## Foreword

## Invited Lectures
- R. Kowalski: Logic as a computer language for children
- R.C. Schank: Looking at learning
- G. Huet: In defense of programming language design
- H.J. Berliner: Multiprocessing and duality in intelligence
- H. Gallaire: Artificial intelligence and industry

## Deduction
- H. Farreny, H. Prade: About flexible matching and its use in analogical reasoning
- E. Chouraqui: Construction of a model for reasoning by analogy
- D. Pütschke: Toward a mathematical theory of analogical reasoning
- L. Farinas-del-Cerro: A deduction method for modal logic
- J. Jaffar, J.L. Lassez: Reasoning about array segments
- A. Bundy, L. Byrd, Ch. Mellish: Special purpose, but domain independent, inference mechanisms

## AI Programming Methodology
- L. Steels: Constraints as consultants
- H. Wertz: A programming environment for the development of complex systems
- A. Ramsay: An environment for developing distributed programs
- E.J.F. Costa: Weakly commuting term rewriting systems: application to automatic recursion removal
- M. Bidoit: Automatic transformation of abstract data types "fair" presentations
- Ch. Beierle: Synthesizing minimal programs from traces of observable behaviour
- E. Kant, A. Newell: Naive algorithm design techniques: a case study
- K. Hanakata: A bit table for message passing in multiple inheritance hierarchies

## Representation
- F. Sobik, E. Sommerfeld: A graph theoretic approach for representation and classification of structured objects
- H. Alshawi: A clustering technique for semantic network processing
- D. Pastre: A language for expressing mathematical knowledge in automatic theorem proving
- D. Kayser: An experiment in knowledge representation
- S. Lityak, T. Roosma, M. Saluever, H. Olm: On the interaction of knowledge representation and reasoning mechanism in discourse comprehension
EXPERT SYSTEMS

R. de Mori, A. Giordana, P. Laface, L. Saitta
An expert system for speech decoding

R.S. Michalski, J.H. Davis, V.S. Bisht,
J.B. Sinclair
Plant/de: An expert consulting system for the diagnosis
of soybean diseases

A. Gershman
Building a geological expert system for dipmeter interpretation

GENERAL TOPICS AND APPLICATIONS

S. Klein
Culture, mysticism and social structure and the calculation
of behavior

I.M. Havel
The truth-reaction paradox: A probe of limitations of
artificial intelligence

P. Hajek
Applying artificial intelligence to data analysis

LEARNING

A. Bundy, B. Silver
A critical survey of rule learning programs

Ch.U. Habel, C.R. Rollinger
The machine as concept-learner

D. Sleeman
Inferring (mal) rules from pupil’s protocols

J.G. Wallace
A development approach to general learning processes

P. Langley
Strategy acquisition governed by experimentation

SEARCH AND GAMES

J. Pearl
The utility of precision in search heuristics

D. de Champeaux, E. van Dijk
Heuristic search with partial node expansion and
bi-directional search in product space

H. Farreny, H. Prade
Toward search methods with imprecise estimates

I. Bratko
Symbolic derivation of chess patterns

VISION AND ROBOTICS

R.J. Beattie
Edge detection for semantically based early visual
processing

B. Yin
A program which recognizes overlapping objects

A.P. Pentland
Local computation of shape

D. Owen
Relating object models to segmentation strategies

R. Chatila
Path planning and environment learning in a mobile
robot system

NATURAL LANGUAGE

E.L. Lozinskii, S. Nirenburg
Parallel processing of natural language

A. Jameson, W. Wahlster
User modelling in anaphora generation: Ellipsis and
definite description

M.O. Cordier, C. Moghrabi
An experiment towards more efficient automatic translation

B.K. Boguraev, K. Sparck Jones
Steps towards natural language to data language translation
using general semantic information
S. Weber Russel
P. Sgall
D. Maier, S.C. Salveter
J.F. Pique, P. Sabatier
E. Mays, A.K. Joshi, B.L. Webber
G. Goerz
M. Yazdanvi

Formalizing factors in metaphorical extension
Automatic understanding with a linguistically based knowledge representation
Supporting natural language updates in database systems
An informative, adaptable and efficient natural language consultable database system
Taking the initiative in natural language database interactions: Monitoring as response
Applying a chart parser to speech understanding
How to write a story

PSYCHOLOGICAL ASPECTS

G. Hagert
T.A. Harley
R. Pfeifer, D.W. Nicholas
D.W. Massaro
W. Jansweijer, L. Konst, J.J. Elshout, B.J. Wielinga

On procedural learning and its relation to memory and attention
There's more than one way ...
Toward computational models of emotion
Simulating letter and word recognition: A fuzzy logical model of integrating visual information and orthographic structure in reading
VUP: a protocol diagnostic program for problem solving in physics