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APPLIED INTELLIGENCE

The International Journal of
Artificial Intelligence, Neural Networks,
and Complex Problem Solving Technologies

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This journal will address issues involving solutions of real-life manufacturing, defense, management, and industrial problems which are too complex to be solved through conventional approaches and which require the simulation of intelligent thought processes, heuristics, applications of knowledge, and distributed and parallel processing. The integration of these multiple approaches in solving complex problems will be of particular importance.

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APPLIED INTELLIGENCE is a new international journal, published four times a year, beginning in January 1991.

Instructions for Authors

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REPRESENTATIONS IN MENTAL MODELS

On March 12–13, 1990, an interdisciplinary group of 35, composed of computer scientists, experimental psychologists, linguists, philosophers and "connectionists" met to share views on representations and their role in

mental models. The meeting shed some light on why "understanding" mental models is difficult. Simply put, the reason is that mental processes are described in many different ways and at quite different levels of abstraction, depending upon the researcher. For example, some emphasize the cognitive properties of mental models, whereas others are more concerned with the internal data structures. Still others may stress the logical form and content of the mental process, as contrasted with the actual computational machinery. The diversity of these viewpoints is clear upon reading the abstracts prepared by the participants. (These abstracts are available upon request.) Further study is needed to examine how these diverse viewpoints fit together into a useful, integrated framework.

The difficulty the group had in sharing a common framework for "What is a Mental Model" poses a challenge for Cognitive Science. The wide diversity of viewpoints and approaches stems in part from the fact that different cognitive tasks often create different classes of problems which generally require quite different tools and expressions for solution.

The group included the following: E. Charniak, E. Davis, G. DeJong, J. Etchemendy, P. Hayes, G. Hinton, J.J. Hopfield, A. Jepson, M. Johnson, M. Jordan, P. Johnson-Laird, R. Kaplan, S. Kosslyn, C. Krumhansl, H. Levesque, W. Levelt, A. Mackworth, D. McDermott, B. Meltzer, D. Norman, S. Peters, S. Pinker, A. Prince, Z. Pylyshyn, R. Reiter, W. Richards, P. Rosenbloom, S. Rosenschein, D. Rumelhart, E. Sandewall, G. Sperling, P. Smolensky, D. Touretzky, A. Treisman, S. Ullman, B. Webber.

The full report of the meeting with abstracts is available from: W. Richards, E10-120, Massachusetts Institute of Technology, 79 Amherst St., Cambridge, MA 02139.

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