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Human mind newest frontier

Researchers exploring devices to enhance behavior, sensation

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THE PRESS DEMOCRAT

SAN DIEGO

In an era where hackers are modifying everything from computers to iPhones, it's only natural they would turn their attention inward and begin hacking the human body.

Technology is increasingly being used to augment human behaviors and sensations, ranging from sex and depression to trust, several scientists said this week at the Emerging Technology conference organized by Sebastopol publisher O'Reilly Media.

Ed Boyden, co-director of MIT's Media Lab Center for Human Augmentation, is using electrical currents to change human emotions.

Researchers in his lab send targeted currents into the brain by a device placed against the head. They have been able to temporarily influence the brain's sense of trust, risk and depression.

"People have been looking at ways to modulate behavior such as trust and fear," he said Thursday. "We've been learning a lot about how our brains mediate what we do every day."

Boyden's lab is developing software intended to help people deal with stress and anxiety. The software asks a series of 50 questions, and then creates customized recommendations on how people can reduce their stress. He hopes the software will one day be loaded on iPhones and other mobile devices.

Boyden began his career as an electrical engineer. But like a growing number of technologists, he took an interest in the impact various technologies can have on neurosciences. He now considers himself a neuroengineer. The Discovery Channel named his research on the ability to control brain nerves by using photons as one of the five best science moments of 2007.

People discussed other ways to hack their senses at the conference -- some were far less clinical than an MIT lab.

Quinn Norton, a San Francisco journalist and photographer who studies ways technology can augment the human body, shared her experience with inserting a magnet underneath the skin of her finger in 2005 to see if she could detect electromagnetic fields.

The magnet vibrated and created a tingling sensation when she neared magnetically charged devices such as speaker wires, computer hard drives or anti-theft machines at malls.

"It was wonderful," she said. "But two months in, my body attacked the magnet, and it all went horribly wrong."

After an infection set in, she had the magnet removed in 2006. The experiment was over.

Kyle Machulis, an engineer, told the audience about the growing number of ways that people can control adult sex devices over the Internet. Basic sex devices aren't much more difficult to design than a light switch, he said.

"But instead of making a light come on, the end result is way more fun," Machulis said. "There are so many interesting things happening with sexual relationships in online worlds right now."

Technology is also creating new ways for people to learn about themselves. A DNA test, for example, can now help an individual discover the likelihood they will develop Alzheimer's disease and other ailments later in life,

said Pauline Ng, a biotechnologist at the J. Craig Venter Institute, a Rockville, Md., research organization that studies genomics.

Governmental regulation is not keeping pace with technology, Ng said. For example, it is legal for insurance companies to refuse to provide a health policy based on someone's DNA, she said.

"The government needs to act," Ng said, adding that she wouldn't make her DNA public.

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