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TUTORIAL NEW HORIZONS FOR HYPERMEDIA IN INFORMATION SYSTEMS

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TUTORIAL

NEW HORIZONS FOR HYPERMEDIA IN INFORMATION SYSTEMS

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Patricia Carlson
United States Air Force
(Perspective: Hypermedia and Intelligent Training)

Steven Kimbrough
University of Pennsylvania
(Perspective: Hypermedia and Large Scale Project Management)

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New Jersey Institute of Technology
(Perspective: Hypermedia and Communications)

We envision a world in which information increasingly empowers people. Decision makers, analysts, researchers, and trainees all will have access to information tailored to their individual tasks and personal preferences. The concept of hypermedia embraces the spirit of such access to information. Eventually, we believe, full hypermedia functionality will be incorporated in all information systems that interface with people.

In this panel, we examine the potential impact of hypermedia on information systems and organizations. We explore new frontiers of hypermedia functionality and the opportunities this brings to understanding and managing knowledge within information system applications and organizations. We describe our visions of hypermedia "access" and how these could augment several information system domains.

Hypermedia is the concept of specifying relationships among pieces of information and providing computer-mediated navigation among them. For example, we automatically can link a keyword with its definition, a calculation with an animated explanation, and a document with a project management subtask. Hypermedia embodies the notions of forward navigation through direct manipulation ("point and click"), backtracking, annotation, and tailored presentation (e.g., information overviews and customized displays).

Until recently, most successful hypermedia implementations have been monolithic applications designed specifically to provide a hypermedia-style interface to a particular domain. The hypermedia community is starting to produce models of hypermedia and standards for exchanging hypermedia linked information. The next stage is to augment the myriad of today's business applications with hypermedia functionality, providing new ways for users to view an application's knowledge and processes conceptually, to navigate among items of interest and analysis stages, to enhance a system's knowledge with comments and relationships, and to target information displays to individual users and their tasks.

After the panelists present their views, we look forward to a lively debate with the audience.

TUTORIAL

PIONEERING THE MIND: THE BIOLOGICAL STRUCTURE OF NATURAL INTELLIGENCE

Michael S. Parks
University of Houston

This tutorial will provide an entertaining trip through the current philosophical and biological views of mind/brain function. Specific attention will be paid to the contrasts in structure and operation of “mind models” and “brain models.”

The tutorial will begin with a survey of the major paradigms and their shared premises:

- (1) The *mind-brain dichotomy* provides the entry point to the discussion of why “minds” and “brains” have historically been viewed in fundamentally different ways.
- (2) The *cognitive view* begins with the original explorations in artificial intelligence that have led to the current functionalist stances such as expert systems.
- (3) The *neural network view* examines the roots of Rosenblatt’s perception and culminates in the recent revival of neural networks by Hopfield and the parallel distributed processing paradigm of the “connectionists.”
- (4) The *neurophysiological* viewpoint provides the basis for discussion about “natural intelligence” based on “brain” functionality.

From these paradigms, several important questions regarding the types of systems that can be represented are examined. Although most IS researchers are familiar with the foundations of artificial intelligence, expert systems and neural networks, little attention has been paid to the “natural intelligence” paradigm. The tutorial will examine the methods employed in neurophysiological studies (such as CAT scans, NMRI scans, and PET scans) to ascertain how the brain might actually perform tasks such as computation, search, and IF-THEN-ELSE.

Several evolutionary questions about intelligence will be examined comparing the axioms of each paradigm:

- (a) Morphogenesis — How does the structure of intelligence evolve?
- (b) Teleogenesis — How do goals evolve?

and most importantly for the ICIS audience,

- (c) Systemogenesis — How do systems evolve? This question will have a pervasive impact on the design of future computer systems that are based on “natural” as opposed to “artificial” intelligence.