Navigating Web Content with an Exertion Interface

Andrea Taylor

Senior Research Associate

Distance Lab

Forres, Scotland

UK

andrea@distancelab.org

Abstract

In this position paper, I describe the interface design of an inflation fetish website that is navigated using a customized input device. Although not as physically exhausting as other exertion interfaces, such as *Breakout for Two* [4] and *Dance Dance Revolution* [2], the primary goal of encouraging body movement and positively supporting the user experience is the same.

ACM Classification Keywords

H5.2. Information interfaces and presentation (e.g., HCI): User Interfaces.

Position Statement

Predominantly, we use a mouse and button presses to control how we interact with information on a computer screen. The mouse is ubiquitous because it turned out to be the device that was the easiest to use for pointing and clicking on a display [3].

I am interested in alternative input devices which have a physical form more tightly coupled to the information interface and presentation. Such controllers may not be as easy to use or as efficient, or may be designed for a single specific purpose, but they can give us a greater sense of satisfaction and involvement.

For example, Nintendo's *Wii Remote* is a controller that uses accelerometers and infrared detection to sense its position in 3D space [5]. This design allows users to control games using physical gestures, such as swinging a tennis racket, as well as traditional button presses. The increased physical movement provides thrills and leads to a more natural and engaging interaction.

Jeffrey Shaw's digital art installation *The Legible City*, allows visitors to navigate a virtual and typographic city by riding a stationary bicycle [6]. A direct connection is established between a cyclist's physical actions and the screen display by allowing people to control the speed and direction of navigation by using the bicycle's pedals and handlebar.

Design Prototype Example

Latex Internet Pump (2002)
People with an inflation fetish find anything that can be inflated erotic – the arousing qualities include growth, expansion, pressure, and tension.

This project is an inflation fetish website navigated using a foot pump in place of the mouse. Movement – compression/expansion – is detected using an infrared emitter and detector sensor attached to the top and bottom of the pump.

The homepage is conceived as an expandable display that can be stretched – inflated – to reveal nested information (subpages). A comparable structure is a concertina where an entire text is contained on a single sheet of folded paper. The user navigates the website by selecting an object, such as the hypertext link to the Art Gallery or a thumbnail image, and pumping. The range and speed of a user's pumping action is matched

to the extent and speed a webpage/object is made fully viewable (inflated). Pages will slowly deflate if no user input is detected.

Figure 1: The homepage and art gallery. Rubber-like qualities erotic to the inflation fetishist – growth, expansion, pressure, and tension – are invested in the design of the website. Physical exertion is required to move between pages, as elements are stretched and compressed.

The fetish content is not of central importance to this piece, but needs to be (and is) treated with care and in depth in order to illustrate an alternative approach to navigating web content. As such, the material is presented in the visual style of existing sites without personal comment.

Conclusion

Latex Internet Pump was exhibited at the Royal College of Art Summer Show 2002. A way to select objects had not yet been built, and so visitors were not able to freely navigate the website. They could, however, experience a pre-set path, and feedback was positive. No formal evaluation was carried out.

I find the research area of interfaces which require physical effort from the user highly engaging. I would appreciate the opportunity to discuss design and evaluation approaches and frameworks, such as that of Benford *et al* [1], with others building Exertion Interfaces.

Acknowledgements

References

[1] Benford S., Schnadelbach H., Koleva B., Gaver B., Schmidt A., Boucher A., Steed A., Anastasi R., Greenhalgh C., Rodden T. and Gellersen H. Sensible, Sensable and Desirable: a Framework for Designing Physical Interfaces, Technical Report Equator-03-003, Equator, February 2003.

[2] Dance, Dance Revolution. http://en.wikipedia.org/wiki/Dance_Dance_Revolution

[3] Moggridge, B. *Designing Interactions*. The MIT Press, Cambridge, Massachusetts, 2007.

[4] Mueller F., Agamanolis S., Picard R. Exertion Interfaces: Sports over a Distance for Social Bonding and Fun, CHI '03, ACM Press.

[5] Nintendo Wii. http://wii.nintendo.com/

[6] Paul, C. *Digital Art*. Thames & Hudson Ltd, London, UK, 2003.