E.I.T. Links

From "self-service" to "room service" :
How Emerging Information Technology is changing the way we live

> "No sensible decision can be made without taking into account not only the world as it is, but also the world as it will be" ~Isaac Asimov

By Steve Knode, steve@steveknode.com

> *Editor's Note:*
> **Please feel free to pass on the newsletter to those interested.** *Anyone wishing to receive future editions of the newsletter, please email me at:* **sknode@gmail.com.**
> **Note: This newsletter contains links found during February and March 2008, and all of the links were working at time of publication.**
> *Remember, all links here can be found at* www.steveknode.com/news_updates.htm

---

Links for this Issue

AI General

- The AI Chasers – The FUTURIST is conducting interviews with some of the most prominent AI researchers. Several are featured here with their interesting views of the progress.

- Automation could speed VA claims – A combination of rules, case-based reasoning, and data mining is being developed to automate claims processing.

Artificial Life

- Swarm Robotics Work Hundreds of Robots into One – Researchers are working to make large swarms of up to 10,000 miniature robots make one single artificial life form.

Brain

- Mapping the Most Complex Structure in the Universe: Your Brain – Harvard scientists have embarked upon an ambitious program to create a circuit diagram of the human brain, with the help of new machines that automatically turn brain tissue into high-resolution neural maps.

- Ape trounces the best of the human world in memory competition – Surprisingly, an ape has won a memory competition against one of the world's best human memory experts.

- Brain map project set to revolutionise neuroscience – Take the most complex organ in the human body, superimpose the legacy of biology's biggest research project, and what have you got? An unprecedented brain map that is set to transform studies of neuroscience and brain disease.

- Brain Enhancement Is Wrong, Right? – Drugs to enhance the brain are already in existence, calling into question the ethics of using such substances.

- Why Language Is All Thumbs – Extremely interesting excerpt from the book, Thumbs, Toes, and Tears, *Walker & Co. 2006.* This excerpt is a fascinating account of how human evolution likely took place.

- I Feel Good – Humans, Smail writes, have invented "a dizzying array of practices that

stimulate the production and circulation of our own chemical messengers," and those devices have become more plentiful with time. We make our own history, albeit with neurotransmitters not of our choosing.

- Mind Reading – This is the latest example of how close we are to being able to "read minds". Researchers using MRI imaging have gone from studying peoples' brains to identifying specific thoughts, allowing them to tell which of 10 similar objects a person is viewing or thinking about.

Expert Systems

- STOP terrorism software – Researchers at the University of Maryland's Institute for Advanced Computer Studies (UMIACS) have developed the SOMA Terror Organization Portal (STOP) allowing analysts to query automatically learned rules on terrorist organization behavior, forecast potential behavior based on these rules, and, most importantly, to network with other analysts examining the same subjects.

Future
- The Next 25 Years in Tech –PC World has the latest forecast of developments in technology for the next 25 years. There is a marked focus on embedding "intelligence" in systems.

- Thinking About Tomorrow – An interesting Wall Street Journal article about how the future will look 10 years from now.

- Future Blogger – This is an example of how blogging has caught on. This site focuses on finding items relevant to the future.

- DARPA chief outlines expansive array of future networking projects – As usual, DARPA is involved in some extremely interesting research. These are some efforts involving networks.

- Learning From the Future (podcast and presentation) – This is a very interesting presentation and associated podcast about how teaching, learning, and creative expression are being impacted by the rapid

development of technologies.

Information Overload

- User Interfaces Rapidly Adjusting to Information Overload –This is a comprehensive report on how interfaces are being designed to help with the information overload we are all facing.

- The Diverse and Exploding Digital Universe – This is an **updated report** from IDC on just how big the digital universe is becoming. Just like the previous reports, the news is that the growth of information is still increasing at an alarming rate. This is one of the best sources of how information is growing and the problems (such as storage being ourstripped) it is creating.

Information Visualization

- The Best Tools for Visualization – An excellent overview of some tools for information visualization. You will be surprised at the variety of tools and their uses.

Innovation

- Measuring Innovation in the 21st Century Economy– This is a Department of Commerce sponsored report on how innovation is measured in the economy and a comprehensive list of recommendations for identifying and measuring innovation in the economy.

Intelligent Agents

- Intelligent SMS Search – An agent-based search engine to enable users to search the directory of users (from open social networks), mobile content, local business directories, local deals, train / flight tickets, hotel deals and movie tickets for major cities in India.

- A Personalized Online News Aggregator – Persai is a site that automatically discovers articles you might like from around the web.

It's a personalized news aggregator, sort of like automated news aggregator Techmeme, but just for your interests. Rather than present you with unneeded information, the search is tailored to your needs.

- [Virtual teachers outperform real thing](#) – Virtual characters and digital tutors are helping children and adults develop advanced social and language skills that can be tough to learn via conventional approaches, according to researchers who briefed reporters here last week at the annual meeting of the American Association for the Advancement of Science.

- [A Virtual Travel Agent With All the Answers](#) – Jenn is assisting Alaskan Air passengers with information automatically. Jenn learns from interaction and gets smarter over time. Another example of how intelligent agents are moving into the next generation of development, this time agents that learn autonomously.

- [Face of the future](#) – This artificial intelligence computer program is in its first year of development, but by the end of the five-year project it is expected to read lips, recognize faces, give emotional responses, hold conversations and teach foreign languages.

Kurzweil

- [Get ready for a scary new world of life-enriching robot implants](#) – Ray Kurzweil, a software engineer and futurologist, has predicted that technology is advancing so fast that it will transform the way that people live by the middle of the century, extending life spans, protecting against disease and even improving the biological hardware of the human body and brain.

Machine Learning

- [Modeling Surprise](#) – Combining massive quantities of data, insights into human psychology, and machine learning can help manage surprising events, says Eric Horvitz. The ability to "predict" surprises might be closer than previously thought.

- [Smart Sticky Notes Organize Themselves](#) – The use of sticky notes has been limited because of the need to organize them. Now researchers have developed electronic sticky notes, called Quickies, that can be searched for digitally and can send reminders and messages via e-mail or a mobile device.

Manufacturing

- [First-Ever Demonstration of Inkjet Printed Solar Cells](#) – Konarka has demonstrated the ability to manufacture solar cells with an inkjet printer.

Medical

- [With Mini in vivo Robots, Anyone Can do Surgery](#) – By attaching a millimeter-sized camera robot to a tether, scientists have designed a way to allow individuals with non-medical backgrounds to perform minimally invasive surgery in almost any location. Unlike room-size and expensive surgical robots, mini *in vivo* robots are inexpensive and mobile enough to support emergency surgeries almost anywhere, from the battlefield to outer space.

- [Artificial Playmates for Autistic Children](#) – The use of artificial playmates is growing in several areas. Interaction with virtual playmates may unlock social aptitude in autistic children. During unsupervised play with typical children, autistic children don't fill in pauses in conversation, nor do they ask or answer questions in a natural flow. But with a virtual playmate, autistic children begin to do all these things after as little as 20 minutes.

- [On Living With Your Doctor](#) – More about how sensors are changing the way in which medical treatment can be delivered. The idea behind this technology is simple: Move diagnostic equipment out of the doctor's office and into the field where it can monitor your health **continuously**.

- [Turning Disabled Into Gamers](#) – Robots are playing a part in the rehabilitation of patients. By combining computer games with robotic devices, stroke patients can be more quickly rehabilitated.

- [The future of biomedicine: virtual humans](#) – Recently scientists have provided a sneak preview of the future of biomedicine with a range of projects seeking to assemble virtual humans — or parts of them — on computers and "labs on a chip." Someday, the descendants of these sophisticated new programs and devices could serve as our stand-ins for clinical tests on drugs, cosmetics and toxic compounds.

Miscellaneous

- [Introduction to the Grand Challenges for Engineering](#) – The National Academy of Engineering has outlined several grand challenges for engineering. Each of these challenges has profound implications for how our lives are conducted.

- [New Software Allows User To Reach Out And Touch, Virtually](#) – Progress in the world of haptics continues. European researchers have pioneered a breakthrough interface that allows people to touch, stretch and pull virtual fabrics that feel like the real thing.

- [Hi Tech Gadgets](#) – Fox news reports takes a look over four weeks at a different emerging technology each week that could have a profound impact on how we live our lives.

- [10 Emerging Technologies 2008](#) – Technology Review does its usual excellent job of outlining several technologies that will impact us in 2008. Several of these should be of interest to all of us.

- [Revolutionary Biometric Artificial Intelligence Technology to Significantly Reduce Fingerprint Software False Reject Rates](#) –This exciting new artificial intelligence enhancement uses a unique "dynamic profiling" technique to learn about a person's fingerprints over time. This knowledge enables the fingerprint software to take actions that mitigate the chance of generating a false reject following a fingerprint scan.

- [Cyber Goggles for Human Tagging](#) – There now exist new pairs of specs which may let you tag your world as easily as you tag a

blog post—so long missing keys.

- [AI researchers think 'Rascals' can pass Turing test](#) – The Turing Test remains the gold standard for grading AI developments. RPI is aiming to pass AI's final exam this fall, by pairing the most powerful university-based supercomputing system in the world with a new multimedia group designing a holodeck, a la *Star Trek.*

- [Terahertz video transfer is foretaste of future wireless](#) – Today's fastest wireless technologies, including WiFi and third generation (3G) mobile networks, operate in the ranges of gigahertz (a billion times per second) and megahertz (a million times a second) respectively. Using terahertz bandwidth – which ranges from 300GHz to 3 terahertz (THz) – could offer a 1000 fold increase in transmission speed.

Nanotechnology

- [Nokia unveils shape changing nano-phone concept](#) (video) – Nokia has unveiled "Morph," a shape-changing mobile devices concept based on nanotechnology.

Neural Networks

- [Woof! Computer Speaks Dog](#) – After many kinds of barks were collected, they were transferred to a computer and digitized. Artificial intelligence software is then used in a two-stage process to first learn the more than 100 acoustic features of the different kinds of barks and then use that knowledge to code, classify and evaluate them.

- [Anti-money Laundering software to curb terrorist activity](#) – The use of neural networks to identify patterns of money laundering connected to terrorists is explained in this article.

- [Crunch time for neural nets](#) – After years of relative obscurity, neural networks are coming to the forefront, this time to predict trends in population health. More applications in the health arena will soon emerge.

- [A Start-Up Says It Can Predict Others' Fate](#) – Yet another interesting neural network

application, this time predicting whether a start-up company will succeed.

- [Artificial intelligence helps clinicians to recognize atrophic gastritis with thyroid disease](#) – The use of neural networks continues to grow in the health diagnosis arena.

- [One of Florida's Largest Resorts Applies Artificial Intelligence Technology to Reduce Labor Cost](#) – Neural networks can do a good job of forecasting when appropriately applied. This application shows one good example of just such an approach.

- ["It's as easy to get online as to dial a call"](#) -- Yet another example of how neural networks have been used to discern patterns in data which can be then used for decision-making. This application is in the human relations arena.

- [Now Blooming: Digital Models](#) – A couple of students have used neural networks to predict when the cherry blossoms will bloom in the DC area. They seem to have a model which performs as well or better than the acknowledged expert in the field.

Natural Language Processing
- [Software grades handwritten essays](#) – Computer scientists in the School of Engineering and Applied Sciences have been working with their colleagues in the Graduate School of Education to develop a computational tool that not only dramatically reduces the time it takes to grade children's handwritten essays, but also may help boost students' reading-comprehension skills.

Robotics
- [Video of BDI's Big Dog robot](#) -- This is one of the most impressive videos showing how agile robots are becoming. In this video, the robot dog is able to maintain its balance under a number of stressful conditions.

- [Battlefields will be big test for 'seeing' robot](#) --The battlefields in Iraq and Afghanistan are likely to provide the first test for a potential breakthrough in robotics: the

ability to "see" well enough and quickly enough to move through unknown terrain without human help.

- [Robots Invade Kennedy Center](#) (video) – Several interesting robots are on display in this video.

- [Wizkid Robot Unveiled at MoMA](#) – There is an interesting new exhibit will open at the Museum of Modern Art in New York (MoMA), *Design and the Elastic Mind*. And until May 12, 2008, you'll be able to interact with Wizkid, which looks like a computer, but is really a robot. You will not need to learn any language or type anything on a keyboard, Wizkid will understand you.

- [Robots Evolve And Learn How to Lie](#) – Now robots can even learn to lie and deceive each other.

- [Robots enter Japan's daily life](#) – This story illustrates just how pervasive robots are becoming in Japan.

- [Plan to teach baby robot to talk](#) – Over the next few years, researchers will attempt to develop a humanoid robot which can learn, think, and talk.

- [Local Area Network Droids](#) – Still more developments in the possible use of robots by the military, this time expendable robots that will be able to overcome the communications problems that soldiers currently face in built-up areas.

- [Robotic drumstick keeps novices on the beat](#) – Robots are even being used to assist in music education.

- [A Robotic Helping Hand](#) -- A new robot from Georgia Tech understands commands given using a simple tool: an off-the-shelf laser pointer. In a demonstration video, a person reclining in a chair flicks on a green laser and trains it on a cordless phone on the floor a few feet away.

Search Engines
- [True Knowledge](#) (video) – An impressive demonstration of a new search engine which can actually answer questions, not just

provide links. Watch this video and you will see how this works—amazing!

Semantic Web

- [302 Semantic Web Videos and Podcasts!](#) – Everything you could possibly want to know or see involving the Semantic Web is probably contained in the many videos and podcasts catalogued here.

- [Are You Ready for the Semantic Wave?](#) -- An outstanding report on the semantic web and its future. There are some of the best charts and examples of the semantic web included. NOTE: This link is only to the Executive Summary. The entire document is expensive ($3495), but the executive summary is free after registration and it is well worth reading.

- [Semantic Web: What Is The Killer App?](#) – This is an excellent perspective on how the Semantic Web will embody several potential killer applications.

Sensors

- [Bloodless Diabetes Monitoring](#) –Developers are working on sensors which will be "truly noninvasive" and will not require that any fluid--blood or otherwise--pass through the skin. The sensor itself is a small, spiral-shaped microwave circuit, which acts as a transmission line and emits electromagnetic waves. When a person places her thumb on the spiral, the electrical properties of her thumb change how energy passes through the circuit. The change is measured to compare with baseline measurements.

- [Sensors for bat-inspired spy plane under development](#) – A six-inch robotic spy plane modeled after a bat would gather data from sights, sounds and smells in urban combat zones and transmit information back to a soldier in real time.

- [The Networked Pill](#) – A new system that monitors pill taking and its effects is being engineered by a Silicon Valley startup. The technology consists of pills that report when they've been taken, and sensors that monitor the body's responses.

Virtual Reality

- [Researchers Create Character With Reasoning Abilities of a Child](#) – In one of the most impressive applications in 2nd Life, researchers unveiled the "embodiment" of their success to date: "Eddie," a 4-year-old child in Second Life who can reason about his own beliefs to draw conclusions in a manner that matches human children his age.

- [Smart 'Lego' conjures up virtual 3D twin](#) – When Lego plastic pieces are snapped together, an exact copy of the construction appears on a computer screen. Every twist of, say, a stick figure's arm is mirrored in 3D modelling software.

- [Historical Maps in Second Life](#) – A new installation inside Second Life is bringing alive one of the world's largest collections of antique maps. Called the David Rumsey Maps Island (registration required), the Second Life site is San Francisco map collector David Rumsey's latest high-technology plan to share his collection with as large an audience as possible.

- [What Can Virtual-World Economists Tell Us about Real-World Economies?](#) – Economists are now using 2nd Life as a place to test our economic theories.

- [Avatar Mimics You in Real Time](#) – There is now a way to create an avatar which will mimic your every move.

Web 2.0

- [The Social Cloud](#) (video) – Very interesting video relating to Cloud computing and also Social computing.

- [Spidering the "Dark Web"](#) – Spiders are now able to deal more capably with new types of information such as blogs, etc. that are part of the "dark web".

- [Top Health 2.0 Web Apps](#) – An excellent overview with links to the use of web 2.0 technologies and health care. This does a great job of illustrating how web 2.0 technologies can be effectively used.

- [The Digital Utility](#) – Nicholas Carr's new book examines the implications of Cloud Computing.

- [Chirp](#) – As social networks continue to expand, keeping track of your contacts and networks becomes a problem. Chirp can solve this problem for you.

- [Social Networking Moves to the Cellphone](#) – The rapid growth of social networks has led to the next obvious development, namely using cell phones for social networking.

- [Web Mashups Made Easy](#) – Intel is making software so that it will be easy for people with no programming experience to combine data from different Web pages.

- [Social Networking Hits the Genome](#) – Soon it will be possible to compare your DNA with that of friends.