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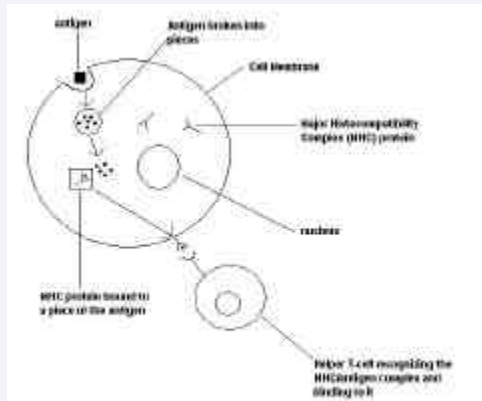
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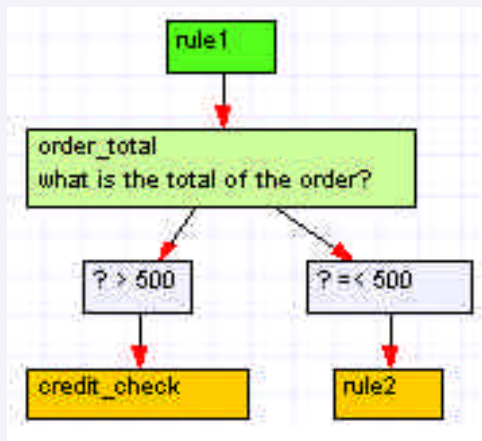
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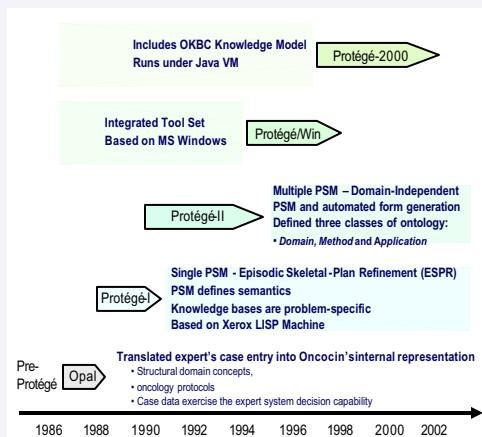
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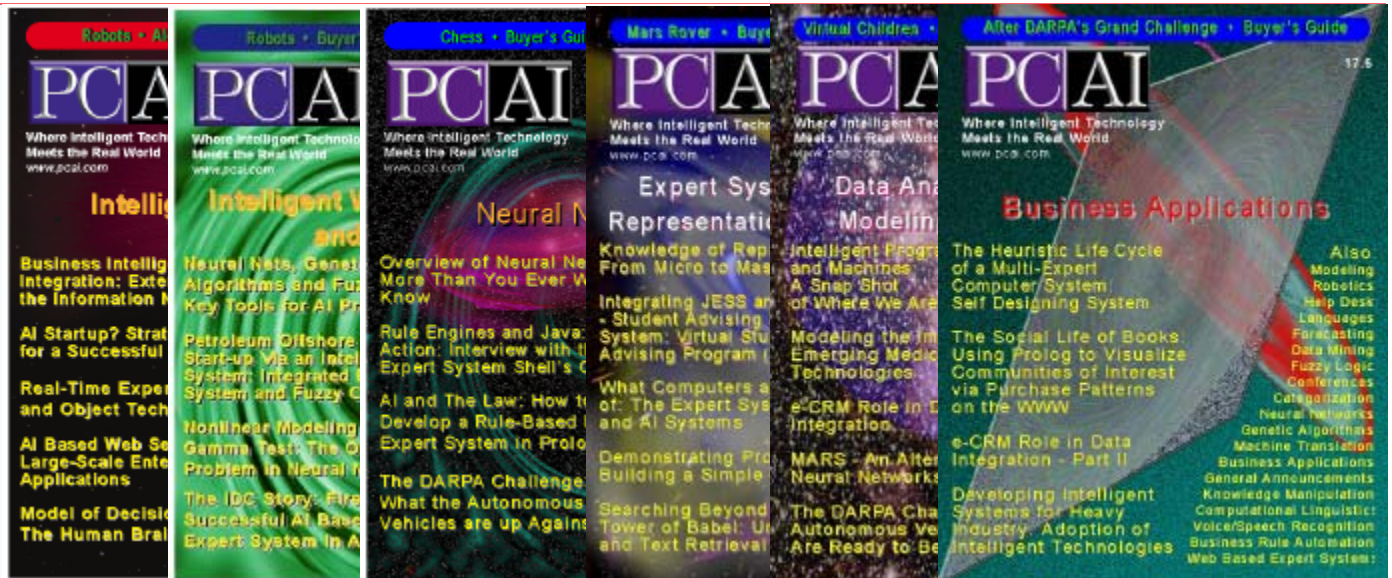
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Editorial

Learning to Communicate

One of the goals of artificial intelligence is to bridge the gap between the world of computers and the world of human beings. Enabling information to pass freely and easily between those two worlds can lead to many benefits. However simple a concept that may seem to be, in practice it is a difficult feat to accomplish. As we all know from yelling at our computers, they are not terribly good listeners. Also, when our computers try to communicate with us, the messages can be so complex as to be of little use to the average computer user. For example, if you have ever received an error message and clicked on the "show details" button, the resulting details look more like a Scrabble game that got out of hand than a helpful diagnostic of the problem. Therefore, a large hindrance to information exchange lies in the inability to effectively communicate. There is hope, though. With artificial intelligence technologies that attempt to emulate human processes, the wealth of information that can be generated by computers becomes more accessible to humans.

One such technology that is bridging the information gap is neural networks. These networks of interconnected processing units mimic the way that neurons in the human brain work. Important connections are emphasized while less relevant connections are downgraded. Neural networks can recognize patterns and predict possible outcomes just like humans can - but with the advantage of increased speed and capacity for information. As I discuss in my article "Neural Nets and Scientific Research: A Match Made in AI Heaven," this fact makes neural networks an invaluable tool in facilitating scientific research.

Another technology is intelligent searching tools. Searching through vast amounts of information can be daunting, especially if queries are taken too literally. However, computers, by nature, take everything literally. They use mathematical algorithms to evaluate problems, and are thus governed by the rigidity of mathematics. But there are ways to create more efficient and pertinent information searches, as Elizabeth Thede details in her article "Indexed vs. Unindexed Searching: From Security Classifications to Forensics." She presents the differences between indexed and unindexed searching and discusses how these enable organizations and individuals to search smarter and faster.

In their article "The Visual Development of Rule-Based Systems," Charles Langley and Clive Spenser discuss another problem with successful man/machine communication - how information is represented. Most people are more likely to understand a concept if it is presented visually, whether it be through diagrams, demonstrations, or gestures. In terms of rule-based systems, the information has almost always been presented in a text-based form. The authors contend that rule-based systems will be more effective if knowledge is presented in a visual form and they discuss the generation of such a system.

In Terry Hengl's article, "Protégé, Ontology and Knowledge Acquisition: Knowledge Representation, the Foundation of Intelligent Systems" he discusses a tool called Protégé which is designed to create customized knowledge-based applications. It works on the principle of ontologies which are definitions of concepts in terms of a language understandable to all parties involved. Ontologies also delineate relations between individual concepts so as to further define their meanings. This makes sure that everyone is "on the same page" and that knowledge is fully developed and useful.

As always, *PC AI's* regular features are back. Test your knowledge of AI terms with the AI-Q crossword puzzle, learn about news in the artificial intelligence world with "AI and the Net," find a book or two to read in "The Bookzone," and discover new products with the "Product Update" and "Buyer's Guide." We hope you enjoy this issue of PC AI and learn something about the many intelligent ways that knowledge is conveyed in the information age.

Ilana Marks