

CONCLUSION

A wealth of ideas surfaced at this workshop. A questionnaire was produced with the intent that the answers to the questionnaire would summarize the views of the attendants. The questionnaire had several levels, the simplest of which asked what proportion of the success in AI in 10 and in 50 years could be attributed to work in natural language processing and what proportion to work in adaptation. Some initial responses were provocative: Waltz thought natural language was most important now and adaptation would be important later; Holland thought adaptation should be the emphasis now and natural language processing should be the emphasis later. There developed, however, so much confusion as to the exact meanings of the questions that the questionnaire was discarded.

Professionals with a wide variety of expertises attended the workshop. Holland and Waltz propose to write computer programs that control intelligent robots. Harth and Pribram investigate brain mechanisms. Conrad and Klopff often look at individual neurons. Pattee and Przybylski work at the molecular level. Rada and Zeigler ponder the formal specifications for intelligence. These characterizations are very crude. They do, however, give a sense of the interests represented at the meeting.

The tendency at the meeting was to favor more biological and foundational approaches to AI. This one might have guessed based on the backgrounds of the people present. The particulars of this tendency are more news-worthy. A few such gems might guide one back to the main text: see Harth's stress on the rich interconnections between all levels of the microscopic to macroscopic organization, see Conrad's fascination for the endless primitives from which the intelligent system can extend itself, and look at Martinez's conviction that models of the self are fundamental at the lowest level of life.

We expect to learn more about the principles upon which mainstream AI is based. The SIGART reader may find some stimulating ideas in this report. We hope that the various disciplines which intersect in the pursuit of AI can optimally share the information and creative energy which stimulate scientific advances.

BOOKS

ARTIFICIAL INTELLIGENCE IN MEDICINE

Edited by Peter Szolovits

Massachusetts Institute of Technology

Westview Press

5500 Central Avenue

Boulder, Colorado 80301

Frederick A. Praeger, Publisher

(303)444-3541

This book introduces the field of artificial intelligence in medicine, a new research area that combines sophisticated representational and computing techniques with the insights of expert physicians to produce tools for improving health care. An introductory chapter describes the historical and technical foundations of the work and provides an overview of the current state of the art and research directions. The authors then describe five prototype computer programs that tackle difficult clinical problems in a manner similar to that of an expert physician.

The programs presented are INTERNIST, a diagnostic aid that combines a large database of disease/manifestation associations with techniques for problem formulation; EXPERT and the Glaucoma Program, which use physiological models for the diagnosis and treatment of eye disease; MYCIN, a rule-based program for diagnosis and therapy selection for infectious diseases; the Digitalis Therapy Advisor, which aids the physician in prescribing the right dose of the drug digitalis and also explains its actions; and ABEL, which combines clinical and pathophysiological reasoning in a consultant for acid-base and electrolyte disorders.

Peter Szolovits is associate professor of computer science at MIT.

CONTENTS: Artificial Intelligence and Medicine--P. Szolovits. Representation of Expert Knowledge for Consultation: The CASNET and EXPERT Projects--Casimir A. Kulikowski and Sholom M. Weiss. Consultation, Knowledge Acquisition, and Instruction: A Case Study--Randall Davis. The Development of Clinical Expertise in the Computer--P. Szolovits and William J. Long. Heuristic Methods for Imposing Structure on Ill-Structured Problems: The Structuring of Medical Diagnostics--Harry E. Pople, Jr. Modeling Knowledge of the Patient in Acid-Base and Electrolyte Disorders--Ramesh S. Patil, P. Szolovits, and William B. Schwartz.

226 pages with tables, figures
LC 82-060046
ISBN 0-89158-900-7
July 1982
\$25.00

**APPROCHES FORMELLES
DE LA
SEMANTIQUE NATURELLE**

**Proceedings of the
First Summer School
"Linguistics for Computer Scientists"**

**organized by
Equipe Comprehension due
Raisonnement Naturel
Laboratoire des LANGAGES ET
SYSTEMES INFORMATIQUES
C.N.R.S. - U.P.S.**

**Toulouse, August 31-September 5, 1981
1982, 284 p.**

Natural language comprehension through computer is one of the most important and difficult problems to be dealt with in artificial intelligence today.

This book is meant to present new researches on the analysis and on the formal representation of the knowledge expressed by natural language. These researches are done by linguists, logicians and computer scientists. Most of them are based on formal logic and they give evidence to the new convergence of these three disciplines.

This book will interest scientists working on knowledge representation and on natural reasoning formalization. Some of the logical formalisms that are presented here may be also interest theoretical computing.

CONTENTS

- M. Borillo. Avant-propos. Contributions logico-linguistiques au probleme de la representation des connaissances.
- J.C. Anscombe. Structures argumentatives et expression linguistique dur raisonnement.
- G. Fauconnier. Espaces referentiels.
- B. de Cornulier. Notions de pragmatique: ambiguite et signification indirecte.
- A. Borillo. Temps notionnel, temps grammatical: quelques faits linguistiques concernant la duree.
- A. Daladier. Problemes de representation d'une langue naturelle en λ -calcul.
- J.B. Grize. Introduction a la logique naturelle et approche logique du dialogue.
- F. Nef. Presentation de la grammaire universelle de Montague, a l'usage des informaticiens, avec une attention particuliere a la theorie de la traduction.
- L. Farinas del Cerro. Representation of causal expressions.
- J.M. Pierrel. On the use of linguistic information in automatic speech recognition and understanding.
- J. Virbel. La composante materielle des structures textuelles.

Order checks are sent to:

C.E.C.
30 rue Condorcet
31400 Toulouse
France
45 Francs (postage included)

**DYNAMIC MEMORY
A Theory of Reminding and
Learning in Computers and People
by Roger C. Schank**

In an imaginative approach to thinking about memory, Roger Schank makes a creative attempt to solve the problems related to breadth and empirical implications of script theory. By focusing on the nature of *reminding*, he provides a provocative and important new perspective on the nature of human memory.

1982 234 pp.
24858 2 cloth \$29.95
27029 4 paper \$10.95

**HANDBOOK OF
HUMAN INTELLIGENCE**

**Edited by
Robert J. Sternberg**

The most comprehensive account yet published of what is known and hypothesized about human intelligence. Leading authorities review the theories and research findings in their own areas, place them in a broad perspective, and point out both new directions for future work and blind alleys. An introductory chapter provides an integrative framework, and a concluding chapter addresses metatheoretical issues raised by the chapters taken as a group.

1982 1046 pp.
45 tables/60 line diagrams
22870 0 cloth \$65.00
29687 0 paper \$24.95

(The above two books may be ordered from Cambridge University Press, 32 East 57th Street, New York, N.Y. 10022)