Solar Pink Pong: Street Video Game

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Abstract

Solar Pink Pong is an art installation that translates a video game into the physical space of the street. In this installation, a computer controlled color mirror reflects sunlight to the asphalt in the form of a neon pink spot. Through motion sensing technology, pedestrians can interact with the animated circle of sunlight. They can kick it with their feet or hit it with the shadows of their hands. They can volley it back and forth with a partner or bounce it off a boundary such as a curb or road marking. The device that makes this game possible works autonomously and completely off the grid. It can be mounted on utility poles or building sides. *Solar Pink Pong* aims at pushing the boundaries of video game culture and technology outside of the living room changing the way humans interact with outdoor environments and see daylight through the lens of technology. Video documentation of this work is available at: https://vimeo.com/111312495

Author Keywords

Interactive Art; Street Video Game; Motion Capture; Augmented Reality; Autonomous Machine; Solar Power
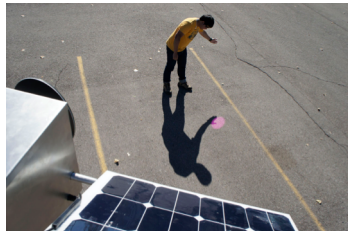
ACM Classification Keywords

H.5.1 [Multimedia Information Systems]: Artificial, augmented, and virtual realities; H.5.2 [User Interfaces]: Interaction styles; I.2.1 [Applications and Expert Systems]: Games

Figure 1. Autonomous, solar-powered device with computer controlled color mirror mounted on utility pole.

Figure 2. Player of this game can interact with the animated pink sunlight reflection on the street using their bodies and shadows.

Street Video Game

We are physical beings and for most part of human history we have played outdoors in bright daylight. Yet, many of our most popular games today are limited to screens and the dimmed light conditions of the living room.

The idea of *Solar Pink Pong* is to take a street and transform it in bright daylight into an interactive immersive environment. In this environment, pedestrians can play video games as physical beings unencumbered by screens or controller. Free from input devices and exposed to sunlight, players find both their bodies and shadows present in the game. The computer-generated graphic of the game – an animated pink circle of sunlight – coincides with the built and natural environment. Unlike the steady light of a screen or video projector, it is the ephemeral nature of daylight [1] that defines the quality of this street video game. I fact, the game's dependency on sunlight counters homo ludens' disconnect from outdoor environments – a disconnect that in the video game world is also known as "the battle of the living room". With the playtime fully determined by the course and availability of the sun, *Solar Pink Pong* shares the transient character of a natural phenomenon that can't simply be controlled by an on-off switch.

Solar Pink Pong references one of the first mainstream video games *Pong* [2] and builds on Myron Krueger's early artificial reality concept *Videoplace* [3]. It manipulates sunlight with a custom designed dichroic mirror that makes sunlight almost magically appear as a colorful spot on the street like an animated pixel on a screen. However, this game is not supposed to end at the boundaries of a screen as we know it. It explores the aesthetic dimension of play and augmented reality in bright daylight without the use of a *Goggle Glass*.

Technical Description

Two servomotors mounted inside a weatherproof box control the moving mirror through a push-pull mechanism. A geared stepper motor turns the box towards the sun for solar panels' best performance. A color camera with wide-angle lens is installed below the mirror. All control software is built on ROS, an open-source robot operating system. A computer vision module processes video stream from camera to distinguish humans and shadows from background. A pong game module sends desired sun spot position to mirror control module. Using position and time from GPS module on top of the box, the module can calculate current sun position with very high accuracy and then sends commands to servomotors. The system is equipped with a 3G modem to allow users to monitor its status and watch live gameplay over the Internet. For the web interface see: www.solarpinkpong.com

References

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[3]   Krueger, M. Videoplace. http://90.146.8.18/en/archives/center_projekt_ausgabe.asp?iProjectID=11224 ACCESSED ON 10-17-2014.

Acknowledgments