AAAI News

Requests for information and suggestions for future news columns can be sent by electronic mail to aimagazine@aaai.org or by US mail to the AAAI office. Suggestions, comments, and questions on any aspect of the society are welcome.

—*William J. Clancey & Claudia Mazzetti*

New AAAI Email Addresses

AAAI has recently changed its email address. The new AAAI email addresses, effective immediately, are as follows:

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For your convenience in contacting the AAAI, please complete the reference card found in this issue. Your member number and the addresses on the reference card will be important for future correspondence with us.

For only IJCAI-89-related correspondence, please continue to use our old email address: aaai-office@sumex-aim.stanford.edu.

Symposia Directory

After our Spring Symposia at Stanford University, we received many requests for information on how to contact the speakers for further discussion. Below are the names and a mailing address for the authors of presented papers, organized by symposium topic.

AI and Limited Rationality

Real-Time Reasoning about Time Constraints and Model Precision in Complex Distributed Mechanical Systems Alice Agogino and K. Ramamurthi, UC Berkeley, 5136 Etcheverry Hall, Berkeley, CA 94720. **Solving Time-Dependent Planning Problems** Mark Boddy and Thomas Dean, Brown University, Dept. of Computer Science, Box 1910, Providence, RI 02912. **Context-Relative Acceptance** Michael Bratman, Dept. of Philosophy, Stanford University, Stanford, CA 94305. **Resource-Bounded Agents in an Uncertain World** Bruce D'Ambrosio and Michael Fehling, Oregon State University, Dept. of Computer Science, Corvallis, OR 97331. **Mental Constitutions and Limited Rationality** Jon Doyle, MIT Computer Science Lab, 545 Technology Square, Room 362, Cambridge, MA 02139. **Episodic Decision Analysis and Dynamic Decision Theory** Ward Edwards, USC, Social Science Research Center, University Park, Los Angeles, CA 90089-1111. **Mechanical Generation of Heuristic Theories: Trading Accuracy for Efficiency** Thomas Ellman, Columbia University, Dept. of Computer Science, New York, NY 10027

Mediation among Advisors

Susan Epstein, Hunter College/CUNY, 144 South Mountain Avenue, Montclair, NJ 07042. **A Comparative Analysis of Chunking and Decision-Analytic Control** Oren Etzioni and Tom Mitchell, Carnegie Mellon University, Computer Science Dept., Pittsburgh, PA 15217. **Adaptive Planning and Search** Michael Fehling, David Einav, and John Breese, Rockwell International Science Center, 444 High Street, Palo Alto, CA 94301. **Resource Allocation with Bounded Reasoning** Joshua Guttman and Phyllis Koton, The MITRE Corporation, Burlington Road, Bedford, MA 01730. **Decision-Theoretic Control of Search**

in BPS Othar Hansson and Andrew Mayer, UCLA, 1310 Olive Drive, Suite PH-B, West Hollywood, CA 90069. **Decision Analysis of the Computational Costs of Decision Analysis with Monte Carlo** Max Henrion, Rockwell International Science Center, 444 High Street, Suite 400, Palo Alto, CA 94301. **Knowledge Compilation for Informable Agents** Jane Hsu and Michael Genesereth, Stanford University, Computer Science Dept., Stanford, CA 94305. **Managing Local Choice** David Kirsh, MIT AI Lab, 545 Technology Square, Cambridge, MA 02139. **How to Decide How to Decide How to. . .: Limited Rationality in Decisions and Games** Barton Lipman, Carnegie Mellon University, Graduate School of Industrial Administration, Pittsburgh, PA 15213. **Two Heuristic Functions for Decision** Ronald Loui, Washington University, St. Louis, MO 63130. **The Dynamics of Action Selection** Pattie Maes, University of Brussels, AI Lab, V.U B., Pleinlaan 2, Brussels, B-1050, Belgium. **Locality-Bounded Rationality** Judea Pearl, University of California, Los Angeles, 4731 Boelter Hall, Los Angeles, CA 90024. **OSCAR: A General Theory of Rationality** John Pollock, University of Arizona, 3518 N. Fox, Tucson, AZ 85716. **Making Situation Calculus Indexical** Devika Subramanian and John Woodfill, Cornell University, Computer Science Dept., Ithaca, NY 14853. **Estimating the Value of Computation: The Case of Real-Time Search** Eric Wefald and Stuart Russell, Computer Science Division, UC Berkeley, Berkeley, CA 94720. **QSA/FL—Qualitative Systems Analysis Based on Fuzzy Logic** Lotfi Zadeh, UC Berkeley, Computer Science Division, Berkeley, CA 94720

AI in Manufacturing

Issues in the Diagnosis of Manufacturing Systems S. M. Alexander, J. H. Graham and C M. Vaidya, University of Louisville, Dept. of Industrial Engineering, Louisville, KY 40292. **Reasoning about Change and Exceptions in Automated Process Planning** S. L. Brooks and K. E. Hummel, Allied-Signal Aerospace Corporation, P O. Box 419159, Kansas City, MO 64141-6159. **ShopTalk: An Integrated Interface for Decision Support in Manufacturing** Philip R Cohen, Mary Dalrymple, Douglas B. Moran, and Fernando C. N. Pereira, SRI International, 333 Ravenswood Ave., Menlo Park, CA 94025. **A Knowledge-Based System for Nuclear Plant Loading Pattern Determination** Pascal Dauboin, Electricite de France, 1 Ave du General de Gaulle, Clamart 92141, France. **A Methodology for Applying Diagnosis in Manufacturing** Steven B Dolins, Karan Briggs, and Lynn Peterson, Texas Instru-

ments, P O Box 655474, MS 238, Dallas, TX 75265. **Mixed Initiative Scheduling** Barry R Fox, McDonnell Douglas Astronautics Company, 16055 Space Center Blvd , Houston, TX 77062. **Planning in the Large** Mark S Fox, School of Computer Science, Carnegie Mellon University, Pittsburgh, PA 15213. **An Ontology and Representation for Flexible Assembly** Henry H Hexmoor and William E Underwood, AI Atlanta Inc , 782 Fox Valley Drive, Stone Mountain, GA 30088. **Continuous Production Control: An Object-Oriented Scheduling System Approach** Yuan-geng Huang, Laveen N Kanal, and Satish K Tripathi, University of Maryland, Dept of Computer Science, College Park, MD 20742. **Using Algebraic Properties and Boolean Operations to Compute Feature Interactions** Raghu R Karinthi and Dana S Nau, Computer Science Dept , University of Maryland, College Park, MD 20742. **Facilities Layout as Constraint Satisfaction** Karl G Kempf, Intel Corp, 2250 Mission College Boulevard, SC9/22, Santa Clara, CA 95052. **Manufacturing Scheduling: Intelligently Combining Existing Methods** Karl G Kempf, Intel Corp, 2250 Mission College Boulevard, SC9/22, Santa Clara, CA 95052. **A Distributed Model for Plan Synchronization and Monitoring** Charles C Koo, Teknekron Corp , 525 University Ave , Palo Alto, CA 94301. **Distributed Artificial Intelligence: A Necessary Paradigm for Supervising Production Management Activities** Jean-Pierre Laurent, Jacqueline Ayel, Bernard-Pierre Panet, Soretas-Graphael, "Le Continental" Ave Descartes, BP 256, 93153 Blanc-Mesnil, Cedex, France. **Interactive Explanation for Design Rationale Capture** William S Mark, Lockheed AI Center, 2710 Sand Hill Road, Menlo Park, CA 94025. **Planning the Spatial Decomposition of Complex Two-Dimensional Shapes** J L Mitchiner, L R Phillips, Y T Lin, and T D Blacker, Sandia National Labs, Org 1412, P O Box 5800, Albuquerque, NM 87185. **Object-Oriented Management Planning Systems for Advanced Manufacturing** D H Norrie, O R Fauvel, B R Gaines, University of Calgary, Dept of Mechanical Engineering, 2500 University Drive, Calgary, Alberta, T2N 1N4 Canada. **A Framework for Knowledge-Based Computer-Integrated Manufacturing** Jeff Y-C Pan, Jay M Tenenbaum, and Jay Glicksman, Schlumberger/Stanford, 10471 Davison Ave , Cupertino, CA 95014. **Challenges to Manufacturing Control** H Van Dyke Parunak, Industrial Technology Institute, P O Box 1485, Ann Arbor, MI 48106. **Communicating Influence Networks:Integrating Multiple Perspectives to Diagnose Manufacturing Problems** Peter Raulefs, Intel Corporation, AI Lab, MS SC9-22, 2250 Mission College, P O Box 58125, Santa Clara, CA 95052. **Integrated Scheduling Frameworks** Steven F Smith, Robotics Institute, Carnegie Mellon University, Pittsburgh, PA 15213. **Dimensions for Categorizing Design Tasks** Louis Steinberg, Rutgers University, Computer Science Dept , Hill Center, Busch Campus, New Brunswick, NJ 08903. **Problem Solving Technologies for Manufacturing Logistics** Gerald Sullivan and Kenneth Fordyce, International Business Machines, Dept 746, Bldg 965-3, Essex Junction, VT 05455. **First-Cut: A Computational Framework for Rapid Prototyping and Team Design** Jay M Tenenbaum and Mark R Cutkosky, Stanford University, Center for Integrated Systems, Stanford, CA 94305. **Propel: An Expert System for Generating Process Plans** Jean Patrick Tsang, Lab de Marcoussis, CGE, Route de Nozay, Marcoussis 91460, France. **Case-Based Planning in Manufacturing** Costas Tsatsoulis, University of Kansas, Dept of Electrical and Computer Engineering, Learned Hall, Lawrence, KS 66045-2228. **Linguistic and Somatic Knowledge Engineering for the Automation of Small-Batch Machining** Paul K Wright, NYU/Courant Institution, Dept of Computer Science, New York, NY 10003

Planning and Search

Learning Problem-Solving Abstractions via Enablement D Paul Benjamin, Philips Labs, 345 Scarborough Road, Briarcliff, NY 10510. **Dynamic Creation of Abstract Objects: A Chunking Approach** Murray S Campbell, Carnegie Mellon University, School of Computer Science, Pittsburgh, PA 15213. **Failure-Guided Search in Planning** Steve A Chien, University of Illinois, 1109 West Stoaghton, #25, Urbana, IL 61801. **Generating Admissible Heuristics from Overestimating Ones Using Statistically Learned Transformations** Henry W Davis, Anna Bramanti-Gregor and Xiaofeng Chen, Wright State University, 274 Blair Drive, Fairborn, OH 45324. **Subgoal Generation from Problem Relaxation** Othar Hansson and Andrew Mayer, UCLA, 1310 Olive Drive, Suite PH-B, West Hollywood, CA 90069. **Real-Time Reaction for Planning Systems** James A Hendler, ICSI/ University of Maryland, 1947 Center Street, Suite 600, Berkeley, CA 94704-1105. **APEX: A System that Learns to Plan** Melanie Hilario, Laforia, 24 Rue Juge, 75015 Paris, France. **Localized Representation and Planning** Amy L Lansky, SRI International, AI Center, 333 Ravenswood Ave , Menlo Park, CA 94025. **Transformational Synthesis: Integrating Multiple Search Heuristics** Theodore A Linden and Sam Owre, Advanced Decision Systems, 1500 Plymouth Street, Mountain View, CA 94043-1230. **Replacing a Domain-Independent Planning Strategy with Learning** Steven Minton, MS 244-17, NASA Ames Reasearch Center, Moffett Field, CA 94035. **Discovering Admissible Search Heuristics by Abstracting and Optimizing** Jack Mostow and Armand E Prieditis, Rutgers University, Computer Science Dept , Hill Center, Busch Campus, New Brunswick, NJ 08903. **SIMD and MIMD Parallel Search** Curt Powley and Richard E Korf, UCLA, 308 Westwood Plaza, Box 361, Los Angeles, CA 90024. **Planning as Debugging** Reid G Simmons, Carnegie Mellon University, Computer Science Dept , Schenley Park, Pittsburgh, PA 15213. **SEPIA: An Experiment in Integrated Planning and Improvisation** Jennifer Turney and Alberto Segre, Cornell University, 316 Thurston Avenue, Apt B-31, Ithaca, NY 14850. **An Approach to Multiple-Goal Planning with Limited Interactions** Qiang Yang, Dana S Nau and James Hendler, University of Maryland, Computer Science Dept , College Park, MD 20742

Robot Navigation

Towards the Unification of Navigational Planning and Reactive Control Ronald C Arkin, Georgia Institute of Technology, Dept of Information and Computer Science, Atlanta, GA 30332-0280. **Navigation by Tracking Vanishing Points** P Bellutta, G Collini, A Verri, and V Torre, IRST, Localita Pante di Povo, 38050 Povo, Italy. **Solving Time-Dependent Planning Problems** Mark Boddy and Thomas Dean, Brown University, Computer Science Dept , Box 1910, Providence, RI 02912. **Image/Map Correspondence Using Curve Matching** Michael D Ernst and Bruce E Flinchbaugh, Texas Instruments, 6518 Copper Creek Drive, Dallas, TX 75248. **Planning with Perceptual Milestones to Control Uncertainty in Robot Navigation** Claude L Fennema, Jr , Edward M Riseman, and Allen R Hanson, University of Massachusetts, Computer and Information Science Dept , Lederle, GRC, Amherst, MA 01003. **Sequential Motion Analysis** David J Heeger and Eero P Simoncelli, MIT AI Lab, 545 Technology Square, Cambridge, MA 02139. **Localization with Topographic Maps** Marian R Heinrichs, Daniel R Montello, Catherine M Nussle, and Kip Smith, University of Minnesota Institute of Child Development, 51 E River Road, Minneapolis, MN 55106. **Mobile Robot Self-Location with the PSEIKI System** Avi Kak, Keith Andress, and Carlos Lopez-Abadia, Purdue University School of Electrical Engineering, West Lafayette, IN 47907. **Why Direction-Giving Is Hard: The Complexity of Linear Navigation by Landmarks** John R Kender and Avraham Leff, Computer Science Dept , Columbia University, New York, NY 10027. **Robot Exploration Based on the Spatial Semantic Hierarchy** Benjamin Kuipers and Yung-Tai Byun, University of Texas, AI Lab, Computer Science Dept , TAY 2 124, Austin, TX 78712. **Visual Re-acquisition of Geographic Locations** Tod S Levitt and Daryl T Lawton, Advanced Decision Systems, 1500 Plymouth Road, Mountain View, CA 94043-1230. **Mental Representations of Spatial and Nonspatial Relations** Timothy P McNamara, Vanderbilt University, Psychology Dept , 134 Wesley Hall, Nashville, TN 37240. **Planning Systems for a Mars Rover** David P Miller, JPL/Caltech, MS 301-440, 4800 Oak Grove Drive, Pasadena, CA 91109. **A Bayesian Method for Certainty Grids** Hans P Moravec and Dong Woo Cho, Robotics Institute, Carnegie Mellon University, Pittsburgh, PA 15213. **Visual Homing Using an Associative Memory** Randal C Nelson, University of Rochester, Computer Science Dept , Rochester, NY 14627. **The Calibration of Space Perception as a Basis for Navigation** John J Rieser and Steven T Kramer, Vanderbilt University, Box 512 Peabody, Nashville, TN 37203. **A Fine-Grained Alternative to the Subsumption Architecture** J Kenneth Rosenblatt and David W Payton, Hughes Research Labs, 3011 Malibu Canyon Road, Malibu, CA 90265. **A Biologically Plausible Model of Optic Flow Perception** Constance S Royden, James A Crowell, and Martin S Banks, UC Berkeley School of Optometry, Berkeley, CA 94720. **Simple Map Building for a Mobile Robot with Uncalibrated Stereo** Karen B Sarachik, MIT AI Lab, 545 Technology Square, Room 825, Cambridge MA 02139. **A Task Control Architecture for Mobile Robots** Reid Simmons and Tom Mitchell, Carnegie Mellon University, Computer Science Dept , Schenley Park, Pittsburgh, PA 15213. **Against Complex Architectures** Anthony J Stentz and Charles E Thorpe, Carnegie Mellon University, Computer Science Dept , Forbes Ave , Pittsburgh, PA 15213

Spoken Language Systems

Spoken Language Systems Jared Bernstein, Robert Moore, Patti Price, Mary Dalrymple, Hy

Murveit and Fernando Pereira, SRI International, 333 Ravenswood Avenue, Menlo Park, CA 94025. **Syntactic Parsing May Not Help Speech Recognition Very Much** Kenneth Church, AT&T Bell Labs, Room 2D-444, 600 Mountain Avenue, Murray Hill, NJ 07974. **Reducing Search by Partitioning the Word Network** John Dowding, Unisys, PO Box 517, Paoli, PA 19301. **The Role of Continuous-Speech Recognition in a Medical Records Task** Lawrence Fagan, Clifford Wulfman, Monica Rua, Ellen Isaacs, Christopher Lane, Janice Rohn, Bonnie Webber and Edward Shortliffe, University of Pennsylvania, Computer and Information Science Dept, Philadelphia, PA 19104. **How People Speak to a Computer** Alexander Hauptmann and Alexander Rudnicky, Carnegie Mellon University Computer Science Dept, Pittsburgh, PA 15213. **Unifying Speech and Natural Language Systems** Charles Hemphill and Joseph Picone, Texas Instruments, 112 Greenwood Court, Coppell, TX 75019. **Grammar and Parsing in the BBN Spoken Language System** Robert Ingria, BBN Systems and Technology Corporation, 10 Moulton, Mailstop 009, Cambridge, MA 02238. **Speech Understanding Based on Layered Abduction** John Josephson, Ohio State University 228 CAE Building, 2036 Neil Avenue, Columbus, OH 43210-1277. **Implications of an Early Experiment in Speech Understanding** Steve Levinson, AT&T Bell Labs, 600 Mountain Avenue, 2D-528, Murray Hill, NJ 07974. **Discourse and Performance Characteristics of Spoken Language** Sharon Oviatt and Philip Cohen, SRI International, 333 Ravenswood Avenue, Menlo Park, CA 94025. **Errors, Repetition and Contrastive Emphasis in Speech Recognition** Alexander Rudnicky and Alexander Hauptmann, Carnegie Mellon University, School of Computer Science, Pittsburgh, PA 15213. **TINA: A Probabilistic Syntactic Parser for Speech Understanding Systems** Stephanie Seneff, MIT Computer Science Lab, 545 Technology Square, Room 204, Cambridge, MA 02139. **Intonation and Syntax in Spoken Language Systems** Mark Steedman, University of Pennsylvania, Computer and Information Science Dept, Philadelphia, PA 19104-6389. **SpeechTrans: An Experimental Real-Time Speech-to-Speech Translation System** Hideto Tomabechi, Hiroaki Saito, and Masaru Tomita, Carnegie Mellon University, School of Computer Science, Pittsburgh, PA 15213. **Grammatical Constraint in Spontaneous Speech** Wayne Ward, Carnegie Mellon University, Computer Science Dept, Pittsburgh, PA 15213. **Invariant Phoneme Recognition Using Connectionist Networks** Raymond Watrous, University of Toronto, 10 King's College Road, Toronto, Ontario, M5S 1A4 Canada. **The Use of Pragmatics in Speech Recognition** Sheryl Young, Carnegie Mellon University, School of Computer Science, Pittsburgh, PA 15213

Representation and Compilation for High-Performance Theorem Proving

A Bag of Compilation Techniques Hassan Ait-Kaci, DEC/Paris Research Laboratory, 85 Avenue Victor Hugo, Rueil-Malmaison, 92563 Cedex, France. **An Inference Engine Based on the Logic of Proposition Surrogates** Bijan Arbab, IBM Los Angeles Scientific Center, IBM LASC, 11601 Wilshire Boulevard, 3d Floor, Los Angeles, CA 90025. **SETHEO—A High Performance Theorem Prover** Wolfgang Bibel, Technische Hochschule Darmstadt, FG Intellektik, FB INF THD, Alexanderstrabe 10, D-61 Darmstadt, West Germany. **Extending the Warren Abstract Machine for an Expert System Shell** David Bridgeland, MCC AI Lab, 3500 West Balcones Center Drive, Austin, TX 78759. **Techniques for Fast Knuth-Bendix Completion** James Christian, University of Texas, Austin, 6910 Hart Lane, #113, Austin, TX 78731. **Parthenon: A Parallel Theorem Prover for Non-Horn Clauses** Ed Clarke, Carnegie Mellon University, School of Computer Science, Pittsburgh, PA 15213. **Improving the Efficiency of Inference Through Many Sorted Logic** Anthony Cohn, University of Warwick, Computer Science Dept, Coventry, CV4 7AL, United Kingdom. **A Conspiratorial and Caching and/or Tree Searcher for Theorem-Proving** Charles Elkan, Cornell University, Computer Science Dept, Upson Hall, Ithaca, NY 14850. **Optimizations of RETE Algorithm and Implementation of Logical Dependenci** Francois Fages, LIENS, URA 1327 du CNRS, 45 Rue d'Ulm, 75005 Paris, France. **An Order-Sorted Logic for Feature Terms** Uli Hedtstueck, IBM Germany Scientific Center, Institute for Knowledge-Based Systems, Stuttgart D-7000, West Germany. **Parallel Execution of Logic Programs** Vipin Kumar, University of Texas at Austin, 4907 Transit Circle, Austin, Texas 78727. **A Bag of Compilation Techniques** Pat Lincoln, Stanford University Computer Science Dept, Margaret Jacks Hall, Stanford, CA 94305. **Discrimination Tree Indexing for Large Sets of Formulas:Experiments and the Structure of Formulas** Bill McCune, Argonne National Laboratory, MCS-221, Argonne, IL 60439-4844. **Code Trees** Jonathan Mills, Indiana University, Bloomington, IN 47405. **What Prolog Technology Can and Cannot Do for Automated Deduction** Ross Overbeek, Argonne National Laboratory, Computer Science Dept, Austin, TX 78712-1188. **Compilation Techniques in Clause Graphs** Hans Juergen Ohlbach, University of Kaiserslautern, FB Informatik, Kaiserslautern D-675, West Germany. **Catching, Avoiding Repeated Work and Explanation Based Generalization in a Back-Chaining Theorem Prover** David Plaisted, University of North Carolina, Computer Science Dept, Chapel Hill, NC 27599. **Combining Lisp and Prolog Efficiently on Standard Architectures** William Schelter, University of Texas at Austin, Mathematics Dept, RLM 10 132, Austin, TX 78712. **Compiling Neaer-Horn Prolog** Bruce Smith, University of North Carolina, Sitterson Hall, CB #3175, Chapel Hill, NC 27599-3175. **A Prolog Technology Theorem Prover** Mark Stickel, SRI International, 333 Ravenswood Ave, Menlo Park, CA 94025. **On Proving the Termination of Algorithms by Machine** Christoph Walther, University of Karlsruhe, Institute fur Logik, Postfach 6980, D-7500 Karlsruhe 1, West Germany. **Term Integration: An Indexing Technique for Storage and Retrieval of Large Number of Terms** Tie Cheng Wang, Kestrel Institute, 1801 Page Mill Road, Palo Alto, CA 94304. **Avoiding Unnecessary Unifiers in AC Completion** Hantao Zhang, University of Iowa, Computer Science Dept, Iowa City, IA 52241