Steveknode.com Dec 2007

E.I.T. Links

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

"Never trust anything that can think for itself if you can't see where it keeps its brain."
~J.K. Rowling. "

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 October and November of 2007, 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

Future

- 10 More Future Web Trends – Apparently 10 trends (see my last newsletter) weren't enough to cover the exciting developments in the www. Here are ten more from the experts.
- Another Perspective on What will happen in 2008 – For a broader look at what is likely to happen in 2008, read this forecast from the World Future Society.
- BT Technology Timeline: 2006-2051 – The BT folks have created an extremely interesting graphic to display several different aspects of technology developments over the next 45 years.
- AI entities will win Nobel prizes by 2020 – Moving from general trend predictions to specifics, here is an example of the amazing things some are predicting to happen in the near future.
- The future is here right now, if you can read the signs– An interesting scenario portraying some amazing developments of the future. Check out these fantastic predictions from an excellent futurist, Ray Hammond.

Sensors

- Improving Athletic Performance – Researchers at the Imperial College London have developed a sensor worn behind the ear that can measure an individual's biomechanical data, such as his or her posture and gait, during an activity. The data is then wirelessly transmitted to a computer so that the wearer's performance can be measured and assessed in real time.
- Networking the Hudson River – IBM and the Beacon Institute are deploying sensors in the Hudson River to collect biological, physical, and chemical information about the environmental aspects of the river. With instantaneous feedback provided, resources can be automatically directed to improve the condition.
- Tracking Flow With Smart Dust – The small and simple machines are being developed to be released in large numbers to collect data about the motion of fluid systems such as ocean currents and atmospheric winds.

Neural Networks

- AANN software for investing (video) – As you know, I am a big fan of neural networks for applications where pattern recognition is key. Here is a video showing how investment firms are using neural networks for predicting the market.

- Subjex explanation of its use of NN (video) – Another example of the neural network approach to investing, this time showing exactly how one firm implements its findings.

- Smart Phone Suggests Things to Do – New software uses artificial intelligence (neural networks) to infer your behavior and serve up appropriate lists of restaurants, stores, and events.

Artificial Life

- Teachable AI Agents Living in Virtual Worlds – In the progress toward Artificial General Intelligence (AGI), several approaches are being pursued. This presents one of the most innovative ones, the use of avatars in virtual worlds to learn automatically.

- Bee strategy helps servers run more sweetly – By mimicking how honeybees manage to efficiently collect a lot of nectar with limited resources, scientists are trying to improve the effectiveness of networks. Yet another example of how the biological world is being copied into the business world.

- From Ants to People, an Instinct to Swarm – There appears to be a universal instinct to swarm. By studying how insects swarm efficiently and effectively, scientists hope to improve how humans navigate busy highways.

Military

- Weaving Batteries into Clothes – One of the biggest problems with the new military reliance on electronics is the availability of batteries. In this article a new approach incorporating nanotechnology to embed batteries into clothes is explained.

- Automated Killers and the Computing Profession – Interesting article about the growing use of automated machines to perform military duties. There are several interesting aspects involving the ethics of using automated "killing machines".

Brain

- New Technology Can Be Operated By Thought –Neuroscientists have significantly advanced brain-machine interface (BMI) technology to the point where severely handicapped people who cannot contract even one leg or arm muscle now can independently compose and send e-mails and operate a TV in their homes. They are using only their thoughts to execute these actions.
- Tiny probe gives wide-angle view of your insides – An ultrasound probe about the size of a grain of rice that could offer panoramic views from inside the human body is being tested by US researchers. They say it could be threaded through blood vessels in the brain or swallowed like a pill.

- Interview with Jeff Hawkins on the brain – Jeff Hawkins, creator of the PalmPilot and co-founder of Numenta gives a fascinating interview on what we know about the brain.

- Research shows the brain's processing speed is significantly faster than real time – Apparently, the brain can process information much faster than previously thought. The brain has an extra gear, called "thought speed" which allows it to process information up to six or seven times faster.

- Don't Forget to Back Up Your Brain – MyLifeBits is a project of Gordon Bell. He is attempting to capture and store every waking moment of his life. Why? Read the article and find out.

- A Wiring Diagram of the Brain – New technologies that allow scientists to trace the fine wiring of the brain more accurately than ever before could soon generate a complete wiring diagram--including every tiny fiber and miniscule connection--of a piece of brain. Dubbed connectomics, these maps could uncover how neural networks perform

their precise functions in the brain.

Search Engines

- Searching Video Lectures– A new tool from MIT allows students to automatically search audio and video lectures for key terms. No longer will you have to listen to the entire lecture if all you want is a small piece!

Medical

- Eye Repair– A new procedure that fuses artificial corneas to the eye cells will vastly improve the repairing of eye problems for millions of sufferers.

- 3-D avatar to help doctors visualize patient records and improve care -- Created at IBM's famed Zurich Research Lab, the technology uses an avatar—a 3-D representation of the human body—to allow doctors to visualize patient medical records in an entirely new way. This innovative visualization method allows a doctor to click with the computer mouse on a particular part of the avatar "body" to trigger a search of medical records to retrieve relevant information.

- Micro-robot that can clear arteries – As has been predicted to someday happen (remember the movie Fantastic Voyage?), we now have a robot device small enough to navigate the human artery and remove blockages.

- Video Game Surgeons – Why not? If video games can improve hand/eye coordination, why not use them to help train surgeons. The evidence seems to support the idea.

- Artificial intelligence addresses the problem of confusing drug names – The U.S. Federal Drug Administration is working hard to solve the problems of medication errors in drug usage, affecting 1.3million persons each year. AI is now being used to deal with the difficulties caused by similarly named drugs.

- Progress Made Toward 'Printing' Organs – Another long time promise has been the capability to "print" human organs. Sounds farfetched, but after reading this article you too might be a believer.

Nanotechnology

- Nanotechnology: Ethics and Society (Streaming Presentation) – This is an outstanding presentation on Nanotechnology Ethics and Society. As nanotech matures, many more of these issues will have to be considered and debated.

Artificial Intelligence - General

- What is artificial intelligence?– A good overview of AI, its definition, examples, and possibilities for the future.

Robots

- Robots turn off senior citizens in aging Japan – High tech robots have not caught on with the senior citizens of Japan. Perhaps a generational issue, but robots will continue to be a big development.

- Domo Arigato, Receptionist Roboto – Welcome to the era of the receptionist robot. With some positions becoming harder and harder to fill, robots are beginning to fill the void.

- Darpa hatches plan for insect cyborgs to fly reconnaissance – Defense Advanced Research Projects Agency has now developed cyborg insects with embedded microelectromechanical systems to run remotely reconnaissance missions.

- New Toys With Real Artificial Intelligence – One of the most rapidly developing areas of robotics is that of "smart" toys. With sensors and robotic parts, toys are becoming more humanlike all the time. ZENO seems to be one of the best of the new breed.

- Will Companies Use Robots to Do Dirty Work — and More? – Robots are now being "hired" to do jobs that humans are less and

less willing to do. As these robots become more inexpensive and robust, they are increasingly able to perform as well as humans for many tasks.

- Robots Podcast from Science Magazine – Interesting audio file on how a robot was able to "join" a family of cockroaches and even assume a position of leadership, all autonomously!

Manufacturing

- The Future of Electronic Paper – Finally, it appears that after 35 years of research, electronic paper is poised to make an appearance and change the way in which information is stored in books. Cheap and reusable, electronic paper promises to launch the second paper revolution.

- Engineers Teach Nature to 'Grow' Computer Components – Nanotechnology breakthroughs continue to turn the world of manufacturing on its head. Read about how we are on the cusp of growing computer components.

- Fab at Home, Open-Source 3D Printer, Lets Users Make Anything (video) – I have mentioned before about printers that will allow you to fabricate almost anything in your home. Here is a video showing some fascinating examples.

- Ponoko wants to give customers the tools to design and sell whatever they want. – Yet another example of an attempt to make custom manufacturing of almost everything affordable. Simply upload your idea and, presto, a manufactured version shows up within five to ten days.

Semantic Web

- The Semantic Web Goes Mainstream – Radar networks has developed a fascinating free tool, TWINE, that can automatically develop a network of information for a person, topic, or idea. As the company states, "Twine helps you become smarter, more productive, and collaborate, share, and organize in a smarter way." This could be the harbinger of web 3.0. For additional information, watch the video at: TWINE creator interview (NOTE: I have signed up for the BETA version.)

Chatterbots

- Virtual Eve: first in human computer interaction – Another in the latest line of "chatterbots", this one a tutor capable of altering her presentation according to the reaction of the child facing her at the keyboard. I have long followed and been involved in the chatterbot business, and this seems to be one of the best thus far. Chatterbots will likely become part of the educational system of the near future. There is also a video demonstration of Virtual Eve at: http://news.massey.ac.nz/quicktime/eve-intro.mov.

Data Mining

- 'Dark Web' Project Takes On Cyber-Terrorism – Using data mining techniques, experts are attempting to uncover, cross-reference, and analyze online terriorist-generated content. With the vast amount of information on the web, this might be the only approach that can keep up.

- CureHunter.com Aims to Distill Evidence Based Medicine into 1 Mouse Click – This company, **CureHunter**, Inc., plans to make it easier to collect information about diseases and medical conditions with its online automated tool to perform meta-analysis of the medical literature in real time.

Miscellaneous

- 'Aggressive but safe' SUV wins robotic street race – The DARPA Urban challenge this year was won by BOSS, the entry from Carnegie Mellon University. Unlike the previous two challenges, this one consisted of navigating an urban environment entirely autonomously. The future of driverless cars is clearly getting closer.

- The Future of Reading – Jeff Bezos, of Amazon fame, has now created the latest e-book reader, the Kindle. Although previous attempts to market e-book readers have failed, do not be too quick to bet against this one.

- Smart Phone Suggests Things to Do – Cell phones have become indispensable items for

many of us. Now, as the phone becomes "smarter", it will not only help us conduct business and pleasure, but even contribute ideas to the mix. Read how this application uses artificial intelligence to infer your behavior and serve up appropriate lists of restaurants, stores, and events.

Knowledge Management

- Hands on Knowledge co-creation and sharing – My favorite KM website, Gurteen website, often provides me with excellent information about developments in the world of Knowledge Management. This link is exceptional, a free book all about how to create and share knowledge.

- Video search makes phone a 'second pair of eyes' – If you want to see a truly amazing development, watch the video at this link. This 3D video cellphone can take a picture of almost any object and them automatically research it for you from an online database!

Genetic Algorithms

- Don't invent, evolve – As a big fan of genetic algorithms, I always am on the lookout for applications of this unique approach to solving certain classes of problems. This excellent article gives some good examples of applications of the technique.

Automated Speech Recognition (ASR)

- F-35 Gets an R2D2 Unit – The use of automated speech gets a boost in this application. With a 98% accuracy rate which exceeds that of many human crews, speech recognition is saving time as well as assisting with decision-making.

Machine Learning

- Lockheed Martin to Develop Automated Object Recognition Using Brain-Inspired Technology – ORBIT will fuse commercial airborne EO and LIDAR sensor data into a three-dimensional, photorealistic model of the landscape. Its brain-inspired object-recognition technology will automatically generate lists of recognizable imagery, like mailboxes and dumpsters.

Kurzweil

- Coming Soon to a Theater Near You: The Singularity – One of my favorite futurists, Ray Kurzweil, is going to turn his epic tome, The Singularity, into a movie. If you did not read the book (one of my favorites), or even if you did, this could be an excellent movie.

- The Grill: Ray Kurzweil talks about 'augmented reality' and the Singularity – Part 1 of a several part interview/discussion with Ray Kurzweil on the future. My most favorite futurist provides some excellent insights into what is coming.