

## NEWS

Welcome once again to intelligence news! Here, I attempt to provide useful summary, occasional commentary, and sometimes practical pointers to some of the more interesting news items connected to the practice of artificial intelligence. If you notice such a newsworthy item, please send me a note at [d.blank@csce.uark.edu](mailto:d.blank@csce.uark.edu). Otherwise, I'll have to make things up.

## Simulated Talking Heads

Chances are that you have encountered the virtual newscaster Ananova before. You may recall that she is the green-haired, animated sim-woman that has been recognized by the Guinness World Records as the world's first virtual newscaster. Visit [ananova.com](http://ananova.com) and she'll read you the day's top news stories. The text-to-speech is very good, and very nicely synchronized with the animated movement of her head, complete with blinking eyes.

In addition, she is claimed to be programmed to show proper emotions and actions related to the news stories that she reads. Apparently the stories are tagged by human editors so that "she" can "read" it properly. I have yet to encounter her being anything but straightforward, but I must admit I got bored pretty quickly listening to her computer generated voice. They would do good to have a couple of newscasters (after all, even CNN's Bernard Shaw is a welcome break from Bobbie Battista every once

in a while). One can almost hear the simulated banter between the virtual co-hosts...

Ananova doesn't have a co-anchor, but she does have competition: meet Sprint's Chase Walker. Chase was designed to be Ananova++. "Ananova isn't interactive," said Scott Prevost, co-founder and president of Headpedal. Prevost, in a recent interview with IDG, explained: "with Chase, you can interrupt him and get him to tell you different stories at different times in various levels of detail."

Although Chase isn't due to appear in your browser for a couple of more months, you can bet that these virtual talking heads will continue to be literally popping up more often, and in other places. They could read your e-mail, teach one's classes, and even do the local weather.



Ananova, the green-haired, English sim-anchor will soon have competition from Chase (top photo). Chase can be interrupted, and can change the level of detail in a news story.

## Herb Simon Dies at Age 84

Carnegie Mellon University Professor Herbert A. Simon, winner of the prestigious Turing Award, the Nobel Prize in Economics, and many other international scientific awards for his work in cognitive psychology and computer science, died February 9 at the age of 84.

His research ranged from com-

puter science to psychology, administration and economics. The thread of continuity through all of his work was his interest in human decision-making and problem-solving processes and the implications of these processes for social institutions.

He made extensive use of the computer as a tool for both simulating

human thinking and augmenting it with artificial intelligence. Simon was widely considered to be one of the founders of the field of artificial intelligence.

Much more information about Simon's research, teaching interests, and awards can be found at [www.psy.cmu.edu/psy/faculty/hsimon/hsimon.html](http://www.psy.cmu.edu/psy/faculty/hsimon/hsimon.html).

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## Sandholm Wins SIGART Autonomous Agents Research Award

The Association for Computing Machinery Special Interest Group on Artificial Intelligence (ACM SIGART), in collaboration with the International Conference on Autonomous Agents (AA), has announced the winner of the 2001 award is Dr. Tuomas Sandholm, of Carnegie Mellon University.

Dr. Sandholm has conducted an intensive research program in electronic markets and multi-agent systems, and has also done work in other areas of autonomous agents. The breadth and depth of his contributions over a relatively short period of time are impressive. In addition, he has been an active contributor to the Autonomous Agents community, contributing regularly to the AA conference since its inception.

The annual award is intended to recognize excellence in research in the area of autonomous agents. It is an official ACM award, funded by an endowment created by ACM SIGART from the proceeds of previous Autonomous Agents conferences.

In recognition of the award, Dr. Sandholm will present an invited lecture at the 2001 International Conference on Autonomous Agents. The title of his presentation is "Agents in Combinatorial Markets."

Candidates for the SIGART Autonomous Agents Research Award are selected through an open nomination process. Each candidate was asked to submit a copy of their curriculum vitae, and a brief summary of their research contributions in autonomous agents. The application portfolios were

evaluated by an impartial committee of distinguished agents researchers, all of whom removed themselves from consideration for the award.

In order to provide a focus on current research, only contributions in the past five years were considered in the evaluation. Evaluation criteria included publication record, evidence that research contributions have been applied in autonomous agent systems, and evidence that research contributions are cited by other researchers and have served as an inspiration for other research.

Nominations for the 2002 SIGART Autonomous Agents Research Award will be solicited soon. Questions regarding the award may be directed to the chair of the awards committee, W. Lewis Johnson (johnson@isi.edu).

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## Computing and the Law: Updates

A federal judge has ruled that Web pages may link to competitors' sites, including "deep linking" (i.e., bypassing home pages) as long as customers can tell whose site they are visiting. Ticketmaster is still hoping to stop other sites from exploiting its Web site and database.

In late January, a group of 17 computer scientists filed court documents arguing that computer programs are speech and should be protected as such. Recall that New York federal Judge Lewis Kaplan ruled last August in favor of the movie industry and ordered an online magazine to stop linking to the program that can decode DVDs.

Courtesy of the Digital Millennium Copyright Act, it is illegal to

reverse-engineer such programs. However, even more extreme, it is illegal to take a reverse-engineered program and distributed it in any form. Computational neuroscientist and code-is-speech proponent David Touretzky continues his Web site at [www.cs.cmu.edu/~dst/DeCSS/Gallery/](http://www.cs.cmu.edu/~dst/DeCSS/Gallery/). The site shows (and tells) many different ways that code can be speech. There you will find the reversed-engineered DVD decoding code represented as images, songs, Haiku, T-shirts, and dozens of other wacky ways.



Should code be a protected form of speech? David Touretzky says "yes!" and has gathered a collection of DeCSS programs represented as images, songs, and even Haiku. This item from his collection is an image of a program that turns special images into computer programs, and also one of those special images. Run the program on itself, and the resulting reverse-engineered program can descramble DVD movies.

## AI Resources

The International Joint Conference on AI (IJCAI) has a workshop on Effective Interactive AI Resources planned for this summer's conference (August 4th - 10th, 2001) in Seattle, Washington.

The workshop is designed to bring together those researchers who are independently designing interactive Web sites, applets, and other resources to help teach Artificial Intelligence concepts to the lay public and the artificial intelligentsia. The workshop also hopes to



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help us collectively understand the underlying issues in AI education, and to investigate the best ways to pool existing and future resources to design the next generation of such resources.

You can find more information about the workshop at [www.cs.ualberta.ca/~greiner/Programme/EffIntAIR.html](http://www.cs.ualberta.ca/~greiner/Programme/EffIntAIR.html) and more information about IJCAI-2001 at [www.boeing.com/nosearch/ijcai/](http://www.boeing.com/nosearch/ijcai/).

## Robots That Eat Slugs and Sugar

I must first say that I am not making this up. Two robots that have appeared in the popular press lately are the Slugbot and the Gastrobot. They eat slugs and sugar, respectively. I'm serious.

The Slugbot has been designed by the University of the West of England's Ian Kelly, Owen Holland, and Chris Melhuish. In research aimed at reaching "true autonomy," the robot was created to make it's own power—from slugs. The researchers propose to convert organic material (i.e., a slug) into electricity by fermenting it to obtain bio-gas, and then using the bio-gas to power an engine driving a generator.

The fermentation vessel, engine, ↵

## BlueEyes: Exploring Attentive Environments

IBM's BlueEyes research project, established in 1997, is the umbrella research project created to explore and define attentive environments, including the PONG robot, Emotion Mouse II, and eye/gaze tracking technologies. As computers become pervasive and transparent, embedded technologies will allow them to better adapt and respond to users. Technologies from the BlueEyes research project have the potential to be embedded in automobiles, household appliances, mobile devices, etc. The goal of the BlueEyes project is to study adaptive technologies and take the computing experience off the desktop.

Emotion Mouse II is a system for correlating physiological attributes, including pulse, temperature, general somatic activity, and galvanic skin



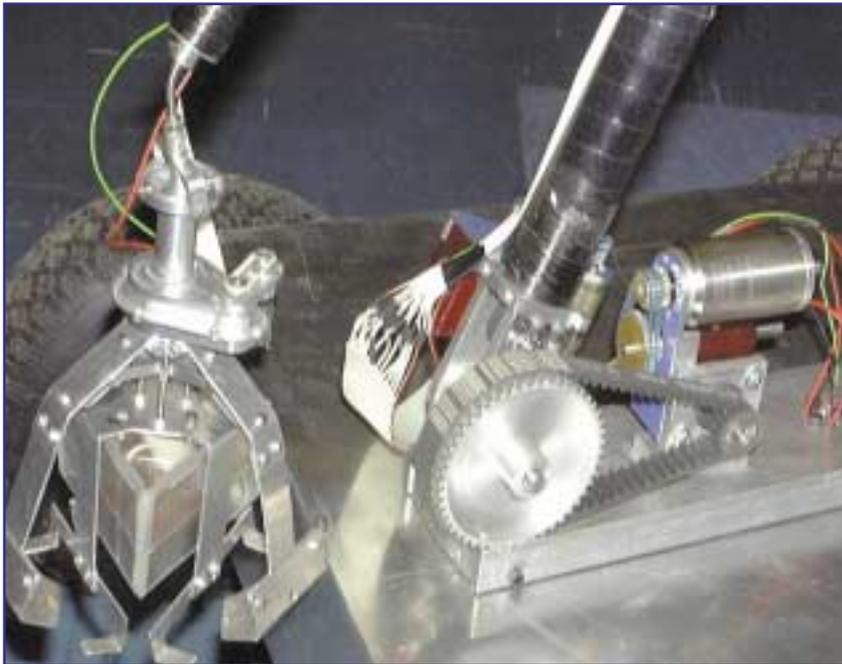
IBM's Emotion Mouse II was designed for correlating pulse, temperature, general somatic activity, to galvanic skin responses. By using this mouse, you can provide additional input to a system.

response to a user's emotion. By simply touching a computer input device, such as a mouse, the computer system is designed to be able to determine a person's emotional state.

IBM claims that their emotion technology can be used for other applications as well. For example, it can be used in automobiles, video games, remote controls, and even phones. For cars, it could be useful to help with critical decisions (Maybe: "I know you want to get into the fast lane, but I'm afraid I can't do that. You're too upset right now").

For video games, it could give individual challenges. For marketing aspects, it could give a more detailed response than just a questionnaire. For phones, it can add another dimension to your communication (I'm thinking the XXX and psychic hot lines will be the first, as usual, to use these immerse technologies. And I don't think I want Ananova getting too much feedback, so let's not even talk about uses on the Internet).

For more information on BlueEyes research projects, see [www.almaden.ibm.com/cs/blueeyes](http://www.almaden.ibm.com/cs/blueeyes).



Shown here is the Slugbot's hand. This device is designed to allow the picking up, and scraping off, of slugs. The slugs are converted into energy that powers the Slugbot.

... and generator are quite large at this point, and so will remain stationary. One (or more) Slugbots will search an area, scoop up the slugs, and scrape them off into the fermentation processor.

Possibly not surprising is that turning the slug into energy is actually the easy part of the process. Finding, scooping, and scraping the slugs are the hard parts, even for humans. You

can see some "bloopers" of the researchers attempting to capture the slugs manually at their Web site at [www.ias.uwe.ac.uk/~i-kelly/tta.htm](http://www.ias.uwe.ac.uk/~i-kelly/tta.htm).

The Gastrobotics Group at the University of South Florida is working on digesting something a little sweeter: sugar. Their robot looks more like a train of wagons than a mobile robot, and, in fact, it had the name "Chew Chew" earlier in its career. And in

fact, it is a train of wagons.

But now it's called *Gastronome*, but it is still designed to eat sugar. The term "gastrobot" was coined in 1998 by the institute's director, Stuart Wilkinson, and means "an intelligent machine (robot) that derives all its energy requirements from the digestion of real food."

*Gastronome* converts sugar cubes into electricity using microbial fuel cell technology. A stacked plate design employing six individual cells is located in one of its wagon. The other wagons contain anolyte and catholyte tanks along with gastric and heart pumps. A D.C. motor propels the robot along.

What's it good for? Wilkinson, an associate professor of mechanical engineering, says one eventual commercial use could be a robotic lawn mower that eats its own clippings for power.

Neither the *Slugbot* nor the *Gastronome* reports mention any excrement or gasses left over from the processes. You can read more about *Gastronome* at [www.gastrobots.com](http://www.gastrobots.com). By the way, [www.gastrobot.com](http://www.gastrobot.com) (singular) is owned by someone else, so be careful not to be tricked by a cheap imitation.

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## Teleoperated Robotic Surgical Hands Receive Government Approval for Testing

**D**a Vinci Surgical Systems of Mountain View, California, has created a series of remote controlled robotic manipulators and software that allow doctors to perform surgery with increased precision. In addition, the tiny hands can get into small areas, thereby being less invasive during surgery.

The da Vinci Surgical System received permission to initiate a multi-

center clinical evaluation from the Food and Drug Administration. This trial will involve approximately 50 patients at six major medical centers in the United States.

Initial studies were conducted by the cardiac team at the University Health Systems of Eastern Carolina/Brody School of Medicine at East Carolina University, Greenville North Carolina.

The studies used the equipment to perform mitral valve repairs.

Although the current da Vinci system has the doctor and patient in the same room, this doesn't have to be the case. Since the doctor is actually operating the scalpel via electronic control, this opens the door for truly remote operations. For more information on da Vinci, see [intuitivesurgical.com](http://intuitivesurgical.com).

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## AI and Games

Artificial intelligence methods, both traditional and alternative, have been used increasingly in games. I have seen an increasing number of game companies looking to hire programmers specifically to work on the “AIs.” Below, I note some of the AI game news items spotted recently.

Now you can write an engine (in any language) for the Five in a Row (or X-O) game at [people.freenet.de/AiTI-IT/](http://people.freenet.de/AiTI-IT/). I use such competitions in my AI courses. I have found competitions to be quite engaging for the students, and an excellent way for them to directly compare alternative AI methods (i.e., alpha-beta pruning vs. genetically evolved heuristics, etc.) If you have used competitions in teaching AI, drop me a line at [d.blank@csce.uark.edu](mailto:d.blank@csce.uark.edu) with your comments on the success or failure, and lessons learned. I will give a report next issue.

The International Game Developers Association has added a Game AI Special Interest Group (SIG) and Research Forum, at [www.igda.org/SIGs/game\\_ai.htm](http://www.igda.org/SIGs/game_ai.htm). Links to academic work are solicited.

CRPG-ARCHIVES is a library of role-playing games, FAQs, screen shots, news, chat, links, etc. See [www.crpq.de/crpq.htm](http://www.crpq.de/crpq.htm).

The Game Programming Vault offers free games, programming tutorials, hints and tips, strategies, and examples. See [members.tripod.co.uk/lpfglc/](http://members.tripod.co.uk/lpfglc/).

Crystal Space is a free, open-source 3-D game engine that runs on Linux, Windows, OS/2, BeOS, DOS, NextStep, Amiga, and Macintosh. It uses software rendering, OpenGL, Glide, and Direct3D, supporting colored dynamic lighting with shadows, portals, mirrors and reflecting surfaces, volumetric fog, halos, mipmap-

ping, curved surfaces, 3-D triangle mesh objects, etc. See [crystal.linuxgames.com](http://crystal.linuxgames.com).

Moongate is a strategy game where you become the leader of an advanced society seeking a new world to call home, and become stranded in an unfamiliar universe. This is a detailed sim/strategy game about space city building, with intelligent diplomacy models and branching game style. The game is currently in beta. See [members.xoom.com/moongte/main.htm](http://members.xoom.com/moongte/main.htm).

To play adventure games online, visit the Internet Game Network at [igame.net](http://igame.net). Many of the games are free, and full membership is as little as \$5/month. Yahoo! Games offers other free games, at [games.yahoo.com/](http://games.yahoo.com/). It's highly recommended for all ages. For games and puzzles with real-time chat, try [www.headbone.com/games/sometimesy](http://www.headbone.com/games/sometimesy).

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## AI HYPE WATCH

*Our eye on AI continues. As noted in previous columns, of all fields, it is probably easier for those in artificial intelligence to make claims that are just a little bit beyond reality. This section of the news is dedicated to keeping ourselves in check, and to keeping a watch on those news makers that have made extraordinary statements. Of course, sometimes hype is not our fault. Sometimes the media tends to exaggerate just a tad. Hype happens. In any case, we'll report what we find here. If you encounter a report in the press, or directly from the researcher's mouth that you think fits the bill, send us a note at [hypewatch@dangermouse.uark.edu](mailto:hypewatch@dangermouse.uark.edu).*

## Hype Downunder and All Over

In a story entitled “Intelligent machines threaten humankind” one might expect to read about intelligent machines threatening humankind, yes-no? In their “Road to Sentience” series of articles on AI in the Enterprise Business Technology section, ZDNetAustralia gives sensational headlines with not much to support them.

For example, “Dystopia or utopia: There may be a calamitous menace hidden behind the glorious possibilities of artificial intelligence” was a sub-headline in one of their stories, but most of their sources gave reason-

able statements.

They try to twist a story out of the quotes, nonetheless. ZDNet quoted Steve Grand, artificial intelligence researcher and author of *Creation: Life and How to Make It*, as saying that it would be impossible for humans to be totally sure that autonomous, intelligent machines would not threaten us. We guess that that type of hype sells newspapers better than: “Researchers Provide 100% Guarantee that Robots Won't Hurt Us. Read All About It.” ZDNetAustralia ([www.zdnet.com.au](http://www.zdnet.com.au)) gets an A+ in hype.

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## Ant-sized Robot has High Hopes and Hype

A truly wonderful piece of art, design, and engineering was marred by a little hype recently. Researchers at the Department of Energy's Sandia National Laboratories (the other SNL) created what may be the world's smallest mobile robot. At .25 cubic inch and weighing less than an ounce, it is powered by three watch batteries, it rides on track wheels and consists of an 8K ROM processor, temperature sensor, and two motors that drive the wheels. It was cleverly described as being able to "turn on a dime and park on a nickel."

The researchers were able to reduce its size by using a new rapid prototyping technique to form the device's body. Called stereolithography, the material-building method lays down a very thin polymer deposit that is cured by a laser. The material, which "grows" as each layer is added, is lightweight, strong, and can be formed in complex shapes.

"This could be the robot of the future," said one of the project's researchers. "It may eventually be capa-

ble of performing difficult tasks that are done with much larger robots today—such as locating and disabling land mines or detecting chemical and biological weapons." A SNL press release claims that the mini-robot has already maneuvered its way through a field of dimes and nickels and travels at about 20 inches a minute.

We won't argue that this could, indeed, be the robot of the future. However, the suggestion that it could disable land mines is a bit too much. On the other hand, such a robot could possibly be very useful for space exploration programs. But before we send a swarm to Mars, we suggest letting it loose in a field of quarters. Before attempting to disable land mines, it might be better



Sandia National Laboratories has created what may be the world's smallest mobile robot. But can it disable land mines?

suited for moving rubber tree plants.

Seriously though, over the next few years, with additional help from other Sandia groups, the researchers expect to add to the mini-robots either infrared or radio wireless two-way communication capability, as well as miniature video cameras, micro-phones, and chemical micro-sensors. We wish them luck!

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## Computers' Rights: Consider the Source

In Network Computing's TechWeb, Art Wittmann asks "But if you unplug your well-behaved thinking computer, have you violated its fundamental rights?" He continues: "For now the question is academic, and I really hope that some of the folks in academia start thinking about it."

Of course we think about it. I suspect the best science fiction ideas come from computer scientists!

But Wittmann pushes the envelope: "If [your] software starts asking, even pleading for more memory or a faster CPU, does it have a right to get it?" Sure, as much as my

kids have a right to get the things that they plead for.

Surprisingly, Wittmann ends on a very balanced note for a journalist (present company excluded, of course): "For now it would be nice if we, as a trade, avoided anthropomorphic terms when describing software. Computers don't think, nor will they for some time. It's just too much to ask. Marketers who believe they can capture our attention will take these liberties with the language without thinking twice. All we can do is consider the source." Network Computing gets an C++ in hype.

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A new IRC channel has been created for AI discussions. It's #hopfield\_ann's on irc.icq.com, open 24 hours a day.



AAAI members now get full online access to the Artificial Intelligence Journal. Email membership@aaai.org to join, then visit www.elsevier.com/login.



Sciencewise is adding R&D news from Newswise to its premium service, selected by interest keywords. Newswise covers press releases from 450 educational, research, and medical institutions. See content.sciencewise.com/informationagent/newsletter.



The Moreover search engine indexes current news headlines from 1,800 sources. A search for "artificial intelligence" pulled up about a dozen headlines for a week. You can sign up for email delivery of headline links about robotics or many other standard topics. w.moreover.com.



IBM's newest Thinkpad, called the TransNote, includes a tablet that saves handwritten notes on paper and as image files. The laptop is expected to sell for about three thousand dollars.



Ford and the UK Defense Evaluation and Research Agency have a ferro-liquid crystal display capable of holographic resolutions. It can be used to create 3-D images that hang in space, like the Princess Leia message in Star Wars. Their computer-generated holography displays should be on the market in 2003.



Cybersphere from VR Systems is a 13-foot translucent globe on a ring of ball bearings, used for virtual reality displays. It acts like a 3-D squirrel cage when someone inside walks in any direction. This is a big improvement over the 20-foot limits of University of Illinois' successful 1992 Cave system, which has been duplicated at over three dozen sites.



Business Week has stated that the new version of Sony's robotic dog, AIBO, looks more like a lion cub than a dog. Sony sold 45,000 of the original AIBO and is gearing up to make 60,000/month of the new model. Future plans include various entertainment robots, including dragons. Sony will be courting venture capitalists and outside suppliers to help build this into a PlayStation-sized market.



According to the Washington Techway, companies have begun to recognize the potential for using artificial life-type systems to enhance their presence on the Web. Artificial life registered a 218 percent hike in revenue to \$2.83 million for the quarter ended June 2000, largely on sales of its "banner bots," used to entertain, educate, or promote a site in order to increase the frequency that users click on an advertisement.



Computists International provides the main source of this column's news tidbits. You can find The CI-Freebies at www.egroups.com/group/CI-Freebies, which is converting to Yahoo! Groups soon.



**Correction**

Due to a typesetting error, the Web address for the Goldbach letter in the section "Who (or What) Wants to be a Millionaire?" in the last issue of AI Update was incorrect. If it is typeset correctly, you can find an image of Goldbach's letter to Leonhard Euler at the following address: www.informatik.uni-giessen.de/staff/richstein/ca/goldbach.jpg, else I'll publish a correction next issue.