

Haptic Technology and Tele-Petting

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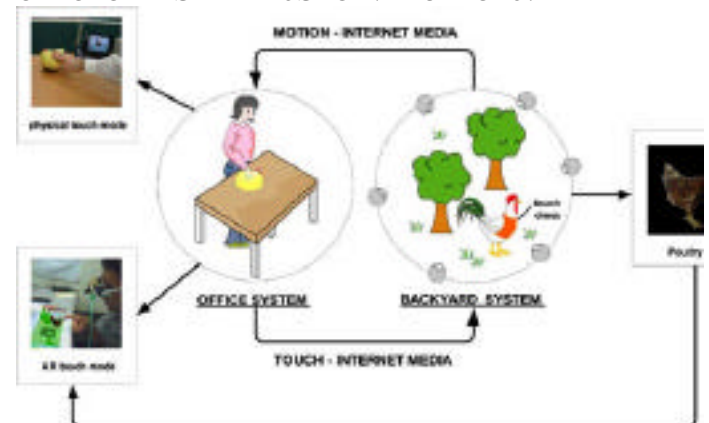
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Haptics is the scientific field that studies the sense of touch. In computers haptics interfaces the science and art of touch to make virtual objects seem real and tangible. There are three different types of haptic interaction that allow the user to communicate with the computer. The first type is **force feedback**, where the user feels forces applied to their body through the movement of the haptic device; these movements are sensed through musculoskeletal forces and also through the skin. This is done by having the user grab a handle connected within the device to motors. The second type, **tactile feedback**, uses force that is applied directly to the skin allowing the user to feel sensations such as roughness, or temperature. Sometimes this is done by a small electric current, a moving array of pins or by changing the temperature of the object. The final type, **proprioception** is the sense of the position of parts of the body, relative to other neighboring parts of the body. This is sometimes integrated with force feedback. These devices can be applied to many areas among them:

video games
medical training
scientific visualization
CAD/CAM
computer animation
engineering design and analysis
architectural layout
virtual toys
remote vehicle and robot control,
automotive design
art
medical rehabilitation
interfaces for the blind

However, the Mixed Reality Lab at the National University of Singapore has developed a system using remote haptic interaction via the internet. This system deemed Tele-Petting by wired.com allows the user to pet a chicken. The user is given a chicken-

shaped doll which moves in the same way the real chicken moves. Touch sensors on the doll are radio interfaced to a PC. The computer triggers tiny vibration motors in a lightweight haptic jacket worn by the chicken. Thus the chicken is able to feel this sensation in the same place where the doll is stroked. If the user is willing to install cameras to watch the chicken a pair of virtual reality glasses allows the user to see where the chicken is in its environment.



This technology allows people who are allergic to animals to be able to interact with them and reap the benefits of having a pet. This technology also has the possibilities of being applied elsewhere such as to teach dance moves, to help train and interact with spy dogs, as well as possible human interaction via the internet such as internet hugging. The company already has plans to develop an advanced haptic suit for humans, which will incorporate tiny air sacs, compressors and valves to make the hug feel more realistic

- <http://www.mixedrealitylab.org/>
- <http://www.psychiatrictimes.com/p990243.html>
- <http://www.wired.com/news/technology/0,1282,67513,00.html>
- http://www.novint.com/what_is_haptics.htm
- <http://www.it.bton.ac.uk/staff/lp22/CS133/haptics.html>