

AI at Work

THE BEST OF CAIA '94

Guest editor:

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The IEEE Computer Society's Conference on Artificial Intelligence for Applications (CAIA) is a key gathering for business and technical people who want to keep tabs on commercial AI. This year, 215 papers were submitted to the conference, of which 63 were accepted as full papers and 21 as poster papers. The accepted papers represented AI work around the world: Australia, Austria, Belgium, Canada, China, Egypt, England, France, Germany, India, Italy, Japan, Scotland, Singapore, Spain, Switzerland, Taiwan, and the United States. This special section of *IEEE Expert* presents four of the best papers from CAIA '94, edited for the magazine's format.

The first article received the conference's Best Paper award: "Using Background Knowledge to Improve Inductive Learning: A Case Study in Molecular Biology," by Haym Hirsh and Michiel Noordewier. The success of many automatic learning systems depends on the input data being in the proper format. But proper format is often assumed, and the effects of a particular format on performance are often not examined. Hirsh and Noordewier used background knowledge of molecular biology to reexpress data in a form more appropriate for learning. Their results show dramatic improvements in classification accuracy for two very different classes of DNA sequences, using traditional "off-the-shelf" decision-tree and neural-network inductive-learning methods.

Bing Liu and his colleagues have integrated several approaches to address the shortest-path problem for route finding. Their prototype system dramatically reduces the computation time required to find routes through Singapore's road system. They describe their approach and the prototype system in "Finding the Shortest Route Using Cases, Knowledge, and Dijkstra's Algorithm."

Myriam Abramson and her colleagues have applied AI techniques to the analysis of counternarcotics intelligence. Their system uses knowledge representation, plan recognition, and machine learning to "fuse" data from multiple sources into a coherent model. The system can also predict future events using a variety of constraints in the domain model. They describe their system in "Using AI for Counternarcotics: The Predictive Analysis System"

Finally, Munindar Singh and Michael Huhns have combined AI and database technologies to address the problem of generating workflows. A workflow is a structured activity that takes place in information systems in typical business environments, frequently involving several database systems, user interfaces, and application programs. They describe the application of their approach in "Automating Workflows for Service Order Processing: Integrating AI and Database Technologies."

The Tenth Conference on Artificial Intelligence for Applications was held in San Antonio, Texas, on March 1-4, 1994. Next year the conference will revert to its previous title: the Conference on Artificial Intelligence Applications. It will be held at the Holiday Inn Crowne Plaza in Los Angeles, on February 20-22, 1995. It will feature three domain tracks (Business, Engineering, and Manufacturing), an enabling-technology track (the usual AI topics), and an organizational impact track (rigorous studies of the impact of AI on organizations). The Bayesian Research Conference (chaired by Ward Edwards), will be held immediately prior to CAIA '95. More information is available from Daniel E. O'Leary, 3660 Trousdale Parkway, University of Southern California, Los Angeles, CA 90089; phone: (213) 740-4856; fax: (213) 747-8241; Internet: oleary@rcf.usc.edu.

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