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Off the Shelf and Into the Garage

By JENNA WORTHAM

When Oliver Kreylos, a computer scientist, heard about the capabilities of Microsoft's new Kinect gaming device, he couldn't wait to get his hands on it. "I dropped everything, rode my bike to the closest game store and bought one," he said.

But he had no interest in playing video games with the Kinect, which is meant to be plugged into an Xbox and allows players to control the action onscreen by moving their bodies.

Mr. Kreylos, who specializes in virtual reality and 3-D graphics, had just learned that he could download some software and use the device with his computer instead. He was soon using it to create "holographic" video images that can be rotated on a computer screen. A video he posted on YouTube last week caused jaws to drop and has been watched 1.3 million times.

Mr. Kreylos is part of a crowd of programmers, roboticists and tinkerers who are getting the Kinect to do things it was not really meant to do. The attraction of the device is that it is outfitted with cameras, sensors and software that let it detect movement, depth, and the shape and position of the human body.

Companies respond to this kind of experimentation with their products in different ways -- and Microsoft has had two very different responses since the Kinect was released on Nov. 4. It initially made vague threats about working with law enforcement to stop "product tampering." But by last week, it was embracing the benevolent hackers.

"Anytime there is engagement and excitement around our technology, we see that as a good thing," said Craig Davidson, senior director for Xbox Live at Microsoft. "It's naïve to think that any new technology that comes out won't have a group that tinkers with it."

Microsoft and other companies would be wise to keep an eye on this kind of outside innovation and consider wrapping some of the creative advances into future products, said Loren Johnson, an analyst at Frost & Sullivan who follows digital media and consumer electronics.

"These adaptations could be a great benefit to their own bottom line," he said. "It's a trend that is undeniable, using public resources to improve on products, whether it be the Kinect or

anything else."

Microsoft invested hundreds of millions of dollars in Kinect in the hopes of wooing a broader audience of gamers, like those who enjoy using the motion-based controllers of the Nintendo Wii.

Word of the technical sophistication and low price of the device spread quickly in tech circles.

Building a device with the Kinect's capabilities would require "thousands of dollars, multiple Ph.D.'s and dozens of months," said Limor Fried, an engineer and founder of Adafruit Industries, a store in New York that sells supplies for experimental hardware projects. "You can just buy this at any game store for $150."

On the day the Kinect went on sale, Ms. Fried and Phillip Torrone, a designer and senior editor of Make magazine, which features do-it-yourself technology projects, announced a $3,000 cash bounty for anyone who created and released free software allowing the Kinect to be used with a computer instead of an Xbox.

Microsoft quickly gave the contest a thumbs-down. In an interview with CNet News, a company representative said that it did not "condone the modification of its products" and that it would "work closely with law enforcement and product safety groups to keep Kinect tamper-resistant."

That is not much different from the approach taken by Apple, which has released software upgrades for its iPhone operating system in an effort to block any unsanctioned hacks or software running on its devices.

But other companies whose products have been popular targets for tinkering have actively encouraged it. One example is iRobot, the company that makes the Roomba, a small robotic vacuum cleaner. That product was so popular with robotics enthusiasts that the company began selling the iRobot Create, a programmable machine with no dusting capabilities.

Mr. Davidson said Microsoft now had no concerns about the Kinect-hacking fan club, but he said the company would be monitoring developments. A modification that compromises the Xbox system, violates the company's terms of service or "degrades the experience for everyone is not something we want," he said.

Other creative uses of the Kinect involve drawing 3-D doodles in the air and then rotating them with a nudge of the hand, and manipulating colorful animated puppets on a computer screen. Most, if not all, of the prototypes were built using the open-source code released as a result of the contest sponsored by Ms. Fried and Mr. Torrone, which was won by Hector Martin, a 20-year-old engineering student in Spain.

The KinectBot, cobbled together in a weekend by Philipp Robbel, a Ph.D. candidate at the Massachusetts Institute of Technology, combines the Kinect and an iRobot Create. It uses the Kinect's sensors to detect humans, respond to gesture and voice commands, and generate 3-D maps of what it is seeing as it rolls through a room.

Mr. Robbel said the KinectBot offered a small glimpse into the future of machines that could aid in the search for survivors after a natural disaster.

"This is only the tip of the iceberg," he said of the wave of Kinect experimentation. "We are going to see an exponential number of videos and tests over the coming weeks and months as more people get their hands on this device."

Toying around with the Kinect could go beyond being a weekend hobby. It could potentially lead to a job. In late 2007, Johnny Lee, then a graduate student at Carnegie Mellon, was so taken by the Wii that he rigged a system that would allow it to track his head movements and adjust the screen perspective accordingly.

A video of Mr. Lee demonstrating the technology was a hit on YouTube, as were his videos of other Wii-related projects. By June 2008, he had a job at Microsoft as part of the core team working on the Kinect software that distinguishes between players and parts of the body.

"The Wii videos made me much more visible to the products people at Xbox," Mr. Lee said. "They were that much more interested in me because of the videos."

Mr. Lee said he was "very happy" to see the response the Kinect was getting among people much like himself. "I'm glad they are inspired and that they like the technology," he said. "I think they'll be able to do really cool things with it."

PHOTOS: Innovators like Oliver Kreylos were eager for the Xbox Kinect, but not to play games. He uses it to capture live 3-D images. (PHOTOGRAPH BY MAX WHITTAKER FOR THE NEW YORK TIMES) (B1); Philipp Robbel combined an iRobot device and the new Microsoft controller that can recognize gestures. He calls it the KinectBot. (PHOTOGRAPH BY BRYCE VICKMARK FOR THE NEW YORK TIMES); Theo Watson and Emily Gobeille created a puppet show using a Kinect. Mehmet S. Akten uses the system to draw in 3-D. (B4)
