

Ball Of Secrets

Ben Margines¹, Raunaq Gupta², Yoram Chisik²

¹HCII, Carnegie Mellon University, Pittsburgh, PA, USA
benjamin.margins@gmail.com

²M-ITI, University of Madeira, Funchal, Portugal
{raunaq.rg, ychisik}@gmail.com

Abstract. With this creative showcase titled the Ball of Secrets, we demonstrate an interactive prototype consisting of a unique user interface with an emphasis on pure play. Through this prototype we created a device that encourages playfulness and explore sharing and communication via anonymous message posting.

In this paper we describe the concept and the technology used to create the interface in order to evoke the necessary user experience.

Keywords. Design, Experimentation, Human Factors, Natural tangible interfaces

1 Introduction

Play is a form of exploration. While playing a player explores the range of possibilities made possible by a toy, token or controller within a set of constraints.

Within the context of games the “toy” is an element of the gameplay (in football a ball is kicked around towards a goal post) and the explorations are goal oriented, governed by a set of rules, bounded by the dimensions of the board or the playing field and driven by an element of competition.

In pure play situations, that is play that takes place for its own rewards with no specific goal in mind the toy is the object of play and the explorations are driven by curiosity and are only bounded by the imagination of the player and the constraints of the physical and social environment. For example, bouncing a ball around allows the player to coax the ball to reveal its secrets, e.g. how bouncy it is while learning about his own strength (how far can I throw the ball), the environment (will the ball bounce higher from a concrete floor or from a grass field?), and the limits of social acceptability (bouncing a ball where or when you are not supposed to).

Digital artifacts are on the whole far less amenable to this type of playful exploration as their digital innards reveal little about their contents and capabilities and their interfaces are often designed with a specific set of aims and an exact set of instructions. The Ball of Secrets is a digital device designed to encourage pure play exploration. Using the familiar and highly tangible shape of a ball and a set of buttons wired to a fast acting audio board, the Ball of Secrets offers a myriad set of opportunities

through which the player can explore the physical shape and digital functionality of the ball itself and the secrets in the form of audio recordings that lie within it.

Our aim in designing the Ball of Secrets is twofold. First, we want to understand how people interact with the device given its form, functionality and lack of an explicit purpose or instruction. Second, we want to see whether people would use the “secret” nature of the ball as a communication medium or leaving messages and personal details which they might not share otherwise, similar to a digital version of PostSecret.com[2].

We wish to explore the effect of setting and context on the ways in which people will interact with the Ball of Secrets. By placing it in different environments such as shopping malls, schools, conference halls and old age homes, etc., the Ball of Secrets may take on different interactions and forms of use; it may be a communication device of the future, an avenue to share stories, disclose secret crushes, or just be an ambiguous and fun device. We hope to observe the ways in which context, environment, personality and society impact and encourage play and exploration.

2 Concept

The Ball of Secrets provides a tangible user interface with memory capabilities to store audio clips. The prototype is a spherical shaped ball close to the size of a standard bowling ball. It has two rows of buttons equally aligned across its surface in the pattern of fingers which are gripping the ball. As the ball is held, subtle holes cover a microphone facing the player. A speaker positioned on the bottom of the ball is similarly obscured. There are no other visible markings on the surface.

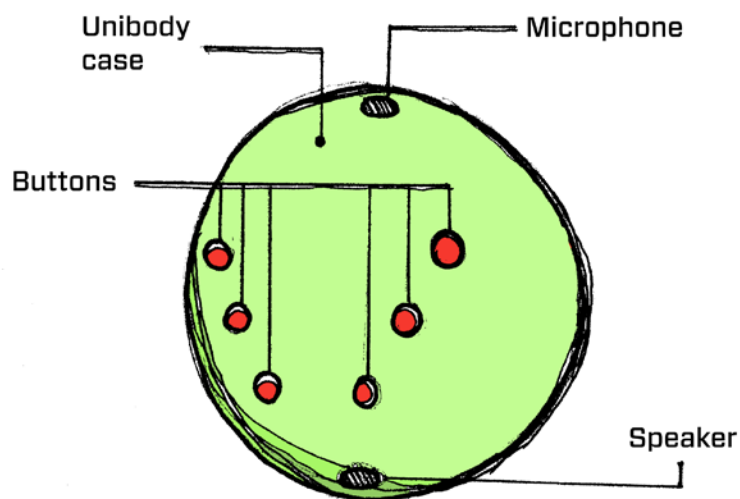


Fig. 1. Components of the prototype

The ball has the ability to store a 10 second audio clip for each combination of buttons that is pressed. As the user holds the sphere in his hands, his fingers can press any combination of the buttons. If there is no audio file stored for a particular combination of buttons, the microphone activates and displays its status with a red LED. This audio clip termed a “secret” can only be heard on pressing the same combination of buttons. With six buttons in the initial prototype, the total number of combinations which can be stored is 63.

3 Implementation

3.1 Hardware

The Ball of Secrets was built using an Arduino Uno microcontroller[3] together with an audio wave shield[4], using a SD memory card to store the audio recordings. The wave shield takes input from an electret microphone, and outputs to a small speaker mounted on the bottom of the sphere. The Arduino is also connected to six pushbutton switches, both for powering an internal LED within each switch and for receiving input.



Fig. 2. Photograph of the prototype in use

3.2 Software

The Ball of Secrets primarily uses an adaptation of the already developed WaveRP library[5]. When activated, the Arduino is constantly reading and debouncing the digital input coming from each pushbutton. Each pushbutton is assigned to one of the following values: 1, 2, 4, 8, 16, 32. As the Arduino passes through the debouncing code, it sums the values of the pressed switches, which will be unique for that combination. It then passes that integer to the WaveRP library to search for a track at that index, and, if it does not find one, the recording function is triggered. After an audio file is played or recorded, the Ball of Secrets returns to its default state afterward.

4 At the Conference

As the ball was designed to be primarily used amongst a gathering of people, we see the creative showcase section of the conference as an ideal place to observe how the conference-goers will interact with the device. We propose to display the ball with minimal supervision and ready to be explored by curious attendees. It will be placed with instructions to use it and will not be supervised to encourage creative interaction and reduce discussion about the ball itself. This will help us observe how people approach the ball, learn about its functions and then use it as per an implicit understanding that they arrive at. To aid in providing context to first-time users the ball will also be pre-loaded with messages for certain combination of buttons.

5 References

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