WAYLA – Novel Gaming Experience through Unique Gaze Interaction

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1. Introduction

An eye tracker is a device that tracks a user's eye gaze when interacting with external world. It has mostly been used as a tool for psychology or market research to provide insights of users' viewing behaviors. Few attempts have been made to integrate eye trackers into video games. However, eye trackers were simply treated as alternative input devices to a mouse or a joystick. Eye gaze based interaction for gaming has the potential to offer experiences which are not available through other interaction mechanisms. *WAYLA* is an original game designed to achieve this purpose.

2. About WAYLA

The story of *WAYLA*, in a sense, is created directly as a result of the eye-tracking technology. The game happens in an imaginary world inside a computer, where creatures called *Ibaus* live and perform the jobs of various computer components in order to support a Skype video chat for a real life couple in a long distance relationship. The *Ibaus* always work with their partners to accomplish their tasks. Like real life couples, they argue with each other sometimes. When *Ibaus* argue, their productivity decreases; as a result, the quality of Skype video chat diminishes. In the game, player takes the role of *Ohlo*, a flying eyeball, who is the angel in the imaginary world. *Ohlo* has the power to harmonize relationships by looking at troubled *Ibaus* couples. With the help from the eye-tracker, players obtain the magical healing power of *Ohlo*. The relationship between troubled *Ibaus* couple recovers when the player visually attends them.

3. Playing with Your Eyes

The nature of eye movement behaviors pose unique and interesting challenges, which do not happen to other traditional input devices. For example, it is difficult to determine whether a player wants to act on or just to see a target on the screen, hence, the 'Midas Touch' effect. When any visual changes in the periphery, a rapid eye movement to the stimuli called reflexive saccade will be triggered automatically, which may disrupt the game play. A straightforward port of an existing game with traditional input device to an eye-tracker with the same game mechanics will encounter such two issues among many others. *WAYLA* takes eye movements behaviors into consideration, and utilizes them as part of game design. Players need to continuously look at and switch among multiple targets, as well as to avoid distractors in order to finish the game. This design allows us to create an interesting and novel game play experience that is markedly different from any other eye tracking games that we have seen.

4. Developing with New Technology in Mind

WAYLA is a game created and designed from the beginning as an eye tracker only game. Not only interactions and game mechanics are unique to eye tracking technique. Other aspects of the game design, such as narrative and characters, are also integrated cohesively with the technology. The characters in *WAYLA* are all eyeballs. Besides the superficial connection with eye tracking, it is a way to subtly immerse a player into the game by casting him/her in the role of the angel *Ohlo*, who is also an eyeball. The theme of connecting relationship with eyes is prevalent throughout the game; not only do the player have to fix characters in relationship troubles through eye gaze, the action also helps a real life couple outside the computer communicating and maintaining their long-distance relationship. *WAYLA* is not simply a proof-of-concept of eye tracking applications in video games. It is a game created following a rigorous development process, including steps all the way from pre-production to user testing. We conducted two public playtests, as well as many internal user tests. The game received many praises not only as being innovative use of the technology, but also being an enjoyable game overall.

5. Future of Eye Tracking in Gaming

As companies, such as Tobii Technology, releasing affordable eye trackers, this technology begins to step outside of laboratories and universities, and into the market. With Tobii's REX, a small USB peripheral for Windows 8, eye tracking has become one of the emerging technologies of the future. As eye tracking becomes more prevalent, the design and development with regard to eye gaze based interactions will also become more important. *WAYLA* is a game on the forefront of utilizing this new technology, and there will be many valuable knowledge and lessons to be gleamed from the creation of this game.

Figure 1. *User shift their gaze as needed between the interaction points while avoid being distracted by other visuals.*