

**Windows Xp Pro**

Update Your Microsoft Licenses & Be First to Get Vista & Office 2007  
[www.microsoft.com/Office](http://www.microsoft.com/Office)

**Free Video iPod (80GB)**

Free 80GB Black or White iPod Get the Hot New iPod 100% Free!  
[www.FreeiPodPlayers.com](http://www.FreeiPodPlayers.com)

**Register Now!** Benefits | Login



# InformationWeek

BUSINESS INNOVATION POWERED BY TECHNOLOGY



Part of the **TechWeb** Business Technology Network

SEARCH

RSS FEEDS

SUBSCRIBE

EVENTS

HOME

- NEWS**
- WINDOWS
- SECURITY
- OUTSOURCING
- INTERNET
- SOFTWARE
- HARDWARE
- MANAGEMENT
- RESEARCH & TOOLS
- INDUSTRIES
- CAREERS

News Center: [New! MyInformationWeek](#) • [Breaking News](#) • [Blog](#) • [Columns](#) • [Product Reviews](#) • [Current Print Issue](#) • [Read All Stories](#)

## Robot, Heal Thyself

Scientists have developed a robot that is not only self-aware and "curious," but it can take action to overcome handicaps or impediments in its environment.

By [Sharon Gaudin](#)  
InformationWeek

Nov 20, 2006 04:05 PM

A team of scientists has developed a self-aware robot that actually can diagnose its own problems and then take steps to heal itself.

Historically, robots have been machines that are given a specific task to do and then they perform it. They weren't built to overcome damage to their own parts. If an integral part was broken, the robot was not generally able to limp along and find another way to get the job done.

Josh Bongard, an assistant professor in computer science at the University of Vermont, says he and two fellow scientists, Victor Zykov and Hod Lipson of Cornell University, have taken robotics to a new stage.

"We wanted intelligent robots that could recover from unanticipated situations," said Bongard, who added that the three-year project was aimed at building the next-generation robot for NASA to send to Mars or its outer moons. "What happens if one of the robot's legs snaps off? The advance of our work is that the robot can build a sense of itself. What would happen if I only had three legs instead of four? How can I figure out a new way to move?"

Bongard, who did the work while he was a post doctorate student at Cornell, explained that the robot does self-awareness tests and keeps track of its own functions and abilities. He said the robot, which resembles a hand-sized star fish with four splayed legs, does a series of tests, such as tilting to the right and then the left, and swiveling its legs. It records the results and then makes predictions about how it should respond to such tests in the future. Basically, it builds a database that gives it an internal model of its shape and abilities.

If it snaps off a leg, for instance, when it tilts to the left, it might realize that it is off balance when it never had been before. It will then perform a series of other tests to pinpoint the problem.

Then, explained Bongard, it would figure out a way to get around the impediment. "We built in a damage recovery stage," he said. "I have a broken leg. How can I change my way of moving to continue to explore the surface of the planet." The robot could change its gate or find other ways to continue moving despite its handicap. It should also be able to adapt to changes in its environment, such as coming upon an icy surface and changing the way it moves so it doesn't slip.

Bongard said they designed the robot to move beyond performing a simple series of tasks. "We gave it the ability to play, be curious," he added. "The robot doesn't just move around randomly. It always tries to perform some action, to move in a new way, to give it new information about its body."

While it could be several years before the robot is ready for real-life action in a government setting, Bongard said its applications go beyond space exploration.

He noted that a self-aware robot could be useful in search-and-rescue scenarios where it would need to adapt to a changing environment.

"You want a robot that could continuously adapt to a changing environment," noted Bongard. "Light levels are changing. The surface is always changing. Humans are entering its environment and leaving again. You need something that will understand that changes are happening and adapt to them."

Advertisement

- » [E-Mail](#)
- » [Print](#)
- » [Discuss](#)
- » [Del.icio.us](#)
- » [Digg](#)
- » [MyInformationWeek](#)
- » [Reprint This Article](#)
- » [Download Top Reports](#)

- » [E-Mail](#)
- » [Print](#)
- » [Discuss](#)
- » [Del.icio.us](#)
- » [Digg](#)

### Related Stories

- » [US Agency To Review Role In Eavesdropping Program](#)
- » [Software Will Let Users Dodge Government Internet Censorship](#)
- » [GPS Devices Won't Kill Paper Maps, Mapmaker Says](#)
- » [IBM Set For Further Expansion In China](#)



Returning Users

E-mail Address:

Login

[New Users Click Here](#)

Advertisement

### InformationWeek Marketplace (Sponsored Links)

Save over 50% on your Business Phone Bills!

Packet8 VoIP-Hosted PBX is \$39.99/month including Auto Attendant, Unlimited calling to the U.S. & C...

[Buy a Link Now](#)

### SPECIALTY RESOURCES



Whitepapers, case studies, webcasts, videos, and additional resources to address pressing IT issues affecting your business

- ▶ [Solve Branch Office Performance Woes](#)
- ▶ [Ensuring the longevity of your IT investment](#)
- ▶ [Securing the PC: Definitive Endpoint Threat Protection](#)
- ▶ [Bright Ideas in Storage and Server Innovations](#)
- ▶ [Printing and Imaging Sales Opportunity Analysis Tool](#)

▶ [VIEW ALL BRIEFING CENTERS](#)

### FEATURED MICROSITE

