

# Students Develop 'Mind-Control' Interface to Play Video Games Without a Controller

August 12 2008

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(PhysOrg.com) -- Drexel University students have taken game controller innovation beyond motion control with a “hands-off” approach and developed an interface that allows players to execute actions using only their mind.

The device looks like a headband and is equipped with sensors that measure brain activity. By shining near-infrared light into the skull and measuring the intensity of light reflected back, oxygen levels corresponding to brain activity can be recorded. The device, originally developed by Drexel’s biomedical engineers to monitor the brain of patients under anesthesia, serves as a controller for the Drexel-developed video game Lazybrains.

Lazybrains features Morby, a couch potato transported to a dangerous

fantasy world as punishment for not exercising his brain. Morby must use his mental power to navigate through obstacles to find his way back home. Players still use a keyboard to make Morby run and jump, however special actions such as lifting a manhole cover require players to put the controller down and use their brain. When the game senses that enough mental power has been exerted, the manhole cover is lifted and the player can proceed.

“The most immediate application for brain-machine interfaces is in medicine. Games like Lazybrains can help kids with ADHD learn how to concentrate in a friendly and fun environment. And as the underlying neurotechnology behind Drexel’s Lazybrains matures, they may become as easy to use as a Wii Controller,” said Dr. Frank Lee, professor in the Computer Science Department and co-director of Drexel’s RePlay Lab on Computer Gaming. Their implication to game innovation is certainly wide open.”

The innovative video game interfaces are the result of the Drexel Research on Play or “RePlay” Lab, a collaborative effort between the University’s Computer Science department in the College of Engineering and the Digital Media program in the Westphal College of Media Arts & Design. RePlay exposes students to game development through research projects and proof-of-concept demonstrations, letting students not just learn it, but live it.

Other innovations developed in the RePlay lab include a touch-screen monitor that can distinguish between multiple fingers and multiple hands. Planet Diggums is a simple game that showcases the system. One or more players can move, squish and sling their Diggum across the screen. The concept is being developed for classroom applications that will be seen in Philadelphia schools within a year.

Drexel has also developed Inversion, a system that brings realism to

games by giving players an RTS-type view of real people quipped with GPS-enabled cell phones. The technology is being developed for emergency personnel and first responders, but it could become an exercise game.

Provided by Drexel University

Citation: Students Develop 'Mind-Control' Interface to Play Video Games Without a Controller (2008, August 12) retrieved 5 May 2024 from <https://phys.org/news/2008-08-students-mind-control-interface-video-games.html>

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