very large spatial data bases
- Creation of effective displays of complex space/time data sets
- Efficient design of operational, spatial data handling systems

This multi-disciplinary symposium, sponsored by the Commission on Geographical Data Sensing and Processing of the International Geographical Union (and co-sponsored by IAPR), will bring together researchers with a common interest in spatial data handling.

The symposium will be oriented toward the technical and scientific aspects of spatial data handling and two classes of papers will make up the majority of the program. The first will be a *series of longer papers (30 minutes) reporting major research results*; these papers will be the subject of prepared discussion. The second will be a *series of shorter papers (15-20 minutes) reporting work in progress and secondary research results*. The latter class of papers will not receive prepared discussion. Several informal sessions will also be arranged to permit participants with similar interests to conduct discussions of work in progress, research horizons, etc.

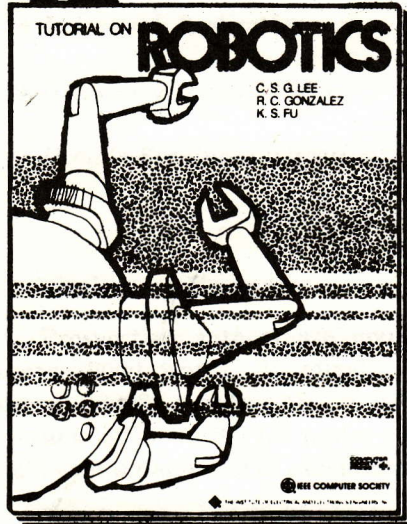
The official language of the meetings will be English. Abstracts of 500-700 words length must be submitted to the organizing committee no later than **October 14, 1983**. Abstracts must carry the full name and mailing address of the author(s) as well as a statement indicating if the paper is to be considered for scheduling as either a long or short paper. Persons submitting abstracts will be notified of the decision of the committee no later than **January 16, 1984** and final papers will be required in camera-ready form no later than **May 1, 1984**.

Abstracts and inquiries should be directed to:

Professor Duane F. MARBLE
Department of Geography
State University of New York at Buffalo
Amherst, New York 14260
U.S.A.
Telephone (716) 636-2264

You may have noticed that the Newsletter has a new look. It was in trying to achieve this new look that we experienced technical difficulties which caused the delay of this issue further than we hoped. This, in addition to summer activities and the beginning of a new academic year, also accounts for the larger size of this issue. We hope you are pleased with our efforts.

NEW!



Tutorial: Robotics

by C. S. G. Lee, R. C. Gonzalez, and K. S. Fu

The purpose of this tutorial is to present and summarize the fundamental concepts and theory of robotics from current literature. In 9 chapters, this book covers the fundamentals of robot arm kinematics, dynamics, control, trajectory, planning, sensors, robot vision, robot control languages and machine intelligence. Providing a brief review of some of the mathematical tools used in robotics, the tutorial includes concepts and theory at a mathematical level that requires a good background in vectors, matrices, kinematics, and dynamics of rigid bodies. Basic concepts are explained at the beginning of each chapter, followed by reprints from various journals which explain the underlying theory.

Chapters: Introduction and History of Robotics • Robot Arm Kinematics • Deriving the Robot Arm Dynamical Model • How to Design Trajectories Between Two Points in 3-Dimensional Space • Servo Control Mechanisms • The Use of Contact Sensors • Survey of Principle Techniques Used in State-of-the-Art Industrial Computer Vision Systems • High Level Programming Languages Used in Process Control • Basic Techniques and Methodologies in Artificial Intelligence

515 (ISBN 0-8186-0515-4): 584 pp., November 1983 NM, \$39.00; M, \$24.00

Tutorial: Software Design Techniques (4th Edition)

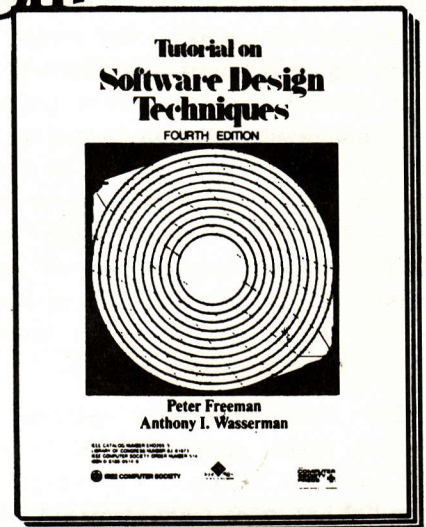
by Peter Freeman and Anthony I. Wasserman

Now in its fourth edition, this popular tutorial and best seller has been revised and expanded to reflect the latest developments and ideas in the field. Intended for both beginning and experienced designers, analysts, and managers needing a broad introduction to software engineering methods, this tutorial reflects the rapid changes that have occurred in such areas as software specification and design by incorporating new materials found to be of exceptional interest to a wide variety of audiences. Nearly half the articles in this book did not appear in the third edition, published three years ago. For continuity and use in professional and university courses, the tutorial retains the structure of previous editions.

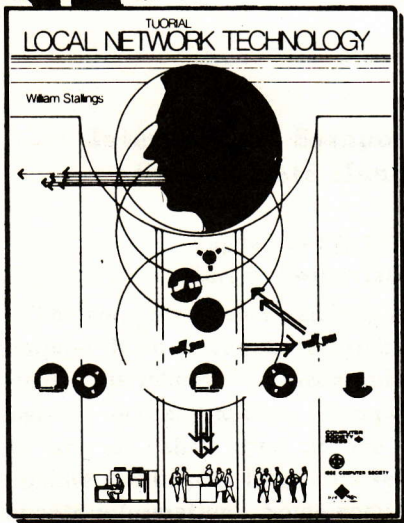
Sections: Introduction • Analysis Techniques • Specification Methods • External Design • Architectural Design Techniques • Detailed Design Techniques • Design Validation • Software Development Methodologies • Bibliography

514 (ISBN 0-8186-0514-6): 736 pp., November 1983 NM, \$32.00; M, \$20.00

NEW EDITION!



NEW!



Tutorial: Local Network Technology

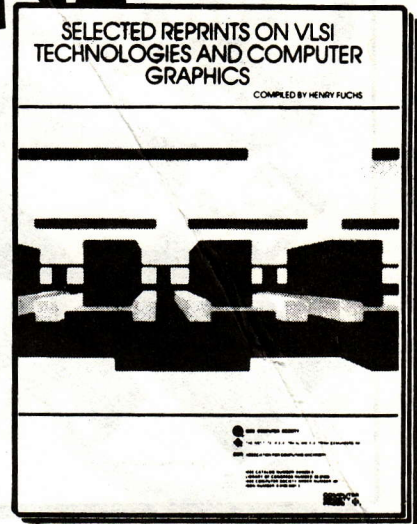
by William Stallings

Few other innovations in data processing and data communications have been so widely discussed and eagerly anticipated before reaching maturity as that of local networks. Intended for a broad range of individuals interested in local networks, this tutorial explores the key issues in the field under broadly defined categories of technology and architecture, network types, and design approaches. Focusing on common principles underlying the design and implementation of all local networks, the tutorial gives the reader sufficient background to judge and compare local network products while describing such elements as: critical design considerations and alternative approaches to meeting user requirements, what to look for in the way of network services and performance, and trade-offs to consider.

Sections: Introduction • Local Area Networks • High-Speed Local Networks • Digital Switches and Computerized Branch Exchanges • The Network Interface • Performance • Internetworking • Design Issues • Glossary • Bibliography

517 (ISBN 0-8186-0517-0): 320 pp., November 1983 NM, \$32.50; M, \$20.00

NEW!



Selected Reprints on VLSI Technologies and Computer Graphics

by Henry Fuchs

This compilation of reprints is intended for professionals interested in the intersection of and the relationship between computer graphics and VLSI. Two major areas are represented: The graphical aspects of VLSI design and the impact of VLSI computing structures on graphics hardware.

This book contains 56 reprinted articles that are divided into eight sections. The sections cover the following topics: Mask level layout; symbolic layout; floorplanning, placement, and routing; artwork analysis; algorithms for layout synthesis and analysis; CAD systems and related graphics issues; and image analysis.

491 (ISBN 0-8186-0491-3): July 1983, 498 pages **NM, \$30.00; M, \$20.00**

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**Tutorial: Computer Graphics
(2nd Edition)**

John C. Beatty and Kellogg S. Booth

Serving as an introductory course in computer graphics, this popular tutorial text has been updated and revised to reflect the developments and increasing use of computer graphics in all areas. Addressing fundamental issues in hardware and software, with emphasis on decision-making in the acquisition of computer graphics equipment, the second edition has expanded sections covering raster graphics, interactive graphics, and visible surface algorithms. Examples of engineering and research are included. Includes 45 reprints, 17 of which are new and is amply illustrated in full color.

425 (ISBN 0-8186-0425-5): April 1982, 570 pp. **NM, \$36.00; M, \$25.00**

**Tutorial: Context-Directed Pattern
Recognition and Machine
Intelligence Techniques for
Information Processing**

Yoh-Han Pao and George W. Ernst

A high-technology information industry is evolving in which powerful information processing methodologies are required to support hardware systems. This tutorial addresses the growing evidence that indicates that the combined use of pattern recognition and artificial intelligence methodologies tends to result in techniques that are far more powerful than would have been available otherwise. Contains 41 papers.

423 (ISBN 0-8186-0423-9): February 1982, 580 pp. **NM, \$30.00; M, \$22.50**



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