Single Button Interaction Technique Patterns Applied to Digital Game Design

Felipe Breyer       Judith Kelner       Eduardo S. Albuquerque*       Luis Vasconcelos**

UFPE, Centro de Informática, Brazil       *UFG, Instituto de Informática, Brazil       **UFPE, dDesign, Brazil

ABSTRACT

This paper investigates how interaction design can be applied to the design of digital games, more specifically, to the player controls scheme definition and user experience. To achieve this objective, this work studies three methods of knowledge formalization, ontologies, tropes and patterns, and as a case study the digital button was chosen as the interaction device to be researched. Initially, a set of games was observed through the inductive research method in order to define analysis parameters that enabled modeling user interaction with the game. Thus, we extend the pattern library of game design, creating a set of interaction technique patterns applied to the button device.

Keywords: Patterns, interaction, technique, games, button

Author’s contact:
{fbb3, jk}@cin.ufpe.br
*eduardo@inf.ufg.br
**lalv4401@gmail.com

1. Introduction

The role of the game designer is to create ludic experiences for their audience through the games he or she conceives. Games are not relevant unless they are played and the players have a good experience during the game [Schell, 2008]. The player experience, in turn, is unique and non-transferable and, although the game designer indirectly designs them, he must have tools to guide the players during their journeys. Interaction design is the border between the game and the player, i.e. the border where the designer can approach the audience, and this is where the efforts of this research are focused.

One of the differences between production software and digital games is that software should reduce the workload of the user while games should make it more difficult over time to maintain player interest [Lazzaro and Keeker, 2004]. Therefore, the game designer can explore interaction possibilities that would be unacceptable in the context of production software. More specifically, the aim of this paper is to identify these unconventional forms of interaction to provide greater consistency in the designer choices during the conception phase of the game design.

The remaining sections of this paper are outlined as follows. Section 2 briefly describes the concept of interaction techniques and classification of interaction devices. Section 3 analyzes the ways of classifying formal elements that will structure the results to be obtained in the research. Section 4 discusses the current status of pattern languages usage applied to the design of digital games. Section 5 explains the object of study and the methodology applied in the experiment. The patterns proposed in this article are described in section 6. Section 7 contains the main conclusions and discusses future work to be carried out to extend this analysis.

2. Interaction Techniques and Interaction Devices Classification

Hinckley, Jacob and Ware [2007] define interaction techniques as a way to use a particular interaction device to perform a generic task interaction. For example, the pop-up menu is an interaction technique to allow the user to select a specific command from a small set. This action is accomplished through interaction devices that are peripheral to the computer, and allow user interaction, such as mouse and monitor. In an atomic way, an Interaction Task is the user-supplied primitive input at the lowest level, such as choosing a command or typing a line of text.

According to Breyer et al [2008] we can classify the interaction devices according to twelve senses: touch, life, movement, balance, smell, taste, vision, warmth, hearing, sense of language or word, thought, and ego. This article is restricted on the tactile input devices, a category that includes devices that are common to most computers, such as keyboards.

A digital signal is the smallest amount of information a user can send to a system and the simplest device used to trigger the transmission is the button. There are devices that provide different amounts and combinations of buttons from the QWERTY keyboard to a variety of joysticks for video games.

The main features observed in continuous inputs are the type of measurement, the type of movement, the...