

■ KENNETH E. KENDALL, Feature Editor, School of Business-Camden, Rutgers University

# Artificial Intelligence, Ecommerce and Personalized Services: Ready or Not, Here They Come

by Kenneth E. Kendall, Feature Editor



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He recently co-authored a text, *Systems Analysis and Design (5th ed., Prentice Hall)* and *Needs Assessment and Project Planning*. He edited *Emerging Information Technologies: Improving Decisions, Cooperation, and Infrastructure (Sage)*. Dr. Kendall has had his research published in *MIS Quarterly*, *Management Science*, *Operations Research*, *Decision Sciences*, *Information & Management*, and many other journals. He is an associate editor for *Decision Sciences*, *Information Systems Journal*, and *Information Resources Management Journal*, and has served as the functional MIS editor for *Interfaces*. Professor Kendall's research focuses on studying push and pull technologies, ecommerce strategies and developing new tools for systems analysis and design. He is one of the founders of the *International Conference on Information Systems (ICIS)* and is a Fellow of the *Decision Sciences Institute*.

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Ecommerce wasn't the impetus for data mining (already seen in OLAP), collaborative filtering (already appearing in restaurant guides), or other personalized services. Ecommerce, however, embraced these technologies and used them (ferociously at times) to attract, keep, and sell to customers. The collaborative filtering at Amazon.com is arguably one of the more well known of these techniques, but there are countless other ecommerce applications that watch a user's behavior in order to "help" the consumer make a series of choices. This month's article ponders what will happen if personalized services (as part of very broadly defined artificial intelligence) are integrated into the DSI national meeting schedule. The deadline for this month's ecommerce column was just after final exams and before the Christmas break. So since 'tis the season to be jolly, I offer this column for your amusement, as well as to suggest a research agenda. Please don't be offended if the AI-generated schedules resemble your patterns at DSI meetings.

When you look over the DSI program schedule for the national meeting, you would be remiss if you didn't notice the proliferation of articles on artificial intelligence (AI). Now, I am not objecting to any of these presentations. Most of these are quality papers based on solid research about the application of AI at sometime in the near or distant future.

However, the more pressing question is whether we can really depend on AI to help us make decisions now?

## Personalized Services May Backfire

On the way home from the conference, some of you may have been quietly crammed into your economy class seat

reading the following article in the *Wall Street Journal* (November 26, 2002): "If TiVo Thinks You Are Gay, Here's How To Set It Straight" (Zaslow, 2002).

The article is in part about a person named Basil Iwanyk, who noticed that the artificial intelligence in his TiVo digital recording machine was selecting and recording gay-themed programs for him. TiVo is a digital recording device as well as a service that not only records TV shows you ask it to record, but also uses artificial intelligence to predict what shows you will want to watch and records those as well.

The only problem was that Mr. Iwanyk, who points out that he is *not* gay, didn't want TiVo to record these shows, so he tried to trick it by asking TiVo to record war movies and other macho stuff.

We now live in a world filled with data mining, collaborative filtering, and other so-called personalization techniques. We are all aware of the techniques that Amazon.com uses first to track your buying and browsing habits, and second to create a profile of you. The Web site then turns around and recommends, or pushes (depending on your point of view), books and other products for you to buy. Amazon.com even intentionally or unintentionally satirizes its own data mining profiling, often with humorous results. For example, I clicked on the Amazon.com site today and got the message "Customers who wear clothes also shop for. . ." (thereon followed a list of clothing items). I wondered if Amazon.com also had a message for "Customers who *don't* wear clothes."

A more serious exposition of these push techniques can be found in an earlier article of mine (Kendall & Kendall, 1999). But this article is about DSI, so let me get back on track.

## DSI National Meetings and Preference Scheduling

In the last couple of years, DSI has been blessed with a new technology in the form of a scheduling preference system that was written by Scott Sampson at Brigham Young University. Scott has a unique conference scheduling system that allows DSI national meeting attendees to enter their preferences for sessions. After this information is collected, Scott's award-winning algorithm helps schedule conference sessions in such a way that minimizes schedule conflicts. Now most attendees can attend the conference and participate in the maximum number of sessions that hold a particular interest for them (Sampson, 2002).

What do you suppose would happen if we didn't have Scott? Suppose we had TiVo technology instead. Here is a sampling of what we might get:

*Anticipated Schedule for Attendee 1:* Attend all sessions where "optimal" is in the title of one of the papers, whether the subject is manufacturing, MIS, or marketing.

*Anticipated Schedule for Attendee 2:* Attend all sessions in which one of the papers references an early MIS paper by one of the past presidents of DSI.

*Anticipated Schedule for Attendee 3:* Attend all the sessions in the same room (presumably because of the attractive wallpaper?)

*Anticipated Schedule for Attendee 4:* Attend all of the DSI committee meetings possible, making it impossible to attend any sessions at all.

*Anticipated Schedule for Attendee 5:* Attend all sessions where at least one of the authors is from the Big Ten football conference (particularly Penn State, the *eleventh* school in the Big Ten).

*Anticipated Schedule for Attendee 6:* Attend no sessions, but hang with the publishers in hopes of garnering free textbooks and other goodies.

So you get my point. If TiVo got a hold of us, we would all get "personalized schedules" that could get a bit extreme.

The broader question here is whether AI is ready to do the things we tradition-

ally like to control ourselves. I think we are in a third phase in the development of artificial intelligence.

## Reexamining Newell and Simon

In an earlier article called: "Artificial Intelligence and Götterdämmerung: The Evolutionary Paradigm of the Future," I explore what has happened in artificial intelligence in the past and I predict what will happen with AI in the future (Kendall, 1996). We are now in phase three, in which a paradigm of action-selection is in force. In this phase (which may last much longer than you can imagine), researchers will be trying to develop autonomous agents that select actions that emerge from the interaction of multiple diverse, and relatively independent modules.

This autonomous agent can help us make decisions (perhaps even produce a personalized national meeting schedule) eventually, but in order for the agent to do so it will have to exhibit the (30-year-old) six behavioral characteristics developed by Newell and Simon in 1972: interruptibility, subgoaling, depth-first signaling, equifinality, avoidance of repetition, and consummation. We are not quite there yet.

Next year I hope to attend the DSI national meeting. My preferences are to attend sessions that contain papers that carve out a piece (one of the six characteristics) of the Newell-Simon framework and seriously attempt to make a contribution in that one small area. That is how we will make some progress. Then AI will be ready for us.

## References

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- Newell, A. & Simon, H. A. (1972). *Human problem solving*. Englewood Cliffs, NJ: Prentice-Hall.

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<http://www.tivo.com>

<http://www.amazon.com> ■

**2002 Dissertation Award**, from page 43

### Co-Winners

*'The Influence of Technology Attributes on Customer Service Perceptions in a Computer Mediated Environment*

**Craig Froehle**, University of Cincinnati (advisor, **Aleda Roth**, University of North Carolina, Chapel Hill)

*A Framework for Integrating Product Platform Development with Global Supply Chain Configuration*

**Joon Park**, Singapore Management University (advisor, **Soumen Ghosh**, Georgia Institute of Technology)

### Honorable Mentions

*An Investigation of Supply Risk Perceptions and Management*

**George Zsidisin**, Michigan State University (advisor, **Lisa Ellram**, Arizona State University)

*Technology Infusion Enabled Value Chain Flexibility: A Learning and Capability Based Perspective*

**Qingyu Zhang**, Arkansas State University, (advisors, **Mark Vonderembse**, **Jeen Su Lim**, University of Toledo). ■