New Ground in Web Technology Affecting Health Care

By Armine Hareyan 2007-03-29 15:02

Amit Sheth, Ph.D., is pioneering the next generation of Web technology with applications in diverse fields ranging from defense and **thwarting terrorism to health care** and financial services. The results of his efforts will spur economic development through the creation of high-tech jobs and the emergence of new information technology companies.

"We live in a society where we are deluged with data, and a key goal in our work is to organize and analyze this data through computer applications and software development," he explained. "We want to collect the dots and then connect the dots."

To achieve this as the LexisNexis Eminent Scholar for Advanced Data Management and Analysis at Wright State University, Sheth directs the Kno.e.sis Center, a world-class academic research organization created to apply knowledge to understanding.

"Kno.e.sis is based on the Greek word for knowledge, and our goal is to advance new approaches, techniques and technologies for information integration and analysis and for process management," he said. "The key to our work is to make data understandable for machines so that machines can do more for humans."

One way Sheth will achieve this is through the Semantic Web. This is an evolving extension of the World Wide Web in which Web content can not only be expressed in natural language but also in a form that can be understood, interpreted and used by software and machines.

Sheth said the researchers contribute to workforce development by educating and training graduate students and contribute to economic development through the creation of intellectual property and through technology transfer leading to software products and services.

He said his work involves several fields, including:

Health care: Improved electronic record systems will help doctors with instant decision support to avoid drug interactions and achieve a better match between diagnosis and treatment. The software intrinsically understands the relationships and rules related to drugs, drug interactions, dosage, diagnosis and treatment.

Life Science: Sheth's team helps biologists improve automation of their experiments and provides better analysis of data to understand such things as the role of complex carbohydrates in cancer research.

Financial Services: In this field, successful investment strategies rely on finding patterns and trends from an increasingly diverse set of information sources (market data, historical trends, commodity prices, etc.) that can be better integrated using the Semantic Web.

Security: Regarding homeland/national security or regulatory compliance, Kno.e.sis can help banks minimize the risks of money laundering, fraud and terrorist financing by going beyond normal search engine applications to include relationships among people and organizations. Sheth said researchers can coordinate information from a variety of different formatted data sources to ferret out whether a customer has an association with a person or organization on a watch list.

Military: These applications include integrating sensor data from spy satellites and other sources with known data bases and profiles to provide troops and commanders in the field with the latest situational awareness.

The Kno.e.sis Center is directed by Sheth and initially consists of three faculty, eight Ph.D. students, several master's students and an administrative coordinator. By the fall of 2008, 10 doctoral students will have joined him, and he expects to double the number of involved faculty and funded students in two to four years. The center, part of the Wright State College of Engineering and Computer Sciences, is housed in the recently completed Joshi Research Center.

Goals of the center are closely aligned with those of the $43 million daytaOhio, a Wright Center of Innovation, also headquartered in the Joshi Center. Part of the state's Third Frontier Project, daytaOhio was created to leverage innovation in data-intensive technologies.

Sheth is internationally known for his work in information integration and analysis, metadata and workflow management, the Semantic Web and service-oriented computing. He came to Wright State in January from the University of Georgia.

Sheth said the Miami Valley has excellent resources for his work in these fields because of daytaOhio, Wright-Patterson Air Force Base, the proliferation of information technology companies in this region like LexisNexis and considerable entrepreneur spirit. "The forward- looking university and area **IT leadership management** is in place here to provide an environment for big success and provides an excellent match to my desire to be an educator, researcher and an entrepreneur at the same time," he said.
-Wright State University