IJCAI-79: TECHNICAL SESSIONS

Note: Sessions are listed by room
A-Auditorium B-1001 C=1002 n=904/905 E=901 F-902

— SESSION 1 MONDAY August 20 9:00 -

A. Vision: Image Analysis

Towards Understanding Color Ocular Fundus Images — K. AkIta and H. Kuga

Automatic Determination of Image-to Data Base Correspondences — R. Bolles, L. Quam, M. Fischler, and H. Wolf

A Model for Perception of Structural Image Feature — H. Enomoto, N. Yonezakl, and K. Nitta

Image Processing by Experimental Arrayed Processor — H. Matsushima, T. Uno and M. Ejiri

B. Applied AT

Preliminary Performance Analysis of the Prospector Consultant System for Mineral Exploration — John Gaschnig

The Hole of Plans in Automated Consultation — Michael R. Genesereth

An Inference Net Compiler for the PROSPECTOR Rule-based Consultation System — Kurt Konolige

Theoretical basis for Knowledge Representation — Setsuo Ohsuga

C. Natural Language Processing

JETS:Achieving Completeness through Coverage and Closure — T. Finin, B. Goodman, and H. Tennant

A Two Level Modular System for Natural Language Understanding — G. Guida and M. Somalvico

A Technique for Managing the Lexicon in a Natural Language Interface to a Changing Data Base — S.J.Kaplan, E.Mays, and A.K. Joshl

The Role of Object Primitives in Natural Language Processing — W. Lehnert and M. Burstein

Interfacing a Semantic Net with an Augmented Transition Network — Joachim H. Laubsch

D. Program Synthesis

On Syntax-Directed, Semantics-Supported Program Synthesis — Wolfgang Bibel

A System which Synthesizes Array-manipulating Programs from Specifications — M. Bidoit, C. Cresse, and C. Guiho

Results in Knowledge-Based Program Synthesis — C.C. Green, R.P. Gabriel, E.Kant, B.I. Kedzierski, P.P. McCune, J. Phillips, S.T.Tappel, and S.J.Westfold

A Knowledge-Based Application Definition System — C. Hollander and H. Reinstein

Characterization of a Class of Functions Synthesized from Examples by a Summers like Method Using the "R.M.W." Matching Technique — J.P. Jouannaud and Y. Kodratoff

E. Theorem Proving

A Prover for General Inequalities — W. W. Bledsoe, P. Bruell, and R. Shostak

Resolution Plans in Theorem Proving — C.L. Chang

A Prover for Parallel Processes — M. Hirata and T. Nishimure

An Automatic Theorem Prover Generating a Proof in Natural Language — M. Nakanishi, M. Nagata and K. Ueda

— SESSION 2 MONDAY August 20 16:00 —

A. Panel: Inexact Reasoning

— R. Davis, S.Kaihara,E.Shortliffe and L.Zadeh

B* Vision: Image Analysis

Symmetry Analysis of Two-dimensional Patterns for Computer Vision — Robert C. Bolles

An Empirical Method that Provides a basis for the Organization of Relaxation Labeling Processes for Vision — F.S. Montalvo and N. Weisstein

Linear Feature Extraction and Description — R. Nevatia and K. R. Babu

Continuous Relaxation and Local Maxima Selection — S.W. Zucker, Y.G. Leclerc, and J.L. Mohammed

A Compact Relational Structure Representation — M. Shneier

C. Natural Language Processing

Prediction and Substantiation: Two Processes that Comprise Understanding — Gerald DeJong

Coreference in a Frame Database — S. Rosenberg and B. Roberts

Understanding Complex Situations — Robert Wilensky

D. Data Bases

Relational Strategies for Processing Universally Quantified Queries to Large Data Bases — Koichi Furukawa

How Not to Say "Nil" - Improving answers to failing queries in Data Base Systems — Juergen M. Janas

The Frame Work of Knowledge Representation and its Retrieval in LGS - Literature Guide System — T. Nishida and S. Doshita

From History to Computer Science: A Formalisation of the Inferential Processes of an Historian — Gian Piero Zarri

E. Program Synthesis

The Roles of Knowledge and Deduction in Program Synthesis — David R. Barstow

Inducing Function Properties from Computation Traces — Pierpaolo Degano

Program Synthesis from Natural Deduction Proofs — Shigeki Goto

— SESSION 3 TUESDAY August 21 9:00 —

A. Robotics

A Knowledge-based Interactive Robot-vision System — T. Vamos, M. Bathor and L. Mero

A Multi-level planning and navigation system for a mobile robot: a first approach to HILARE — G. Giralt, R. Sobek, and R. Chatila

Modelling and Monitoring Manipulation Environment — T. I.asegawa and H. Inoue

Time in Robots and Dialog Systems — L. Litvintseva and D. Pospelov

A Logic Representation of Manufacturing Control — W.I. Bullers, S.Y. Nof, and A.B. Whinston

Computer Control of Multijointed Finger System — Tokuji Okada

B. Distributed AI

Hierarchical Planning in a Distributed Environment — Daniel D. Corkill II

A Parallel Searching Scheme for Multiprocessor Systems and its Application to Combinatorial Problems — M.Imai, V. Yosbida, and T. Fukumura

Application of Artificial Intelligence Techniques to Cooperative Distributed Processing — V.R. Lesser and D.D. Corkill

A Framework for Distributed Problem Solving — Reid G. Smith

C. Deductive Methods

A Natural Programming Calculus — A.Hansson and S.Tarnlund

Conditional Answers in Question-Answering Systems — Philip Klahr

Toward Efficiency through Generality — J.Louis Lauriere

The Synthesis of Programs by Analogy — R. Moll and J.W. Ulrich

Automatic Program Debugging — Harald Wertz

D. Program Understanding

Meta-Interpretation of Recursive List-Processing Programs — D. Goossens

Overview of the Programmer's Apprentice — C. Rich, H. Shrobe and R. Waters

Dependency Directed Reasoning in the Analysis of Programs Which Modify Complex Data Structures — Howard E. Shrobe

A Method for Automatically Analyzing Programs — Richard C. Waters

E. Cognitive Psychology

A Learning System and its Psychological Implications — J. Anderson and P. Kline

Meta-knowledge 8nd Cognition — Avron Barr

Computer Models of Human Personality Traits — Jaime G. Carbonell

Modelling Intentional Behavior Generation — William S. Faught

Use of Thematic Information to Speed Search of Semantic Nets — L.M. Reder and J.R. Anderson

F. Poster Session: Vision

Surface-normals from Closed Paths — M.J. Brooks

Recognition of Handprinted Alphanumerics, Symbols, and "Katakana" characters — Y. Hoshino, H. Kami, R. Ohmori, H. Ueda and M. Mitsuzawa

A Theory of Origami World — Takeo Kanade

Visual Mapping by a Robot Rover — Hans P. Moravec

Motion and Structure from Optical Flow — K. Prazdny

Automotive Stereo Vision Using Deconvolution Technique — Tomomasa Sato

An Automobile with Artificial Intelligence — S. Tsugawa, T. Yatabe, T. Hirose and T. Matsumoto

— SESSION 4 TUESDAY August 21 14:00 —

A. Vision: Region and Edge Detection

Region Segmentation of Images by Expansion and Contraction of Edge Points — Walton A. Perkins

A Production System for Region Analysis — Y. Ohta, T. Kanade and T. Sakai

Automatic Construction of Junction Dictionaries and Their Exploitation for the Analysis of Range Data — Kokichi Sugihara

A Knowledge Directed Line Finder for Analysis of Complex Scenes — M. Yachida, M. Ikeda, and S. Tsuji

B. Applied AI

Structure and Function of the Crysalls System — Robert S. Fngelmore and Allan Terry

Dynamic Speech Discrimination Using an Articulatory Model — Shun Ishizaki

SUPP: Understanding Moving Picture Patterns based on Linguistic Knowledge — Naoyuki *Okada*

Speech Training Systems Using Lateral Shapes of Vocal Tract and F1-F2 Diagram for Hearine-impaired Children — M. Shigenaga and Y. Sekiguchi

Detection of the Movements of Men for Autonomous Vehicles — T.Tsukiyama and Y. Shirai

C. Natural Language Processing

Extraction of Items from Abstracts — F. Nishida, G. Kisbimoto and S. Takamatsu

Graceful Interaction in Man-Machine Communication — Pbil Hayes and Raj Reddy

Retrieving Information from an Episodic Memory, or Why Computer's Memories Should be More Like People's — R. Schank and J. Kolodner

Japanese Word Processor — T. Kawada and S. Amano

An Understanding System of Natural Language and Pictorial Pattern in the World of Weather Report -- E. Kawaguchi, M. Yokota, T. Endo, and T. Tamati

D. Problem-Solving Issues

The Origin and Resolution of Ambiguities in Causal Arguments — Johan deKleer

The Counterplanning Process: reasoning under adversity — Jaime G. Carbonell

An Active frame for Knowledge Representation — H. Ogawa, H. Nanba, and K. Tanaka

E. Program Synthesis

A Knowledge-Based Approach to using Efficiency Estimation in Program Synthesis — Elaine Kant

Towards a Mathematical Theory of Program Synthesis — Masahlko Sato

A Deductive Approach to Program Synthesis — Z. Manna and R. Waldinger

F. Poster Session: Expert Systems £ Data Bases

Browsing in Large Data Bases — Daniel D. Dankel

Recognition in a Program Understanding System — S. Fickas and Ruven Brooks

A Facsimile Based Text Editor using Handwritten Mark Recognition — Yasuhito Suenaga

Music Information Processing System and its Applications to Comparative Musicology Y.Nakamura and S. Inokuchi

A Domain-independent Production-rule System for Consultation Programs — William van Melle

Knowledge-Driven Interpretation of ESCA Spectra — M. Yamazakl and H. Ihara

— SESSION 5 TUESDAY August 21 16:00

A. Panel: History of AI

—E.A. Feigenbaum, S.Amarel, J.McCarthy, and H.A.Simon

B. Vision: Shape and Shading

Finding the Axis of an Egg — J.M. Brady

Inferring the Direction of the Sun from Intensity Values on a Generalized Cone — J.M. Brady

An Application of the Photometric Stereo Method — K. Ikeuchi and B.K.P. Horn

A Polarimetric Approach to Shape Understanding of Glossy Objects — Kazutada Kosnlkawa

Relating Properties of Surface Curvature to Image Intensity — Robert J.Woodham

C. Natural Language: Dialog & Discourse

Dialogue Management for Rule-Based Tutorials — William J. Clancey

Conservation As Planned Behavior — Jerry R. Hobbs

A Model of Dialog Based on Fuzzy Set Concept — H. Imaoka and M. Sugeno

Centered Logic: The Role of Entity Centered Sentence Representation in Natural Language Inferencing — A.K. Joshi and S. Kuhn

D. Games

Hierarchical Reasoning In the Game of Go — David J.H. Brown

Testing Correctness of strategies In game-playing programs — M.A. Bramer

A Knowledge-Based System for Locating Missing High Cards in Bridge — J.R. Quinlan

The Structure and Performance of the Interim.2 Go Program — W. Reltman and B. Wilcox

E. Induction and Learning

Theory of Self-Organizing Nerve Nets with Special Reference to Association and Concept Formation — Shun-ichi Amari

A Computational Approach to the Study of Human Skill Acquisition — J.J. Elshout and B.J.Wielinga

Self-Organization of a Neural Network which Gives Position-Invariant Response — Kunlhlko Fukushlma

An Analysis of Generalization as a Search Problem — Tom M. Mitchell

— SESSION 6 WEDNESDAY August 22 9:00 —

A. Vision: Texture

Describing Natural Textures — R. Nevatia, K.E. Price, ana F. Vilnrotter

Shape from Texture: an aggregation transform that maps a class of textures into surface orientation — John R. Render

Description of Textures by a Structural Analysis — F.Tomita, Y.Shirai, and S. Tsujl

Boundary Detection of Textured Regions — M. Yachlda, M. Ikeda, and S. Tsujl

B. Problem-Solving Issues

Sub-problem finder and instance checker: Two Cooperating Preprocessors for Theorem Provers — Dennis de Champeaux

Interactive Theorem Proving on Hierarchically and Modularly Structured Set of Very Many Axioms — M.Honda and R.Nakajima

Resolution in a New Modal Logic — Masamichi Shimura

Network Truth Maintenance for Deduction and Modelling — Alan M. Thompson

C. Representation

Interactive Graph Production System — K. Aoki and K. Tanaka

Representation and Efficiency in a Production System for Speech Understanding — Donald L. McCracken

Visual Analog Representations for Natural Language Understanding — D.L. Waltz and L. Boggess

D. Induction and Learning

Learning of Abstractions from Structural Descriptions of Pictures — Pierre Bonzon

Rediscovering Physics with BACON-3 — Pat Langley

Failure Processing In a System for Designing Complex Assemblies — Jean-Claude Latombe

A Learning System Able to Synthesize Arithmetical Functions — F. Schyn and G. Guiho

Heuristics for Knowledge Acquisition From Maps — Perry W. Thorndyke

E. Games

Co-ordinate Square: a solution to many chess pawn endgames — Ken Church

The X-0-0 Heuristic in Game Tree Analysis — J. Denbigh Starkey

A Scrabble Crossword Game Playing Program — Stuart C. Shapiro

An Application of Decision Analysis to Strategy-Making in Game Playing — Y. Tsukauoto, K. Yamada, and T. Terano

F. Poster Session: Natural Language

Understanding Medical Jargon as if it Were a Natural Language — Alain Bonnet

Question-Answering System of Charles University — E. Buranova, S. Machova, B. Miniberger, and A. Riha

A Procedural Representation of Lexical Entries in Augmented Transition Network Grammar Y.Kobayashi and Y. Niimi

Learning Structural Descriptions of Grammar Rules from Examples — Robert C. Berwick

An Infinite-connected Words Recognition System for Male Speakers Using Time-space Dynamic Programming — Ryu-ichi Oka

PLAS, A Paradigmatic Language Acquisition System: An Overview — V. Sembugamoorthy

Towards Minimal Data Structures for Deterministic Parsing — D.W. Shlpman and M.P.Marcus

— SESSION 7 WEDNESDAY August 22 14:00 —

A. Vision: Object Detection

The ACRONYM Model-Based Vision System R.A.Brooks, R. Grelner and T.O. BInford

Object Detection and Measurement Using Stereo Vision — Donald B. Gennery

Structural Analysis of Complex Aerial Photographs — M. Nagao, T. Matsuyama, and H. Mori

B. Natural Language: Question-Answering

Controlling Question Asking In a Medical Expert System — Ruven Brooks and Jon Reiser

Quantification in a Three-valued Logic for Natural Language Question-answering systems — Veronica Dahl

Experimental Japanese Language Question Answering System MSSS78 - Using Case Patterns with Procedures — A. Shimazu and H. Iida

Experience with the Evaluation of Natural Language Question Answerers — Harry Tennant

C. Applied AI: Medicine

Prototypes and Production Rules: An Approach to Knowledge Representation for Hypothesis Formation — Jan AikIns

An Approach to Medical Diagnosis Based on Conceptual Structures — B. Chandrasekaran, F. Gomez, S. Mittal and J. Smith

Representation of Dynamic Clinical Knowledge: Measurement Interpretation in the Intensive Care Unit — L.M. Fagan, J.C. Kunz, E.A. Feigenbautn and J.J. Osborn

Conceptual Lattice: a unified model for medical inference processes — Tsuguchika KamInuma

A Case Study of EXPERT Formalism - an approach to a design of medical consultation system through EXPERT Formalisms — F. Mizoguchi, K. Maruyama, K. Kitazawa, M. Saito,and C. Kulikowskl

D. Architectures for AI

Knowledge-Based Problem Solving by a Labelled Production System — Y. Anzal, N. Ishibashi, Y. Mitsuya and Shoji Ura

A Framework for Control in Production Systems — Michael Georgeff

ETHER- A Parallel Problem Solving System — William A. Komfeld

Parallel-Serial Production Systems with Many Working Memories — Leonard Uhr

E. Representation

An Introduction to Non-monotonic Logic — Drew McDermott and Jon Doyle

Prepositional Attitudes: Fregean Representation and Simulative Reasoning — Lewis G. Creary

The Interaction of Observation and Inference in a Formal Representation System — Robert E. Filman

F. Poster Session: Problem Solving

A Basic Model for Learning Systems — K. Akama and A. Ichlkawa

Tree Analysis Techniques in Tsume-go — D.B. Benson, B.R. HildItch, and J.D. Starkey

Manipulation Extrapolation- A System for Controlling Trainable Robots — Ron Colman

Consistency of Theories of Ideas — Bob Elschlager

On Inheritance In Knowledge Representation — Mark S. Fox

Making Aesthetic Choices — Kenneth M. Kahn

SESSION 7 - F (cont.'d.)

Problem Solving of Elementary Algebra by Hierarchical Abstraction — F. Nishida, Y. Fujita, and H. Kusaka

The Theorem Prover Using a Parallel Processing System — H. Ogawa, T. Kitahashi, and K. Tanaka

— SESSION 8 WEDNESDAY August 22 9:00 —

A* Panel: Robotics

—Y.Shirai,E.Fredkin,T.Numakura,W.A.Perkins,and M. Yachida

B. Representation

Numerical Quantifiers and Their Use in Reasoning with Negative Information — Stuart C. Shapiro

An Overview of an Automatically Compilable Hierarchical Definition Matcher — Barbara C. Sangster

Problems with Parts — Lenhart K. Schubert

C. Natural Language: Parsing

Alternative Parsers for Conceptual Dependency: Getting There is Half the Fun — Marc Eisenstadt

Structured Inheritance Networks and Natural Language Understanding — H.H. Leitner and M. Freeman

Word Expert Parsing — C. Rieger and S. Small

Predictive Control Parser; Extended LINGOL — H.Tanaka, Taisuke Sato and F. Motoyoshi

D. Reasoning Models

Scheduling of Processes in a Speech Understanding System Based on Approximate Reasoning — Renato de Mori and Lorenza Saitta

Fuzzy Conditional Inferences and Fuzzy Inferences with Fuzzy Quantifiers — M. Mizumoto, S. Fukami, and K. Tanaka

A Measure of Closeness of Weak Implication to Strict Implication — Masanori B. Okamoto

A System for Fuzzy Reasoning — M. Umano, M. Mizumoto, and K. Tanaka

Approximate Reasoning Based on Fuzzy Logic — L.A. Zadeh

E. Architectures for AI

L1sp Activities In Japan — Toshlaki Kurokawa

Cognitive Economy In Artificial Intelligence Systems — D.B. Lenat, F. Hayes-Roth and P. Klahr

LISP Machine NK3 and Measurement of its Performance — M. Nagao, J. Tsujll, K. Nakajima, K. Mitaimira, and H. Tto

Biological Software — Erik Sandewall

The Experimental LISP Machine — K. Taki, Y. Kaneda, and S. Maekawa

SYSP: a New Programming Language for the Next Generation — T. Yokoi, S. Yokoyama, T. Satoo, F. Motoyoshl and K.Furhl

— SESSION 9 THURSDAY August 23 9:00 —

A. Vision: Motion

Extraction of Moving Object Images Through Change Detection — R. Jain, W.N. Martin, and J. Aggarwal

ALVEN: A Study on Motion Understanding by Computer — J.K. Tsotsos, J.Mylopoulos, H.D.Cowey, and S. Zucker

Three Dimensional Movement Analysis of Dynamic Line Images — S.Tsuji, M.Osada and M.Yachida

Plan-Guided Analysis of Noisy Dynamic Images — M. Yachida, M. Ikeda, and S. Tsuji

B. Natural Language: Semantics

Parsing Directly Into Knowledge Structures — R.C. Schank, M. Lebowltz, and L. Birnbaum

Quantitative Evaluation of Transmission of Meaning — H. Fujisaki and Y. Katagiri

The Conceptual Content of Conversation R.C.Schank and W.G. Lehnert

Speech Acts and Multiple Environments — Y.Wilks and J. Bien

Hierarchical Concepts Structure for Natural Language Understanding System — Sho Yoshida

C. Reasoning Models

On the Construction of Evaluation Functions for Large Domains — Hans Berliner

A Glimpse of Truth Maintenance — Jon Doyle

Controlling Knowledge Deduction in a Declarative Approach -- H. Gallaire and C. Lasserre

Reasoning in Incomplete Domains — Steven Rosenberg

D. Paradigms for Knowledge-Based Systems

Operationalizing Heuristics: Some AI Methods for Assisting AI Programming — J. Mostow and F. Hayes-Roth

S-Net: A foundation for knowledge representation languages — M. Nagao and J. Tsujll

A Semantic Network of Production Rules in a System for Describing Computer Structures — Michael D. Rychener

E. Induction and Learning

A Problem Similarity Approach to Devising Heuristics: First Results — John Gaschnig

Implementing Search Heuristics Using the AL1 Advice-Taking System — Ivan Bratko

Automatic Discovery of Heuristics for Non-deterministic Programs — S.Stolfo and M.Harrison

Inductive Learning of Categories from Examples Using Minimum Cost Representations — Steven L. Tanimoto

Learning Production Rules for Consultation Systems — S.M. Weiss, C.A. Kulikowski, and B. Nudel

F. Poster Session: Applied AI

SACON: A Knowledge-Based Consultant for Structural Analysis — James S. Bennett and Robert S. Engelmore

Property Driven Data Bases — J.P.A. Barthes, M. Vayssade, and M. Miaczynska

Knowledge Engineering in Nuclear Physics — David R. Barstow

KNOBS: An Experimental Knowledge Based Tactical Air Mission Planning System ad a Rule Based Aircraft Identification Simulation Facility — C. Engelman, M. Bischoff, and C. Berg

Knowledge-Based Experiment Design in Molecular Genetics — Peter Frledland

Experience with ROBOT in 12 Commercial Natural Language Data Base Query Applications — Larry R. Harris

Common-sense Knowledge of Space: learning from experience — Benjamin Kuipers

— SESSION 10 THURSDAY August 23 11:00 ~

A. Panel * Natural Language

—M.Nagao,H. Tanaka,D.Walker,D.Waltz and Y. Wilks

B. Problem-Solving Issues

Mechanizing a Particularly Expressive Many Sorted Logic — Anthony Cohn

Increasing Tree Search Efficiency for Constraint Satisfaction Problems — R. Haralick and G. Elliot

Associative Commutative Pattern-Matching — J.M. Hullot

A Parallel Tree Search Method — S. Nakagawa and T. Sakal

C Paradigms for Knowledge-Based Systems

An Examination of a Frame-structured Representation System — Mark Stefik

EXPERT: a system for developing consultation models — R. Weiss and C.Kulikowski

Hierarchical Production System — R. Mizoguchi and 0. Kakusho

AGE (Attempt to Generalize): A Knowledge-based Program for Building Knowledge-based Programs — H.P. Nil and N. Aiello

D. Planning

Formal Objects and Feature Associations in Argos-II — M. Cayrol, B. Fade, and H. Farreny

Modeling Planning as an Incremental, Opportunistic Process — B. Hayes-Roth, F. Hayes-Roth, S. Rosenschein, and S. Cammarata

The Execution of Plans in an Independent Dynamic Microworld — G. McCalla and P. Schneider

Using Plans in Chess — David Wilkins

E. Induction and Learning

Learning to use Analogies — John McDermott

Grammatical Inference on the Basis of Linear Environments of Symbol Strings — Yoshiyuki Kotani

Learning and Generalization of Characteristic Descriptions: Evaluation Criteria and Comparative Review of Selected Methods — T.G. Dietterich and R.S. Michalski

Building and Exploiting User Models — Elaine Rich