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## Computers Get Touchy-Feely

See how new haptics technology delivers a virtual sense of touch, Wednesday 3/6 at 9 p.m. Eastern on 'Tech Live.'

By Jim Goldman, Tech Live Silicon Valley bureau chief  
March 6, 2002

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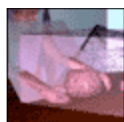
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It's the golden rule of just about every art museum: Look but don't touch.

But the [Fisher Gallery](#) on the campus of the University of Southern California in Los Angeles is actually encouraging it, now that it has become one of the first in the nation to use a new kind of haptics technology.

"We exhibit works of art you're not supposed to touch," said Jennifer Jaskowiak, the museum's curator. "The accumulation over the years of an object being touched is damaging to the work."

But once she saw what haptics technology was capable of, she instantly saw its value.

"I've tried it myself, and I get really jazzed about it, because the technology is so stunning -- and I'm not a technical person," Jaskowiak said. "When I try it I get really excited. It's like, 'Wow! This is really cool, because it's like there's nothing there, but it's there!'"

The technology that grabbed her attention is gestating in a lab just a few hundred yards from Fisher Gallery. It's called "virtual touch," and researchers describe it as a major advance in haptics technology.

They call it the natural evolution of computers themselves: No longer will computer users be limited to simply seeing and hearing. Now they will be able to touch and feel, making experience far more realistic.

Users fit their hands inside a haptics glove, a network of exoskeletal tendons that look like something out of the sci-fi classic "The Terminator."

The glove, connected by a USB cable to a personal computer, can be networked, letting a user touch and feel what is stored on a computer and even reach into a website and lay a virtual hand on whatever is found there.

Project director Margaret McLaughlin demonstrates the new technology's capabilities by strapping on a haptics glove and sitting in front of a computer. On the screen, you can see a computer-generated hand and a bouncing ball.

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As the computer-generated ball touches the virtual hand, McLaughlin's real fingers move in response. She can "feel" the ball touching her own hand.

McLaughlin's team at USC's [Integrated Media Systems Center](#) has come up with a software algorithm that lets various kinds of haptics hardware work with one another over a computer network.

"The nature of the touch is essentially pushing the finger backward," McLaughlin said. "I feel it. I can feel that I'm being touched."

Engineers at the center say networking touch could represent a significant change in the way people use and interact with computers.

"When we think about adding touch, what we're really trying to do is create a more realistic representation that people can work with again. Touch has been missing," said Ulrich Neumann, director of the Integrated Media Systems Center. "I think people get it pretty quickly. Once you give them a chance to actually touch it, actually try it, there's this instantaneous, 'Aha! Now I get it.'"

The idea of mutual touch could have a big impact on e-commerce by letting computer users touch and feel products while shopping online. The technology also could add a heavy dose of reality to online computer gaming.

But curators remain excited about the prospect of using the technology for educational purposes. For instance, haptics could allow students to virtually feel a work of art without having to worry about the effects that physical touching would have on it. Haptics also could be an effective way to preserve historic objects.

"It would immediately answer more questions than a photograph would ever answer, for example, scale, weight, a reality check on what it really felt like," Jaskowiak said.

Maybe most importantly, networked haptics technology could offer a new way to connect with people over the Internet -- a way to reach out and touch someone.

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