



CANADIAN ARTIFICIAL INTELLIGENCE

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Canadian Society for Computational
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Société canadienne pour l'étude
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Canadian Society for Computational Studies of Intelligence

Société canadienne pour l'étude de l'intelligence par ordinateur

CSCSI/SCEIO is the Canadian society for the promotion of interest and activity in Artificial Intelligence. It conducts workshops and fully refereed national conferences, publishes this newsletter, sponsors the journal *Computational Intelligence*, and coordinates activities with related societies, government, and industry.

To join CSCSI/SCEIO, use the membership form in this issue. Non-Canadian members are welcomed.

CSCSI/SCEIO is affiliated with the Canadian Information Processing Society and the International Joint Council on Artificial Intelligence.

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The *Newsletter* solicits contributions in English or French on any matter related to artificial intelligence, including:

- Articles of general interest.
- Descriptions of current research and courses.
- Reports of recent conferences and workshops.
- Announcements of forthcoming activities.
- Calls for papers.
- Book reviews (and books for review).
- Announcements of new AI companies and products.
- Opinions, counterpoints, polemic, controversy.
- Abstracts of recent publications, theses, and technical reports.
- Humour, cartoons, artwork.
- Advertisements (rates upon request).
- Anything else concerned with AI.

Please send submissions, either on paper or by network, to the editor or to your local *Newsletter* representative (see list on page 3). On-line submissions are preferred, but they should not contain justification spaces or hyphenated line breaks.

The *Newsletter* is published in March, June, September, and December. Material for publication is due on the 15th of the preceding month.

Please send changes of address to:
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A new forum for Canadian AI

Graeme Hirst
Editor

As the rest of this issue makes clear, artificial intelligence in Canada is growing very rapidly. Appropriately, CSCSI/SCEIO's newsletter is growing too. This issue marks its third incarnation, with a new title, a new style, and a new mandate.

The newsletter will no longer just be a report on the society's activities. Rather, as the *Canadian Artificial Intelligence Newsletter*, it will report on all aspects of AI in Canada, or of special interest in Canada. It will provide a forum for reporting Canadian AI to the world, and I believe that just as people in North America and elsewhere subscribe to *AISB Quarterly*, the European AI newsletter, to find out what's happening in AI in Europe, so people outside Canada will want to subscribe to the *Canadian A.I. Newsletter* to find out what's happening in Canada.

I strongly encourage all readers (not just Canadians) to contribute to the *Newsletter*. We are especially keen to receive opinion pieces, humour, illustrations, and letters to the editor; but anything relevant to AI is acceptable. For details of how to submit, see page 2.

Your opinions on the *Newsletter* itself are also solicited. What did we do right? What did we do wrong? Please let me know.

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The opinions expressed herein are those of their respective authors, and are not necessarily those of their employers, CSCSI/SCEIO, the *Canadian Artificial Intelligence Newsletter*, the editor, CIPS, or the University of Toronto. So there!

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AI in Canada and CSCSI/SCEIO

1. Nick Cercone, Out-going president

As the out-going president of the Canadian AI society I would like to leave with you my impressions of the events most significant to the AI community which occurred during my term of service.

The Japanese announcement of a Fifth Generation Project, American and European responses, the importance of AI to 5G, the success of "expert" systems in geological "hard rock" mineral exploration, medical diagnosis and legal systems, computer-aided instruction and diagnosis of arithmetic misconceptions, sophisticated natural language interfaces to databases, and the burgeoning home and office computer market have all contributed to public interest in Artificial Intelligence. AI is now being perceived as being influential and having the potential to be practical. How have we all reacted to this new found prominence? Computing Science Departments, expanding feverishly in the past few years, now actually hire AIers just like "real" computing scientists; industry expects AIers to initiate a golden age of economic recovery (dontcha know that one part AI mixed with one part VLSI, a dash of engineering and systems work—voilà— instant high-tech Silicon Valley in [your town here]); politicians now cultivate their favorite AIer. It is predictable that, awakening to their new place in the sun, AIers be distracted by sycophants, charlatans, and barmecides. Does the AIer grow frustrated with misconceptions about AI? You bet we do.

During January 1983 the Science Council of Canada took the initiative to host a two-day workshop on Artificial Intelligence. Proceedings are available to anyone, free of charge, from the Publications Office, 100 Metcalfe Street, Ottawa, Ont K1P 5M1. The "invitation-only" workshop was attended by researchers from university, government, and commercial laboratories, industrialists, policy makers, and venture capitalists. The Science Council took some flak from government agencies and academics who perceived that

the workshop was hastily and poorly organized, rigid in structure, and not sufficiently representative of the Canadian AI community. However, the Science Council deserves credit for taking the initiative, and the proceedings make interesting reading for the layman. At the Science Council workshop, the CSCSI/SCEIO promised to undertake a survey the results of which constitute the report *Directions for Canadian AI* and the bulk of our March 1984 Newsletter.

At approximately the same time that the Science Council was addressing AI, the Canadian Institute for Advanced Research (CIAR) interest in "Artificial Intelligence, Robotics, and Society" (AIRS) [see page 7] was in its formative stages. The CIAR came to my attention during March 1983, when the President of Simon Fraser University asked me to offer the CSCSI/SCEIO's support to the Director of the CIAR. In accordance with our organization's constitution, article 11(b), I offered the support of the CSCSI/SCEIO, informed the CIAR of our history and current activities, and sent the CIAR some of our newsletters. Director Mustard's cordial reply ended with the comment "looking forward to exploring ways in which the Institute and CSCSI/SCEIO can cooperate on the promotion of research on AI". The potential of this auspicious beginning has not yet been realized. During March 1984, after a lapse of approximately one year, the CSCSI/SCEIO was asked to suggest up to 30 possible attendees for the joint "conference" on "Machines that Think, Sense, and Act and their Applications". The conference was held during March 1984 with a controlled, invited attendance of approximately 200 people. During most of 1983 and early 1984 the CSCSI/SCEIO officers met deception, egomania, and interminable arguments in a frustrating attempt to get information from the CIAR on their AIRS project.

These sorts of experiences in part motivated me to accept when invited by the CSCSI/SCEIO to participate in a panel discussion of national AI infrastructure to be held during our Fifth National Conference in May. I wanted to emphasize that organizations have responsibilities

as well as opportunities when they approach a community of researchers. Using a single overhead, I raised questions which are, unfortunately, still relevant and still unanswered. They bear repeating:

1. What makes the CIAR different than any other potential benefactor (NSERC, industry, etc.)?
2. Where does the money come from?
3. Who picks / adjudicates the projects?
4. Who picks / adjudicates the researchers?
5. How should be / is university liaison handled?
6. What impact (if any) did / does the CIAR have on participating / non-participating departments?
7. What is the bottom line? What should be accomplished and how should it be judged?
8. Where / Who / What is / has the commitment to (Canadian) AI?

It is important that these questions be answered and that the primacy of process be considered when establishing programs which have serious impact, especially when they affect a small and fragile community.

Shortly after the CIAR "conference", NSERC sponsored a meeting in Ottawa which culminated in the formation of the Canadian Society for Fifth Generation Research. Carl Hamacher and Eric Manning organized the open meeting to promote 5G activities in Canada and to persuade government (NSERC) to direct increased funding toward such efforts. Attended by approximately 100 academics and 30 observers from industry and government, this group elected five members to serve on a steering committee. The primary responsibility of the committee was to draft a proposal which represents Canadian activities and capabilities. By September 1984 the proposal will be ready for submission to NSERC in order to stimulate increased 5G funding.

During the past year, AI has become industrialized. Dominated by such giants as Teknowledge, IntelliCorp, Smart Systems Technology, Applied Expert Systems, and Thinking Machines in the United States, these companies focus primarily on expert systems. Canadian entries are much smaller in scale, including Applied AI systems of Kanata, the Canadian AI Products Corporation in Nepean, Dogwood AI in Vancouver, and CogniCom Corporation, an academic consortium consisting of academics from Toronto, U.B.C., McGill, Western, and a few others.

Canadians have achieved recognition in academic endeavours. The October 1983 issue of IEEE's *Computer*, based in part on the Fourth National Conference of the CSCSI/SCEIO, and the January 1983 issue of *Computers and Mathematics* featured Canadian contributors. The National Research Council of Canada recently announced their 13th journal, *Computational Intelligence / Intelligence Informatique*, the first issue of which will appear during Spring 1985 [see page 9] *Computational Intelligence* is the first new journal supported by the NRCC in twelve years; CSCSI/SCEIO is the sponsoring society. Negotiations are underway between the NRCC and the CSCSI/SCEIO to offer the journal to members at a reduced rate. *Computational Intelligence* will be an international journal with an international editorial board.

Your new executive is: Gordon McCalla, President; John Tsotsos, Vice-President; Mike Bauer, Secretary; and Wayne Davis, Treasurer. Good luck during the next two years, friends—you will need it. I am happy to welcome the new *Newsletter* editor, Graeme Hirst, who has begun already to upgrade and produce a more conspicuous, regular newsletter. I sincerely thank Gordon, John, and Wayne, who shared the work during my term in office. Gordon and I especially enjoyed a productive year while he visited on the faculty at Simon Fraser.

All of the members of the CSCSI/SCEIO, please observe that the role which your organization plays in the intensifying AI research game will reflect your participation. The CSCSI/SCEIO is moving fast; contribute your interest to the momentum, invite and encourage new members, and build a organization which will represent you. You can confidently expect innovation, energy, and leadership from your Chairman, Gordon McCalla.

Ciao.

2. Gordon McCalla, In-coming president



It is my pleasure to make a few inaugural remarks to initiate my presidency and the new *Newsletter*. There is an ancient curse "may you live in interesting times". This is certainly an interesting time for Canadian artificial

intelligence. Whether or not it is cursed remains to be seen.

In the last couple of years there has been a sudden flowering of interest in AI in this country. The Science Council of Canada hosted an AI workshop in Ottawa. The Canadian Institute for Advanced Research is funding a major project in AI [see page 7]. A conference sponsored jointly by CIAR and the Science Council announcing the project was held in Ottawa. Numerous AI companies have sprung up. Existing companies such as Bell-Northern Research have created AI projects. The Institute for Fifth Generation Research has been formed and is in the process of seeking funding. The Cognos report on natural language has been produced for the Department of Communications and will, I hope, be available to a more general readership soon.

Nor has the CSCSI/SCEIO been idle. In order to keep our membership informed and to keep on top of the burgeoning interest in AI, the CSCSI/SCEIO has had to respond vigorously and creatively. The new *Newsletter* format will, I hope, provide a high quality vehicle for communication within Canadian AI and a high profile "advertisement" for Canadian AI to the world. A major survey of the CSCSI/SCEIO membership was carried out and reported on in the newsletter last spring. A document based on this survey was prepared and circulated widely to government and industry, and various subsidiary parts of this document were presented at the CIPS national conference in Calgary in May, the CSCSI/SCEIO conference, and will soon appear in the *AI Magazine*. The largest CSCSI/SCEIO conference ever held took place in May in London, Ontario. The CSCSI/SCEIO initiated the creation of (and is the sponsoring society for) a major new international AI journal *Computational Intelligence* [see page 9]; a wide variety of outstanding AI scholars have agreed to serve on the editorial board or contribute to the first volume. Events planned for the near future include a workshop, with published proceedings, on Theoretical Approaches to Natural Language, at Halifax, Nova Scotia on 28-30 May 1985 [see page 11], and the next CSCSI/SCEIO conference for Montreal, Quebec in the late spring of 1986.

To carry out all of these activities we need people. Remember when you read your *Newsletter*, attend a conference, peruse the survey results, or open your copy of *Computational Intelligence*, that many hours of work have gone into their production. Remember when there is some sort of foul-up in any of these activities that the people doing them are volunteers doing them, in addition to their full-time jobs, for the

good of AI in Canada. Rather than complaining "why don't they do that better", keep in mind that YOU are the CSCSI/SCEIO. We would be delighted to have throngs of people beating down our doors to work on various CSCSI/SCEIO projects.

To carry out all these activities we need money. AI as a field is now becoming "moneyed", even in Canada. It is possible to raise many thousands of dollars to support various AI projects in the country, but precious little financial support is available to back the initiatives of the CSCSI/SCEIO. We take in around \$2500 per year in dues, more or less break even on our conference (with the support of an NSERC conference grant), and occasionally receive a donation from industry. We will be spending almost all that we take in (maybe more!) on the new *Newsletter*, let alone providing support for special projects (such as the survey), financing advanced publicity for workshops and conferences, paying travel expenses or other out of pocket expenses for people on CSCSI/SCEIO business, offsetting CSCSI/SCEIO administrative expenses, etc. Where does the extra money to finance all this come from? One possibility is to solicit advertisements for the newsletter. Another is to raise dues. Other suggestions (or contributions!) will be welcomed with open arms.

To carry out all these activities we need information. It is impossible for the CSCSI/SCEIO to carry out its major roles of providing information to the membership, to government, and to industry without getting this information in the first place. We can at best act as a clearing-house for what comes our way; if nothing comes in, nothing goes out. We would encourage all members to submit descriptions of their AI related activities to the *Newsletter*, to write philosophical or other treatises on their AI viewpoints, to publish abstracts of their technical reports, etc. We would encourage summaries of AI conferences or descriptions of the goals of special AI projects that have been launched. Specifically, we would like reviews of CSCSI/SCEIO conferences and other workshops and gatherings (Canadian or foreign) of interest to the Canadian AI community; descriptions of the goals of projects like the AIRS project; outlines of the objectives of various AI companies; and opinions from industry and government on the roles they perceive for AI. Whatever your personal objectives are in AI, you have a responsibility to the field as a whole in Canada to keep your colleagues informed.

Finally, I would like to express my thanks to a number of people who have valiantly served the CSCSI/SCEIO in the last couple of years:

—To Wayne Davis for his outstanding work on the outgoing “three society” newsletter, work that was essential so that we could reach the stage where we could consider going it alone with our own newsletter.

—To Ted Elcock, John Tsotsos, Mike Bauer, and the program committee of the Fifth National CSCSI/SCEIO conference for putting on such an outstanding show in London last May.

—To Graeme Hirst for volunteering to take on the newsletter editor’s arduous duties.

—To Renato de Mori and Bill Havens for agreeing to take on the job of putting on the 1986 CSCSI/SCEIO conference in Montreal.

—To Richard Rosenberg and the program committee of the Theoretical Approaches to Natural Language Workshop for putting together what promises to be an interesting event next year in Halifax.

—To all those who have agreed to serve on the editorial board of *Computational Intelligence* journal.

—To Kathy Finter for designing the new CSCSI/SCEIO logo.

—To Sydney J. Hurtubise, R. M. Duck-Lewis, and Rogatien “G” Cumberbatch for their penetrating analyses on the state of AI both inside and outside this country (in fact inside and outside this world).

—Most of all, to outgoing CSCSI/SCEIO president Nick Cercone for an incredible number of contributions to the society over the past two years.

I’m looking forward to my term as president of the CSCSI/SCEIO. I, and the rest of the executive, are here to serve you. With luck, and the co-operation of all of you, we may avoid the curse that interestingness supposedly brings and may all look forward to the most exciting times yet for Canadian artificial intelligence. □

Guidelines for electronic submissions

The *Canadian A.I. Newsletter* prefers submissions to be made by network mail, to eliminate the need for retyping. However, please do not send text that has been through a document formatter; extra embedded spaces and hyphenated line breaks just have to be edited out again before typesetting. The best thing to send is plain typing or *troff* source (preferably with *-me* macros).

Canadian Institute for Advanced Research

The CIAR program in Artificial Intelligence, Robotics, and Society

Steve Zucker
Department of Electrical Engineering
McGill University

The Canadian Institute for Advanced Research (CIAR) is a private, non-profit corporation whose aim is to promote excellence and achievement in research in Canada. In pursuit of that objective, CIAR supports scientists and attempts to provide a base for cross-disciplinary research. The Institute is especially interested in providing exceptional opportunities for promising young researchers.

CIAR’s Research Council, with representatives from across Canada, is responsible for determining the Institute’s research priorities. The first area chosen, Artificial Intelligence, Robotics, and Society (or AIRS), exemplifies its goals: to support areas of major intellectual challenge and social importance that (i) involve researchers from many disciplines; (ii) build upon centres of research strength that already exist; and (iii) require involvement by a national organization to develop their potential. Because of the extensive investment in equipment necessary to support such a program, the research will be centered in existing university laboratories.

The initial focus of the AIRS program is sensory—especially visual—information processing and the application of this capability to robotic devices. Research in this area involves computer scientists, engineers, psychologists, and neuroscientists centered at three universities: University of British Columbia, McGill, and Toronto. In addition, industrial affiliates from Spar Aerospace and other companies will be working with the Institute’s fellows at these institutions. A second component of the program, focusing on the social and cultural implications of artificial intelligence, will involve sociologists, historians, philosophers, economists, and anthropologists. This component is just now being put into place.

While the AIRS program provides general direction, each university node has its own particular thrust. At U.B.C. research is mainly concerned with vision and with the logical foundations of representational systems. At Toronto, the emphasis is on second generation expert systems and databases as well as with vision. McGill's emphasis is on robotics, early vision, and distributed and adaptive control theory. Perhaps the most exciting aspect of the AIRS program is the potential for collaboration between these nodes, leading, as the Gestalt psychologists would put it, to a system in which the whole is greater than the sum of its parts.

The AIRS program is administered by three nodal coordinators: Ray Reiter at U.B.C., Steve Zucker at McGill, and John Mylopoulos at Toronto. Bill Tatton, of the Playfair Neuroscience Unit, Toronto Western Hospital, played an early role in bringing the program together. Additional information about the Institute can be obtained by writing to CIAR, 434 University Ave., Suite 502, Toronto, Ont M5G 1R6, or from any of the coordinators. □

Conference Report

CSCSI-84

Brian Nixon
Department of Computer Science
University of Toronto

There are many pleasant memories of CSCSI-84, the fifth national conference of the Canadian Society for Computational Studies of Intelligence. The conference was held 15-17 May 1984 on the campus of the University of Western Ontario in London.

The majority of attendees were artificial intelligence faculty members and graduate students from across Canada, as well as the north-eastern United States; there was also some representation from industry.

The technical sessions showed strong representation from several universities including Waterloo (Logic Programming), Pennsylvania (Natural Language), McGill (Computer Vision), and Yale (Learning). A fairly large number of the papers were presented by graduate students.

The invited speakers presented very digestible overviews of their particular areas. Martin Kay, whose talk on computational linguistics opened the conference, got us all off to a good start by reflecting on the level of artificial intelligence required to schedule a speaker from the West Coast for 5:30 a.m. Pacific Time.

If I had to choose a single "hot topic" of the conference, it would be the role of Prolog. Alan Robinson's invited talk on the Future of Logic Programming traced the growth of interest in this area. He decried the "silly rivalry" between proponents of various programming languages which all use the same idea: assertional programming.

Ramesh Patil's talk on Physiology in Medical Reasoning exhibited both breadth and depth of expertise. The talk kept the attention even of those not versed in expert systems.

There was quite a lot of interest in the panel discussion on the AI, Robotics, and Society programme of the Canadian Institute for Advanced Research. Private industry is providing funds to develop small groups working at three selected universities, with the emphasis on research in specialised areas. The focus of support is on individuals whose administrative duties will be released to allow further concentration on research. Panelists described the research projects that will be supported. Society President Nick Cercone responded with a list of questions entitled "Responsibilities of Organisations".

Gord McCalla and Nick Cercone presented the results of a survey on Canadian AI in the Next Decade. The discussion included the possible roles that CSCSI/SCEIO should play. It was pointed out that the Society must choose priorities from among roles including scholarly activities, government liaison and professional events.

Discussion of future roles of CSCSI/SCEIO continued at the annual meeting. The Executive Committee proposed that the Society sponsor a journal. There was also discussion on the frequency of future conferences, tutorials and workshops.

Between sessions, we were able to admire the beautiful campus at Western. The architectural style seems to mould the buildings into one cohesive unit. While the conference sessions may not have formed such a cohesive unit, CSCSI-84 certainly did provide a valuable snapshot of the diversity of Canadian AI today. □

Copies of the conference proceedings are available through CIPS. They may be ordered with the form on the back cover of this issue.

COMPUTATIONAL INTELLIGENCE

An International Journal

Quarterly, commencing February 1985.

Sponsored by the National Research Council of Canada
and CSCSI/SCEIO.

Aims and Scope

Computational Intelligence will publish high-quality original theoretical or experimental research in computational (artificial) intelligence. Contributions from all areas of artificial intelligence are encouraged, including knowledge representation, natural language understanding, computational vision, applications of artificial intelligence, logic programming, theorem proving, language learning, cognitive science, problem solving and planning, languages and tools for artificial intelligence, speech understanding, game playing, philosophical implications, and foundations of artificial intelligence. High scientific standards are crucial, and the journal encourages submissions of readable, issue-oriented presentations that are accessible to a general artificial intelligence audience.

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Subscriptions will be \$^{CDN}75 institutional and \$^{CDN}37 personal, and \$10 for postage outside Canada. An arrangement whereby CSCSI/SCEIO members will be able to subscribe for about \$16 is presently being worked out; details will be announced in the December *Newsletter*. For more information about non-member subscriptions, write to: Gerry Lacroix, Distribution, *Computational Intelligence*, National Research Council, R-88, Ottawa, Ont, CANADA K1A 0R6.

Maintaining High Quality in AI Products

Alan Bundy
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Credibility has always been a precious asset for AI, but never more so than now. We are being given the chance to prove ourselves. If the range of AI products now coming onto the market is shown to provide genuine solutions to hard problems then we have a rosy future. A few such products have been produced, but our future could still be jeopardized by a few, well publicized, failures.

Genuine failures—where there was determined, but ultimately unsuccessful, effort to solve a problem—are regrettable, but not fatal. Every technology has its limitations. What we have to worry about are charlatans and incompetents taking advantage of the current fashion and selling products which are overrated or useless. AI might then be stigmatized as a giant con-trick, and the current tide of enthusiasm would ebb as fast as it flowed. (Remember Machine Translation—it could still happen.)

The academic field guards itself against charlatans and incompetents by the peer review of research papers, grants, PhDs, etc. There is no equivalent in the commercial AI field. Faced with this problem, other fields set up professional associations and codes of practice. We need a similar set-up and we needed it yesterday. The 'blue chip' AI companies should get together now to found such an association. Membership should depend on a continuing high standard of AI product and in-house expertise. Members would be able to advertise their membership and customers would have some assurance of quality. Charlatans and incompetents would be excluded or ejected, so that the failure of their products would not be seen to reflect on the field as a whole.

A mechanism needs to be devised to prevent a few companies annexing the association to themselves and excluding worthy competition. But this is not a big worry. Firstly, in the current state of the field, AI companies have a lot to gain by encouraging quality in other companies. Every success increases the market for everyone,

whereas failure decreases it. Until the size of the market has been established and the capacity of the companies risen to meet it, they have more to gain than to lose by mutual support. Secondly, excluded companies can always set up a rival association.

This association needs a code of practice, which members would agree to adhere to and which would serve as a basis for refusing membership. What form should such a code take, *i.e.*, what counts as malpractice in AI? I suspect malpractice may be a lot harder to define in AI than in insurance, or medicine, or a travel agency. Due to the state of the art, AI products cannot be perfect. No one expects 100% accurate diagnosis of all known diseases. On the other hand a program which only works for slight variations of the standard demo is clearly a con. Where is the threshold to be drawn and how can it be defined? What constitutes an extravagant claim? Any product which claims to understand any natural language input, or to make programming redundant, or to allow the user to volunteer any information, sounds decidedly smelly to me. Where do we draw the line? I would welcome suggestions and comments. □

Artificial Intelligence Products

AI has finally made the move from the academic to the commercial environment and our client has created a new group to market and support its LISP environment aimed at providing high performance, personal computers for research, advanced systems development and rapid prototyping. This has led to the requirement for:

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**Dalhousie University
Halifax, Nova Scotia
28-30 May 1985**

sponsored by the CSCSI/SCEIO

**General Chairperson: Richard Rosenberg, Dalhousie University
Program Chairperson: Nick Cercone, Simon Fraser University**

Day 1: Aspects of Grammar and Parsing

- Theoretical Developments (organizer Len Schubert, University of Alberta)
- Logic-Based Meta-Grammars (organizer Veronica Dahl, Simon Fraser University)

Day 2: Aspects of Semantics

- Situation Semantics (organizer David Israel, Bolt, Beranek and Newman)
- Montague Semantics (organizer Graeme Hirst, University of Toronto)

Day 3: Aspects of Knowledge Representation

- Logical Systems (organizer James Allen, University of Rochester)
- Special-Purpose Inference Systems (organizer TBA)

Theoretical Approaches to Natural Language is intended to bring together active researchers in Computational Linguistics, Artificial Intelligence, Linguistics, Philosophy, and Cognitive Science to discuss/hear invited talks, papers, and positions relating to some of the "hot" issues regarding the current state of natural language understanding. The three topics chosen for discussion are intended to form the focus for contributions to Theoretical Approaches to Natural Language. The three topics include aspects of grammars, aspects of semantics/pragmatics, and knowledge representation. Each of the three topics will consider two current methodologies: for grammars - theoretical developments, especially Generalised Phrase Structure grammars and logic-based meta-grammars; for semantics - situational semantics and Montague semantics; for knowledge representation - logical systems (temporal logics, etc.) and special purpose inference systems. In particular, each session will address the following three questions:

- (1) What's "right" about the formalism/approach
- (2) What's "wrong" about the formalism/approach; and
- (3) What alternative(s) can/could be investigated and how are they related.

A call for papers will be issued shortly. In the meantime, for more information, prospective authors should contact Nick Cercone, Dept Computing Science, Simon Fraser University, Burnaby, BC, Canada V5A 1S6; phone 604-291-3791.

CogniCom: Canadian Academic Researchers Form AI Consulting Group

Zenon W. Pylyshyn
Departments of Psychology and Computer Science
University of Western Ontario
London, Ontario, Canada N6A 5C2

It is generally recognized that the critical bottleneck in the industrial application of artificial intelligence is not lack of ideas or lack of hardware or software tools; it is the lack of trained personnel. That is not to say that the major technical problems have been solved: far from it, the surface has barely been scratched. But the past five years have shown us that it is possible to adapt current technology, with all its limitations and ad hoc solutions, to produce systems which are powerful enough to make an enormous economic impact in many areas.

The possibility of building economically viable systems using artificial intelligence techniques has not been lost on the business world. Large U.S. corporations have rushed to build their own AI groups, and commercial AI is receiving a great deal of support in Japan, Britain and Europe. Companies and government agencies feel, quite rightly, that they can't afford not to keep informed of developments in this new technology. Even if there are no known immediate applications in their own field, the possibility that they could miss an important competitive advantage has everyone running scared.

As a result of all this interest, both real and hyped, headhunting agencies have raided and reraided the same small trough of top AI schools and research laboratories. The demand is so high and the supply of experienced people so low that industries has been advised, when asked whether they ought to develop an AI group "Forget it. You cannot find any more people. You can raid the same places only so many times. There are not enough people out there." (Winston and Prendergast, *The AI Business*, MIT Press, 1984, p. 146)

Anticipating the need for high-level consultants to help government and industry develop R

& D plans and to advise industry on product development, a group of top AI researchers at five Canadian universities formed CogniCom Inc., a private consulting company with headquarters in Toronto. The group consists of the following people (in alphabetical order):

- Richard Kittredge from the University of Montreal, former Director of the well-known TAUM machine translation project and an expert in computational linguistics and sublanguages;
- John Mylopoulos of the University of Toronto, an expert in knowledge representation, conceptual modelling, and the application of artificial intelligence techniques to databases and dialogue systems;
- Zenon Pylyshyn, Director of the Centre for Cognitive Science at the University of Western Ontario, to represent the psychological side of the AI field, including knowledge acquisition and human-machine interfacing;
- Raymond Reiter of the University of British Columbia, an expert in the application of logic in AI, especially for deductive databases;
- John Tsotsos, of the University of Toronto, an expert in knowledge representation, expert systems, and applications of AI to medicine;
- Robert Woodham of the University of British Columbia, developer of photometric stereo and an expert in machine vision, remote sensing and automated cartography; and
- Steve Zucker of McGill University, an expert in machine vision, pattern recognition, robotics, and models of human vision.

CogniCom has been in existence since late 1983. The President of CogniCom, Z. Pylyshyn, was in charge of the scientific team (which included several CogniCom members) that produced the major five-volume *Cognos Report* for the Secretary of State and the Department of Communications, recommending an AI strategy

for Canada. This report is currently being studied by the government and DOC plans to make an abbreviated version of it available later this year. CogniCom also has several other contracts at the present time, including two from the Department of Communications: one involves development of an expert systems tool, and the other is a study of the applications of AI to large consumer databases, including ones based on Telidon.

One of CogniCom's long term contracts is to work with the major new AI company, Canadian Artificial Intelligence Products Corporation of Nepean, Ontario (613-727-0082) by assisting them in developing AI products and by providing them with technical advice and first-call on a variety of consulting services.

The CogniCom offices are located at 20 Richmond Street, Suite 425, Toronto, Ontario M5C 2R9 (phone 416-366-4857). The General Manager is Ms. Jan Ruby, an MBA and an experienced technology and communications policy consultant. She is available at that location to answer questions about the company or to direct inquiries to the relevant principals. □

Call for papers

IJCAI-85
International Joint Conference
on Artificial Intelligence

18-24 August 1985

University of California, Los Angeles

The IJCAI conferences are the main forum for the presentation of Artificial Intelligence research to an international audience. The goal of IJCAI-85 is to promote scientific interchange within and between all subfields of AI among researchers from all over the world.

Authors are invited to submit papers on substantial, original, and previously unreported research in any aspect of AI, including:

- AI architectures and languages;
- AI and education (including intelligent CAI);
- Automated reasoning (including theorem proving, automatic programming, planning, search, problem solving, commonsense and qualitative reasoning);
- Cognitive modelling;
- Expert systems;

- Knowledge representation;
- Learning and knowledge acquisition;
- Logic Programming;
- Natural language (including speech);
- Perception (including visual, auditory, tactile);
- Philosophical foundations;
- Robotics;
- Social, economic, and legal implications.

Authors should submit four copies of their paper (hard-copy only). Long papers should be 5500 words maximum (up to seven proceedings pages), short papers up to 2200 words (three proceedings pages). Each paper will be stringently reviewed by experts in the topic area specified. Acceptance will be based on originality and significance of the reported research as well as the quality of its presentation. Applications clearly demonstrating the power of established techniques, as well as thoughtful critiques of previously published material, will be considered provided that they point the way to new research and are substantive scientific contributions in their own right.

Short papers are a forum for the presentation of succinct, crisp results. They are not a safety net for rejected long papers.

In order to ensure appropriate refereeing, authors are requested to specify in which of the above topic areas the paper belongs, as well as a set of no more than five keywords for further classification within that subject area. Papers requiring major revisions will not be accepted.

The following information must be included with each paper: Author's name, address, phone number, and netmail address; topic area and keywords; an abstract of 100-200 words; the length of the paper (in words).

Papers *must* be received by 7 January 1985. Authors will be notified by 16 March 1985; camera-ready copy will be due 16 April 1985.

Submissions should be sent to the Program Chair:

Aravind Joshi

Dept Computer and Information Science
University of Pennsylvania
Philadelphia, PA 19104, U.S.A.

General enquiries should be directed to the General Chair:

Alan Mackworth

Dept Computer Science
University of British Columbia
Vancouver, BC, CANADA V6T 1W5

Artificial Intelligence at Simon Fraser University

Nick Cercone
Laboratory for Computer and
Communication Research
Department of Computing Science
Simon Fraser University
Burnaby, BC V5A 1S6

Artificial Intelligence activity at Simon Fraser University is flourishing. AI activities centre primarily on computational vision, logic programming, knowledge representation, and natural language understanding. Faculty involved in full-time AI research include Brian Funt, Veronica Dahl, Bob Hadley, Nick Cercone, and (as of January 1985) Jim Delgrande. Other faculty whose interests extend to AI include Tom Calvert (motion, vision, graphics), Tom Poiker (expert systems for cartographic applications), and Binay Bhattacharya (pattern recognition). This is a young group, the majority of whom have only recently come to Simon Fraser. The graduate program is relatively new (the M.Sc. program is 4 years old, the Ph.D. program 2 years) and approximately 25% of the 55 graduate students are involved in AI research (and about 40% of the Ph.D. students).

Facilities for AI research at Simon Fraser are provided by the Laboratory for Computer and Communication Research (LCCR), an interdisciplinary laboratory established just over one year ago with the aid of installation and infrastructure grants from NSERC and financial support from Simon Fraser. The LCCR is supported by researchers from the Computing Science and Communication Departments and the Faculty of Engineering Science of SFU. The primary purposes of the LCCR are: (1) to promote inquiry into the problems of computer and communication research; (2) to develop a facility for basic computer and communication research and related research topics; (3) to foster co-operative research efforts by members of the University, industry professionals, and government agencies; (4) to assist members in the planning, funding,

and conducting of research proposals and projects; (5) to develop a research program for the direction of Master's and Doctoral theses and seek financial support for graduate students; and (6) to sponsor distinguished visitors from other universities, research institutes, industry and government.

Although only in its formative stages, the LCCR has made good progress toward each of its primary goals. Problems of computer and communication research are attacked from many sides, encompassing research into distributed database design, cautious transaction schedulers with admission control, software development emulating network interface units, and organisational communication. The Automated Academic Advisor (AAA) project is a long term effort to integrate dynamic databases, knowledge representation techniques, natural language understanding and expert system design and evaluation into a functional expert system. The AAA is intended to deliver information of the Computing Science, Engineering Science and Communication curriculum to students, faculty and staff. The AAA project provides a practical context within which AI researchers can implement and evaluate their ideas. Microtel Pacific Research (MPR) and SFU cooperatively investigate VLSI design. The LCCR provides some limited consulting to local industries. In part, the LCCR sponsored the sabbatical visit of Gord McCalla during the 1983-84 academic year. Other distinguished visitors include Naoki Katoh and Toshihide Ibaraki.

The research facilities of the LCCR and the Computing Science Department share a common local area Ethernet (Ungermann and Bass) and include two VAX 11/750 supermini computers and six Sun Microsystems workstations with over 2 gigabytes of disk storage and a number of other special-purpose pieces of equipment for graphics, VLSI design, and network concurrency and traffic research.

The newest of the National Research Council of Canada research publications, *Computational Intelligence*, will use the facilities of the LCCR. From the editorial office at Simon Fraser this quarterly international journal (NRCC's 13th journal) will be co-ordinated and edited.

The natural language group is the newest informal group within the structure of the LCCR. It consists of Veronica Dahl, Bob Hadley, Jim Delgrande, Nick Cercone, graduate students Tomek Strzalkowski, Fred Martin, Fred Popowich, Charlie Brown, and research scientist Paul McFetridge. These computing scientists are joined from time to time by linguists,

philosophers, and psychologists at Simon Fraser who are interested in specific aspects of natural language.

Tiko Kameda (computer communications network design and database design) is the director of the LCCR. Ms Carol Murchison is the Administrative Assistant and Ed Bryant is the systems programmer for the LCCR. Inquiries concerning the LCCR may be directed to Ms Murchison, by mail, telephone (604-291-4704), or UUCP (. . . !ubc-vision!sfucmpt!sfulccr!carol). The LCCR 1983 annual report, which introduces the Laboratory for Computer and Communication Research and reports on the first year of the laboratory's activities, is available from Ms Murchison. □

Abstracts of some recent technical reports on AI activity at Simon Fraser University appear on pages 16-17.

Artificial Intelligence at Bell-Northern Research

Dick Peacocke
Manager, Knowledge Technology
Bell-Northern Research
Ottawa, Ontario K1Y 4H7

Bell-Northern Research is the research and development organization for Northern Telecom and Bell Canada. BNR has over 4,000 staff in laboratories across Canada, U.S.A., and in England. Signal and image processing have been worked on for more than a decade, and now a new AI program has been initiated.

The scope of the AI program is broad—to explore and develop AI techniques for use in products and services provided by BNR and its parent companies, and for use in design and development processes. A core AI group was formed at the beginning of 1984. The core group handles basic technology issues, and helps to define and support applications throughout the corporation. The core group is also responsible for liaison with AI activities in universities and government. This liaison is viewed as an important task, leading, it is hoped, to useful collaboration in some instances.

Telecommunications and information systems are major products of Northern Telecom. As they become more and more sophisticated in their capabilities in the future they must still be easy to use and manage. A central theme for AI work at BNR is coupling machines and people together in the performance of complex tasks.

Research at BNR on expert systems focuses on expert system applications; the technology is being investigated by building expert systems. Some of the interesting issues are domain characterization, knowledge elicitation and representation, development of methodologies, selection of tools, and prototyping and testing expert systems.

Natural language research at BNR is aimed at intelligent human-machine dialogue. Natural language is being studied from both the behavioural and computational points of view. The strategy used is the "entire system strategy", viz. building and using entire natural language programs rather than concentrating on isolated phenomena. A general purpose interpreter has been built, driven by a lexicon and a combination of semantic ATN and grammar. Output from the interpreter is a parse and pseudo-English echo back. Some anaphoric and elliptical expressions are handled. Another natural language system is being used to study behaviour of users interacting with an operational database. Issues of interest include different modes of dialogue, how context is used, and dynamic patterns of focus.

In addition to research in expert systems and natural language processing, we are investigating techniques and algorithms for automating the design and development of software systems, and improving development productivity. This work puts particular emphasis on specific BNR domains. The term 'development' as used here includes all of the software life-cycle phases from requirements and specification through to testing, release, and maintenance. Topics of interest include specification languages, rapid prototyping, intelligent development environments, automatic test generation, etc.

As a computing environment we are using MTS Lisp and Waterloo Prolog on IBM mainframes, a small expert system building framework for IBM PC's, and will be using Xerox Lisp machines with Interlisp-D and LOOPS, a hybrid AI development system for experimenting with different programming methodologies. □

Recent Technical Reports

Editor's note: Recent technical reports will be listed in this department. Abstracts will be included as space permits, with preference being given to theses.

Simon Fraser University

Reports below with LCCR numbers can be obtained from Carol Murchison; others can be obtained by contacting the author. The address is:

Laboratory for Computer and
Communication Research
Department of Computing Science
Simon Fraser University
Burnaby, BC V5A 1S6

SAUMER: Sentence Analysis Using Metarules

Fred Popowich

LCCR TR 84-2, 45 pages

A programming language is presented which combines some of the features of Generalized Phrase Structure Grammars with Definite Clause Grammars to create an executable grammar specification. An implementation is tested with two small grammars and lexicons. The resulting systems can provide semantic interpretations for sentences containing topicalization, relative clauses, passivization, and questions.

Towards the Automated Evaluation of Interactive Systems:

A Quality Assessment Approach

Fred Martin

M.Sc. thesis, 143 pages

LCCR TR 84-3

A system for performing automated quality-assessment evaluation of interactive computer systems is proposed and an implementation is discussed. After the need for evaluation is reviewed and the shortcomings of existing evaluation methods are cited, the proposed alternative method is introduced. A major feature of the proposed system is the automated recording of user characteristics and user perceptions of

system quality. A Lisp implementation of the evaluation system is introduced and described. Test results are given, demonstrating the use of the system on a small-scale expert system application. Conclusions are presented regarding the efficacy of the method and suggestions for future work are outlined.

Toward a Proper Meaning Representation for Natural Language

Tomek Strzalkowski

LCCR Natural Language Group

Working paper 1, 86 pages

This is the author's Ph.D. thesis proposal, which proposes extensions to the lambda categorial languages as the basis of a proper meaning representation for natural language.

The Automated Academic Advisor

Nick Cercone, Robert Hadley,

Fred Martin, Tomek Strzalkowski

LCCR Natural Language Group,

Working Paper 2, 25 pages

The automated academic advisor (AAA), a large practical artificial intelligence system currently under development, is introduced. Informal comparisons are made between the applicability of two parsers, one ATN-based, the other Prolog-based, to the AAA, and our initial experience with them is discussed. The design of an evaluation subsystem is discussed briefly with the intent of discovering universal techniques of system evaluation which will permit consistency and comparability of evaluation. Our evaluation emphasis is placed on the system's quality assessment rather than the more traditional performance measurement criterion.

Logic Programming for Constructive Expert Systems

Veronica Dahl

Working paper, 10 pages

We discuss expert database systems that can be viewed as sets of specifications for combining different components into desired configurations or structures. These are constructed on demand, according to the combination rules stored and the particular requirements in a user's query. We emphasize intelligent synchronization of constructive processes, and relate our proposal to recent developments on concurrent logic programming.

On Gapping Grammars

Veronica Dahl and Harvey Abramson

CMPT TR 84-5

12 pages

Gapping grammars (GGs) are logic grammars that may explicitly refer to gaps in between constituents—*i.e.*, to unidentified intermediate substrings of symbols. In this paper we motivate gapping grammars by presenting grammatical examples where extraposition grammars are not adequate and we describe and discuss alternative implementations of GGs in logic.

More on Gapping Grammars

Veronica Dahl

CMPT TR 84-7

17 pages

This article discusses how gapping grammars can be exploited to produce natural and formal language descriptions, and how they can powerfully help capture several linguistic phenomena: coordination, free word order and right extraposition.

On the Complexity of Context-Sensitive Languages

Tomek Strzalkowski

CMPT TR 84-4

32 pages

We prove the central theorem that the complex-sensitive recognition problem is PSPACE-complete. It appears that both PSPACE/NP and NP/P boundaries lie somewhere in the context-sensitive class of languages, and that "more than context-free" does not necessarily mean intractable.

Artificial Intelligence: Underlying Assumptions and Basic Objectives

Nick Cercone and Gordon McCalla

CMPT TR 83-13

25 pages

Perspectives are presented on methodological assumptions underlying research efforts in AI across the spectrum of subareas it comprises, and whether current predictions of the future importance are well-founded.

ENGR: Yet Another Parser for English

Tomek Strzalkowski

CMPT TR 83-10

106 pages

Sandy Harris

The following report is available from:

Sandy Harris
42 Third Avenue
Ottawa, Ont K1S 2J8

A new representation for English text

Sandy Harris

This paper describes a new representation for English text which both allows efficient implementation of key operations for "dumb" text manipulation and provides a valuable data structure for more complex "intelligent" applications. The technique is based on the use of pointers to a table of 32K high-frequency words.

University of Toronto

Artificial intelligence reports from the University of Toronto are available from four research groups:

1. Computational Linguistics
2. Research in Biological and Computational Vision
3. Laboratory for Computational Medicine
4. The Taxis Project

Requests for any of the following publications should be addressed to:

Artificial Intelligence Group
Department of Computer Science
University of Toronto
Toronto, Ontario, Canada M5S 1A4

1. Computational Linguistics

A Computational Model for the Analysis of Arguments

Robin Cohen

Ph.D. Thesis

Technical Report CSRG-151

October 1983, 225 pages

This thesis proposes a model for an argument understanding system—a natural language understanding system which processes arguments. The form of input considered is one-way communication in a conversational setting, where the speaker tries to convince the hearer of a particular point of view. The main contributions are: (i) a theory of expected coherent structure which limits analysis to the reconstruction of particular transmission forms; (ii) a theory of linguistic clues which assigns a functional interpretation to special words and phrases used by the speaker to indicate structure; (iii) a theory of evidence relationships which includes the demand for

pragmatic analysis to accommodate beliefs not currently held. A system designed to incorporate these theories could be used to analyze the structure of arguments—the necessary first step for a hearer, before judging credibility and responding.

2. Research in Biological and Computational Vision

A Spatio-Temporal Model for Early Visual Processing

David J. Fleet, Allan D. Jepson, and Peter E. Hallett

Technical Report RBCV-84-1
April 1984

In this paper we discuss the motivation for, and the analysis of a linear spatio-temporal model for early visual processing. The general structure of the mechanisms of the model are derived from physiological research on the retina. The detailed structure has also been influenced by a desire for tractability in analysis.

Representational Axes and Temporal Cooperative Processes

John K. Tsotsos

Technical Report RBCV-84-2
April 1984

A framework for the integration of time into high level (attentive) vision is described. The key elements are an organization of knowledge along several axes, including time, several search modes facilitated by the knowledge organization, a hypothesize-and-test reasoning framework and a temporal cooperative process, driven by the knowledge organization, for hypothesis ranking.

3. Laboratory for Computational Medicine

An Explanation System for Frame-based Knowledge Organized Along Multiple Dimensions

Ron Gershon, Yawar Ali, and Michael Jenkin

M.Sc. thesis of the first author
Technical Report LCM-TR83-2
December 1983

This paper describes an explanation system for frame-based knowledge about events, as presented in a visual motion expert system. As such, it can be applied to representations that embody different frame organizational relationships such as IS-A, PART-OF, INSTANCE-OF, similarity, and time. This may be contrasted with most current expert systems which employ rule-based knowledge representations. In addition, such expert systems typically do not deal with complex spatio-temporal information and only a small number of them have any explanation

capabilities. The system described in this document is capable of making inferences about frame comparisons and temporal relationships not present in the knowledge base, and provides output in both textual and pictorial formats. The graphical format is particularly useful for revealing the structure of the knowledge frames. The system has been implemented and tested on a knowledge base designed for human left ventricular performance assessment and examples of interaction with the system will be presented.

Knowledge Organization: Its Role in Representation, Decision-Making, and Explanation Schemes for Expert Systems

John K. Tsotsos

Technical Report LCM-TR83-3
December 1983

It is proposed that one of the keys for research on "second generation" expert systems is knowledge organization. Knowledge organization determines control structure design, explanation and evaluation capabilities for the resultant knowledge base, and has strong influence on system performance.

Research on Knowledge-based Systems: PSN, ALVEN, and CAA

John K. Tsotsos, John Mylopoulos, and Tetsutaro Shibahara

Technical Report LCM-TR84-1
May 1984

This technical report is intended to give an overview of research on knowledge-based systems carried out within the Department of Computer Science at the University of Toronto. This research includes the development of a knowledge representation system based on semantic networks (PSN), a knowledge-based system that analyzes films of human left ventricle and generates descriptions based on a knowledge base of facts about motion concepts (ALVEN), and another system that examines ECG data looking for a particular class of cardiac disorders—arrhythmias (CAA).

A central theme of our research effort has been the organization of knowledge and how it can be employed in expert decision making. Thus PSN offers three organizational principles based on the notions of generalization, aggregation and classification and the control structures of ALVEN and CAA take full advantage of these. Moreover, both ALVEN and CAA introduce additional organizational principles based on the notions of (concept) similarity, time, causality and projection.

This technical report comprises four papers that give overviews of the three projects and discuss their interrelations.

4. The Taxis Project

Requirements Modelling: A Knowledge Representation Approach to Software Requirements Definition

Sol J. Greenspan

Ph.D. Thesis

Technical Report CSRG-155

March 1984, 124 pages

Software Engineering can be viewed as the production of a series of models beginning with a completely world-oriented (application-oriented) model and progressing toward models that are more and more machine-oriented. In this view, the first model in the series, referred to in the thesis as a requirements model, should capture and formalize information that is usually left informal in current approaches. A language for requirements modeling (RML) has been designed. It is based on knowledge representation ideas from AI: a model in RML is considered as a knowledge base about some slice of reality. It offers three kinds of objects (entity, activity, and assertion) for representing concepts and three abstraction principles (aggregation, classification, and generalization) for organizing objects. RML is formally defined by giving a translation of each of its features into a first-order logic with time. The notion of consistency of a requirements model is thus linked to consistency of the corresponding set of FOL axioms. Among other examples of RML usage, the language is used to describe the organizing of an IFIP working conference. To offer some methodological guidance, RML is linked to SADT* (Structured Analysis and Design Technique). SADT provides a technique for constructing an initial "structural model" whose semantics can then be specified using RML. RML was designed as part of the Taxis Project at the University of Toronto and is based on the same framework as the Taxis language for information system design.

An Extended Taxis Compiler

Kyungwha Lawrence Chung

M.Sc. Thesis

CSRG Technical Note 37

January 1984, 179 pages

Taxis, a language for the design of interactive information systems (IISs) such as systems for credit card verification, airline reservation and

inventory control, is extended to provide both dialogue and process management for IISs. The overall organization and structure of dialogue and process control is achieved by integrating scripts, a modified version of augmented Petri nets, into the Taxis conceptual framework of properties, classes, and IS-A hierarchies.

Extended Taxis, hereafter Taxis+, has already been tried in "real world" applications and some weaknesses were discovered and have led to improvements of the language, which are included in the thesis. The improvements include semantic integrity assertions, user interfaces and exception handling facilities.

This thesis is concerned with the integration of scripts into the Taxis language, and with the extension of the Taxis compiler to include the new constructs. This thesis also defines a user interface for communication with active script instances, and develops techniques for efficient enforcement of semantic integrity assertions. It should be noted that the compiler for Taxis+ is currently under implementation.

Taxis '84: Selected Papers

Brian Nixon, editor

Technical Report CSRG-160

June 1984, 231 pages

The Taxis project aims to provide tools to facilitate the design of large interactive information systems. It uses a framework of abstraction principles (including classification, generalisation / specialisation, and aggregation), based on work on knowledge representation in the field of Artificial Intelligence, and also draws on results from Programming Languages, Databases, and Software Engineering. This report collects 16 papers from the project, from late 1982 to early 1984. About half of the papers have been presented by project members at conferences; some appear in this report in revised form.

The papers are grouped into seven sections:

1. Overview (2 papers)
2. Conceptual Modelling Languages (2 papers)
3. Medical Applications (1 paper)
4. Implementation and Design Issues (2 papers)
5. Requirements Modelling (4 papers)
6. Linguistic User Interfaces (3 papers)
7. Exceptions and Errors (2 papers)

A bibliography for the project is also provided.

**Deadline for the
December Newsletter
is 15 November.**

*SADT is a trademark of Softech, Inc.

Forthcoming Conferences, and Calls for Papers

See also the announcements on page 9 of *Computational Intelligence*, page 11 of the workshop on Theoretical Approaches to Natural Language, and on page 13 of *IJCAI-85*.

**IEEE Workshop on
Principles of Knowledge-Based Systems**

3-4 December 1984

Sheraton Denver Tex, Denver, Colorado

The purpose of this conference is to focus attention on the principles, theories, and methods of artificial intelligence that have played an important role in the construction of expert and knowledge-based systems. The workshop will provide a forum for researchers in expert and knowledge-based systems to discuss the concepts that underlie their systems.

Proceedings will be distributed at the workshop and will be subsequently available for purchase from IEEE. Selected full papers will be considered (along with papers from the IEEE Conference on AI and Applications) for a special issue of *IEEE Transactions on Pattern Analysis and Machine Intelligence* on knowledge-based systems to be published in September 1985.

General Chairman:

John Roach
Department of Computer Science
Virginia Polytechnic Institute
Blacksburg, VA, U.S.A.

Local Arrangements Chairman:

David Morgenthaler
Martin Marietta Corp.
Denver, CO, U.S.A.

**Association for Computational Linguistics
European Chapter
Second Conference and General Meeting**

28-29 March 1985

University of Geneva, Switzerland

For more information, write to:

Harold Somers
Centre for Computational Linguistics
UMIST, PO Box 88

Manchester M60 1QD
England

**International Conference on
Fifth Generation Computer Systems**

6-9 November 1984

Tokyo, Japan

For more information, write to:

FGCS '84 Secretariat
ICOT, Mita Kokusai Bldg. 21F
1-4-28 Mita, Minatu-ku
Tokyo 108, Japan
Phone: +03 456-3195

**Fifth Generation Computing
and Expert Systems Conference**

20-21 September 1984

Westin Hotel, Calgary

Sponsored by the Calgary Research and Development Authority and the University of Calgary.

For more information, contact:

Juanita Busch
Suite 1435, Bow Valley Square I
202 - 6 Avenue SW
Calgary, Alta. T2P 2R9

**Workshop on Transportable
Natural Language Processing**

22-23 October 1984

Duke University, Durham, N.C.

For more information, contact:

Bruce Ballard
AT&T Bell Labs, 3C-440A
Murray Hill, NJ 07974, U.S.A.
Phone: 201-582-5440
UUCP: allegra!bwb

AISB 85

**The Society For The Study Of
Artificial Intelligence And Simulation Of Behaviour**

10-12 April 1985

University of Warwick, England

Submissions are invited for the AISB Easter 1985 conference. Papers may be on any aspect of AI, including, though not necessarily restricted to, the following: AI and education; reasoning; learning; knowledge representation; robotics; vision; natural language; cognitive modelling; expert

systems; architectures and languages; planning; speech. Papers should ideally relate to practical or theoretical work in progress or completed. Those intending to submit a paper should make a preliminary submission of a provisional title and abstract of up to 100 words and a provisional list of keywords. Deadline for notification: 1 November 1984.

Full papers, of 2000–5000 words, should be on A4 pages and double-spaced. Three copies should be submitted. The first sheet should give the title, names of authors, a brief abstract and a list of keywords, to help in the assigning of referees. The paper itself should start on the next page, and authors' names should not appear in the main body of the text. Deadline for full papers: 7 December 1984.

Authors will be notified of referees' decisions around the end of January 1985. Final copies, for photo-reproduction, will be needed by late February. Copies of the conference proceedings will be provided to everyone attending.

There will also be unrefereed postgraduate poster sessions, to allow postgraduates to display information about their work. Those wishing to provide a poster session should contact the programme chairman, no later than January 31st, 1985. Authors of submitted papers will not be eligible to provide poster sessions.

Programme Committee chairman:

Peter Ross
Department of Artificial Intelligence
Forrest Hill
Edinburgh EH1 2QL, Scotland

Computer Vision and Pattern Recognition

9–13 June 1985

Cathedral Hill Hotel, San Francisco

The program will consist of submitted and invited papers. Submitted papers may be long, short, or poster presentations. Long papers (8 proceedings pages, 45 minutes presentation) are reserved for finished, high-quality work. Short papers (6 pages, 25 minutes) are continuing work with complete presentation of partial results, and for ideas that can be expressed concisely. Poster sessions (3 pages) are for timely presentation of current research where there may be few results at the submission deadline, but where more complete results will be available for the conference.

Conference topics include:

- Edges, lines, and contours;
- Image representations;

- Texture analysis and reconstruction;
- Segmentation and 2-D descriptions;
- Shape and 3-D descriptions;
- Motion;
- Stereo;
- Matching;
- Robotic vision;
- Vision for navigation;
- Shape from shading, texture, etc;
- Vision systems;
- Vision hardware;
- Pattern analysis;
- Pattern classification;
- Applications of computer vision;
- Human perception.

It is important that papers report on new and interesting research ideas. Research proposals and minor changes to old ideas are discouraged.

Each paper submitted should include a cover page with the title, authors' names, address, index terms including at least one of the above topics, and the type of paper (long, short, or poster). The cover page will not be sent to the reviewer and the authors' names and organization should not be on the body of the paper. Deadline for long and short papers is 7 January 1985; deadline for poster presentations is 4 February 1985. Final papers will be required by 1 April 1985. Send four copies of papers to:

Keith Price, CVPR Program Chair
Electrical Eng Systems MC-0272
University of Southern California
Los Angeles, CA 90089-0272, U.S.A.
Phone: 213-743-5526

1985 Symposium on Logic Programming

15–18 July 1985

Boston, Massachusetts

The symposium, sponsored by the IEEE Computer Society and the IEEE Technical Committee on Computer Languages, will cover implementations and applications of logic programming systems, including (but not limited to) parallel processing, expert systems, natural language processing, systems programming, implementation techniques, and performance issues.

Authors should send 8 copies of their papers (8–20 pages, double spaced) to

John Conery
Dept Computer and Information Science
University of Oregon
Eugene, OR 97403, U.S.A.
Phone: 503-686-4408
CSNET: conery@uoregon

Submission deadline is 16 November 1984. For more information, contact one of the following:

Conference Chairman:

Doug DeGroot
IBM T.J. Watson Research Center
Yorktown Heights, NY 10598, U.S.A.
Phone: 914-945-3497

Technical Co-Chairmen:

Jacques Cohen
Computer Science Dept, Ford Hall
Brandeis University
Waltham, MA 02254, U.S.A.
Phone: 617-647-3370
CSNET: jc@brandeis

John Conery
[address above]

**Applications of AI in engineering:
Special Issue of *SIGART Newsletter***

The April 1985 issue of the *SIGART Newsletter* (tentative schedule) will focus on the applications of AI in engineering. The purpose of this issue is to provide an overview of research being conducted in this area around the world.

The following topics are suggested: Knowledge-based expert systems; Intelligent computer tutors; Representation of engineering problems; Natural language and graphical interfaces; Interfacing engineering databases with expert systems; This list is by no means exhaustive; other related topics are welcome.

Individuals or groups conducting research in this area and who would like to share their ideas are invited to send two copies of 3 to 4 page summaries of their work, preferably ongoing research, before December 1, 1984. The summaries should include a title, the names of people associated with the research, affiliations, and bibliographical references. Since the primary aim of this special issue is to provide information about ongoing and proposed research, please be as brief as possible and avoid lengthy implementation details. Submissions should be sent to D. Sriram at the following address or through Arpanet to Sriram@CMU-RI-CIVE:

D. Sriram
Design Research Center
Carnegie-Mellon University
Pittsburgh, PA 15213, U.S.A.
Phone: 412-578-3603

**Machine translation and related topics:
Special Section of *SIGART Newsletter***

A special section on machine translation and related topics is planned for an early 1985 issue of *SIGART Newsletter*. For details of how to submit a report, write to the guest editor:

Sergei Nirenburg
Department of Computer Science
Colgate University
Hamilton, NY 13346, U.S.A.

New Bindings

Robin Cohen from University of Toronto to University of Waterloo.
Marlene Colbourn from University of Toronto to University of Waterloo.
Jim Delgrande from University of Toronto to Simon Fraser University.
Sol Greenspan from University of Toronto to Schlumberger-Doll Research (Ridgefield, CT).
Graeme Hirst from Brown University to the University of Toronto.
Hector Levesque from Fairchild Laboratory for AI Research to the University of Toronto.
Jan Mulder from University of British Columbia to Dalhousie University.
Peter Patel-Schneider from University of Toronto to Fairchild Laboratory for AI Research (Palo Alto, CA).
Michel Pilote from Netron to Emerald City Research (Toronto).
David Poole from Australian National University to University of Waterloo.
Richard Rosenberg from University of British Columbia to Dalhousie University.

Free Books

We have several AI books awaiting reviewers, who of course may keep the book after writing the review. If you would like to be a book reviewer for the *Canadian A.I. Newsletter*, contact the editor, giving your subfields of interest.

Encourage your colleagues and students to join CSCSI/SCEIO (before the dues go up).

University of Maryland Offers AI Software

Liz Allen
Department of Computer Science
University of Maryland
College Park MD 20742, U.S.A.

This is to announce the University of Maryland software distribution. This includes source code for the following packages, which are currently running on a VAX 11/780 under Berkeley Unix™:

1. The flavors package written in Franz Lisp. This package has been used successfully in a number of large systems at Maryland, and while it does not implement all the features of Lisp Machine Flavors, the features present are as close to the Lisp Machine version as possible within the constraints of Franz Lisp. (Note that Maryland flavors code *can* be compiled.)
2. Other Maryland Franz hacks, including the Interlisp-like top level, the `llspbreak` error handling package, the `for` macro and the new loader package.
3. The YAPS production system written in Franz Lisp. This is similar to OPS5 but more flexible in the kinds of Lisp expression that may appear as facts and patterns (sublists are allowed and flavor objects are treated atomically), the variety of tests that may appear in the left-hand sides of rules, and the kinds of actions may appear in the right-hand sides of rules. In addition, YAPS allows multiple databases, which are flavor objects and may be sent messages such as `fact` and `goal`.
4. The windows package, in the form of a C-loadable library. This flexible package allows convenient management of multiple contexts on the screen, and runs on ordinary character display terminals as well as bit-mapped displays. Included is a Franz Lisp interface to the window library, a window shell for executing shell processes in windows, and a menu package (also a C-loadable library).

5. The `phone` program, a facility to allow two or more users to type messages to each other in separate windows on a terminal screen.

6. The `calend` program, an appointment calendar maintainer. It uses a user file of messages and dates for reminding, and can notify a user by printing to their terminal, sending them mail, or nagging them to get off the terminal at a certain time of day. It allows one-time only, weekly, biweekly, monthly, yearly and other reminding schedules.

7. The `bbd` program, a multiple bulletin board system loosely based on the `msgs` program.

8. `Rxasm`, a relocating Z80 cross-assembler. Running on the VAX, it puts out ld-style object files.

9. `Zrun`, a Z80 microprocessor simulator.

Two forms of the distribution are available: one runs under Berkeley Unix 4.1, the other under 4.2. We also include Franz Lisp in the distribution since it is easier to do that than to describe all the small changes that we have made to the Franz sources.

The distribution tape costs \$^{US}100 for the 4.1 version, or \$^{US}200 for the 4.2 version. Purchasers are required to sign a licence agreement. For more details and a copy of the agreement, write to the author at the address above, or to `despina@maryland` on the ARPANET, or phone 301-454-7690.

University of Toronto to hold Symposium on Fifth Generation Computing

On Friday 26 October 1984, the University of Toronto Departments of Computer Science and Electrical Engineering, in cooperation with the Computer Systems Research Institute, will hold a day-long symposium on activities at the University related to Fifth Generation Computing and featuring speakers from other organizations in Canada and the U.S.. Details of the program will be announced in September. Attendance is by invitation. For more information, contact:

Professor J.N.P. Hume
Department of Computer Science
University of Toronto
Toronto, Ont M5S 1A4
Phone: 416-978-2990

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Membership: \$10 regular, \$5 students (Canadian funds); there is a discount of \$2 for CIPS members. Conference proceedings: \$25 each, plus \$5 for postage within Canada, \$7 for postage outside Canada. Payment may be made in U.S. dollars at the current rate of exchange.

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