
An Open-Source Sexual HCI Research Platform

Kyle Machulis

Nonpolynomial Labs
1321 Homeland Ave.
Norman, Oklahoma, 73069
(405)570-9855
<http://www.nonpolynomial.com>
kyle@nonpolynomial.com

Abstract

Teledildonics hardware presents an interesting haptics actuation platform for HCI research. However, most current commercial teledildonics products include anti-reverse-engineering measures in their hardware and user agreements, meaning that usage of the products outside of the limits set by the manufacturer is not legally possible. The SeXBox is an open source platform that allows HCI researchers to quickly and easily implement interfaces for software controlled sexual interaction through a computer.

Keywords

Guides, instructions, author's kit, conference publications

ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous. See [3] for help using the ACM Classification system.

Overview

The term "Teledildonics" was originally coined by the artist Stelarc in the mid-1990s. It refers to any remote sexual stimulation that is controlled through some sort of electronic communication, though it usually refers to internet/computer controlled sex.

Commercial teledildonics products came to market in the late 90's, with products like SafeSexPlus and Symphony allowing users to control the vibration speed of sex toys over the internet. These types of toys still exist, with companies like Sinulate and Highjoy now producing toys with internet enabled speed and rotation controls. However, these toys implement handshaking protocols that require encryption keys embedded in the manufactured hardware, meaning that only software distributed by the producer can be used for control and communication. Not only does the interface of the software leave something to be desired, it locks out developers from creating new control schemes and triggers for the toys.

The SeXBox aims to give developers and researchers an easy-to-use platform for implementing interfaces for computerized control of sexual situations. With publishes schematics and API, users will be able to get teledildonics platforms up and running without worry of licensing or creative issues.

Creation and Revision History

The original version of the SeXBox was created in February 2005. It consisted of a video game console controller with the force feedback motors removed, and feedback power port rerouted to a sex toy. Any time the controller is sent a vibration command by a video game, it causes the toy to vibrate. This worked as both an alternative video game feedback device (by using it with a game console), as well as a simple teledildonics control (by hooking the controller up to a computer and using the force feedback API of the operating system). The project plans were published on the web in hopes of using sexual interaction projects to teach people about engineering and electronics.

Later versions of the SeXBox implemented safety measures and external power supplies, meaning that there were fewer issues that would involve harm to the

controller or console. Also added was a standardized connector that would fit most modular sex toys, meaning that users that are not interested in building their own toys can order pre-built toys with the connector already attached. These toys can usually be found for under \$10US.

The major drawback to the game controller version of the SeXBox was that it required buying and modifying a rather expensive controller (\$30-40US), with the possibility of having the controller break if an external motor that drew too much current was used.

The main requirement of the final version of the SeXBox is that it require no modification to any part or add-on in order to use. The product needs to be a complete, working platform out of the box.

To this end, the video game controller will be replaced with a microcontroller chip. With the addition of this chip, the SeXBox will be able to talk directly with the USB port of a computer, meaning that the hardware will be essentially plug and play instead of involving complex soldering and rewiring. An open source API will be distributed with the SeXBox.

Research Abilities of the Platform

Even though the final version is still in development, the SeXbox has already been used for implementing multiple HCI research projects.

As a Video Game Feedback Device

Since the SeXBox can easily be hooked up to video game consoles, the force feedback signals can be repurposed for whatever uses the player can imagine. Video games as sexual environments is a subject that comes up more and more often these days, with sex becoming more accepted as a plot device in games with adult themes. Adding haptics or sex hardware to this

could increase the depth of immersion in game environments.

As a Emergent Teledildonics Client Enabler

When used in conjunction with the Second Life software (<http://www.secondlife.com>), the SeXBox added the features of a teledildonics client to the virtual world. Users could now interact with an object in world that would relay information to other machines on the internet, directing the speed and patterns of haptics hardware. Adding this feature to the world allows users the explore new types of physical response and interaction with their in-world objects. It also opens the doors to those who have fetishes that can only be expressed in virtual or simulated worlds, due to the laws of physics, the government, or sometimes both.

As a Synesthetic Actuator

Max/MSP is a very popular programming environment for musicians. It consists of a set of "patches" (Objects that perform different audio/video functions) and wires that connect the patches together, letting them communicate with each other. A patch was created that would take numerical values as an input, controlling the speed of a vibrator through the SeXBox. This project made it easy for musicians to easily add a haptic element to their creation and performance process.

As an HCI Research Tool

One of the major considerations in the new realm of sexually interactive games is the issue of user interaction with the game interface during times of lessened attention or possibly involuntary muscle response. If a user is presented with a physically intense situation, how should a GUI change and accommodate the state the user is in the keep the game playable? The ideas inherent to Fitt's Law still apply, but with new considerations due to the user's state of mind and being. Software that makes

interaction difficult at these times will not only annoy users, it will drive away new customers who are worried about the idea of using this software in the first place. The SeXBox is one of the tools being used as a test device to see how users will react when experiencing with a physically stimulating situation outside of normal handheld haptics. This research will hopefully lead to graphical interfaces that are instantly comfortable to users who are worried about the usability of a new, intimate machine driven environment.

Resources

- Kyle Machulis, "DIY Teledildonics Projects", http://www.slashdong.org/content/projects/diy_sex_toys_and_teledildonics/
- Kyle Machulis, "Sex and Second Life", http://www.slashdong.org/content/projects/freesex_network/sex_and_sl.php
- Kyle Machulis, "Beepsex: Trancevibrator Patch for Max/MSP", http://www.slashdong.org/content/projects/beepsex/beepsex_trancev.php
- Simulate, <http://www.simulate.com>
- Second Life, <http://www.secondlife.com/>
- Highjoy, <http://www.highjoy.com>

About Nonpolynomial Labs/Kyle Machulis

Nonpolynomial Labs is the network/company behind the projects and blogs of Kyle Machulis, also known as qDot. A graduate of the University of Oklahoma with a degree in Computer Science currently working as a robotics engineer, Kyle started Nonpolynomial Labs to house his personal projects in immersive environment and alternative input research. Going by the mantra, "As free as possible", he works to create immersion in video games and virtual worlds through the absolute cheapest, easiest means possible, with the goal of proving that simple user interface additions to a very complex computer-generated world can create new kinds of emergent play and interaction.

Kyle is also researcher in the realm of sex technology. Through his [Slashdong](#) webpage, he uses the topic of teledildonics (remotely actuated sexual experience) to teach the basic concepts of electrical and mechanical engineering. He also tracks the convergence of sex and technological advances in toys and interaction. A renowned writer in the field of sex in Video Games, he is on the leadership council of the [IGDA Sex In Games Special Interest Group](#), a gathering of game developers, academics, and players interested in discussing the role of sex in interactive entertainment. His [MMOrgy Project](#) keeps the game developer/player community updated on the intimate happenings of the Massively Multiplayer Online Gaming world, where emergent sex (intimate encounters not originally planned as part of the game/world by developers) has become a hot topic and oft-seen event. He is slated to speak on the subject at the Game Developers Conference, South by Southwest Interactive, and other conferences over the coming months.