
Designing Digital Vertigo Games

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Abstract

This document presents a summary of my doctoral research as an application for the DIS 2016 Doctoral Consortium. My work investigates the design of digital vertigo games, exploring what type of games constitute vertigo games and how we, as designers, can develop digital games of vertigo.

Author Keywords

Vertigo; play; research through design; galvanic vestibular stimulation; hci

ACM Classification Keywords

H.5.m [Information interfaces and presentation (e.g., HCI)]:
Miscellaneous

PhD Stage

I am a PhD researcher with a background in Computer Science and Human Computer Interaction. I have recently entered my third year of a three year PhD program in the Exertion Games Lab offered by the School of Media and Communication at RMIT University, Melbourne, Australia.

Research Summary

My research topic explores the design of digital games of “vertigo”, and leans on the teachings of Roger Caillois [4], who describes games of vertigo as: “an attempt to momen-



Figure 1: Inner Disturbance



Figure 2: Balance Ninja

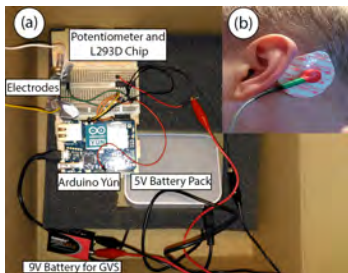


Figure 3: (a) GVS Circuit and (b) electrode placement.

tarily destroy the stability of perception and inflict a kind of voluptuous panic on an otherwise lucid mind". Scholars, such as Kenyon [6] have expanded on Caillois work, explaining how "man has always been attracted to activities in which he is unable to maintain complete control of his body or his immediate environment". Despite people's attraction to the pursuit of vertigo with activities such as rock climbing, skiing and dancing, little seems to have been investigated regarding digital vertigo games. As game scholar Bateman notes "very little has been written about the ilinx [vertigo] of videogames, despite the fact it is an increasingly potent force in popular games" [1]. Therefore, despite vertigo being explored in some digital games, a structured understanding of how to design digital vertigo games appears to be lacking, and thus, my primary research question I explore in my thesis is: *how do we design digital vertigo games?*

Case Studies

Following a Research through Design approach [7], I have so far created two games that explore my research question: *Inner Disturbance* and *Balance Ninja*, and also reported on findings from an exploratory design workshop based on my research topic [3]. Both games were well received by players and provided both research and design insights. Both games use a Galvanic Vestibular Stimulation (GVS) system (figure 3a). GVS is a simple and safe system [5] which affects an individual's balance through the stimulation of the vestibular system, through electrodes placed on the mastoid bones behind the ears (figure 3b). In the first, single-player game, players stand on one leg and try to maintain their balance whilst a pre-programmed GVS pattern alternates from the left to right trying to rock the player in order to make them lose the game by placing their foot back on the floor. In the second, two-player game, player 1 controls the GVS of player 2 (and vice versa) and both play-

ers stand on a balance beam. When one player leans, the balance of the other player is affected and the object of the game is to knock the other player off the beam.

A thematic analysis [2] of data gathered during the games has allowed me to derive several recurring design themes and associated design strategies for use by designers of digital vertigo games. My next steps are to create a third game based on the previous findings and to then collate the results into a structured design framework for use by digital game designers for either primarily entertainment or commercial purposes. Secondly, designers could also use the framework to create games that challenge players to learn about their own bodily limitations.

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