My robot
Hackers reprogramming Roombas to do more than just clean floors

By Hiawatha Bray, Globe Staff | March 6, 2006

Some people are tinkering with their Roomba robotic vacuums, but not much of it has to do with cleaning floors.

When iRobot Corp. introduced the Roomba in 2002, the Burlington company was hailed for making available the first home robot.

But for some, the disc-shaped machine that zips across floors sucking up dirt and dust is more than an electronic housekeeper: It's a science project on wheels, a surrogate pet, even a fashion statement.

People are reprogramming and revamping their Roombas to add new functions, and to have fun.

"The vast majority of our customers have no need and no desire to be programming their robots," said iRobot chairman and cofounder Helen Greiner. "But there are a few people out there who really enjoy hacking things."

They find the Roomba especially tempting because it combines advanced robotic technology with a modest price tag - as little as $150. Until the Roomba arrived, amateur builders had to start from scratch.

And iRobot is happy to help them experiment. In October, it introduced a $30 kit that lets people reprogram the software in older Roombas so they can modify how it works. The newest models feature a digital data port, similar to those found on PCs, that allows the robot's sensors and motors to be controlled by a computer. And iRobot is even giving university robotics labs free Roombas to use as teaching aids.

The idea is to encourage a new wave of robotic innovation by users that won't cost iRobot a lot of money. Investors have rebelled against the company's recently announced plans to increase spending on research and development. The company's stock, which sold for almost $38 in mid-January, closed Friday at $28.78 on the Nasdaq stock exchange.

The Roomba has plenty of room for improvement. Sensors allow it to change course when it hits a wall and avoid tumbling down flights of stairs. It can even plug itself into a battery recharging station. But the device doesn't really know where it's going -- it follows a mathematical model that estimates the best route to cover a floor surface.

A New Mexico systems engineer, Paul Grunwald, hopes to fix that. He is adding a circuit board to a Roomba so it can be controlled by a Palm Pilot hand-held computer. Grunwald then plans to write a Palm Pilot program that would generate maps of rooms that the robot cleans. The Roomba would use the maps to ensure that it never misses a spot.

Matt Krumtum, an attorney in Bristol, Va., is part of a team of hobbyists who frequent roombareview.com, a website that caters to avid Roomba hackers. The team hopes to bolt a laptop computer with wireless Internet access on top of a Roomba. Software would allow the computer to download e-mail and feed it to a program that would cause the robot to read the messages aloud.

"The robot could come to you at certain specified times and read your e-mail to you," Krumtum said.

Locally, four Acton siblings are more concerned about Roomba fashion than function. They have created what might be the world's first line of designer clothing for robots.

"If you've ever seen one work you get mesmerized by it," said their father, Greg Smith, a software designer.

His children began dressing their Roomba with paper cutouts to make it look like a shark and decided to turn their creative impulses into a business. Their website, myRoomBud.com, features animal-themed RoomBud outfits priced at $25 each.
"Our kids think it's hysterical," said Acton human resources consultant Laura Jacobs, who purchased a RoomBud outfit modeled after a panther. "I put dog cookies on it and have my dog chase it around the house," Jacobs said. "He gets cookies and my house gets clean.

But most people who experiment with Roombas have more sophisticated uses in mind.

Phillip Torrone, associate editor of Make, a magazine for do-it-yourselfers, has turned his Roomba into a roving camera that relays pictures from his house to the Internet site Flickr.

Torrone equipped the Roomba with a laptop computer with a built-in digital camera and wireless Internet service. He let it trundle around the house shooting pictures at random and automatically uploading them to Flickr, so Torrone can see them from any Internet-connected computer in the world. The photo-Roomba could be a first step toward replacing human security guards with robots, he said.

Not all of Torrone's inspirations are so practical. Consider his plan to build a simian scare-bot: "I got this robot monkey head at Sharper Image and I wanted to do something real cool with it," he said. So Torrone plans to mount the head on top of a Roomba and write software to control the contraption.

"The Roomba will go around and when it gets to its destination, the monkey head starts to scream," he said.

Hiawatha Bray can be reached at bray@globe.com.