EYE TRACKING RESEARCH

Video Game User Experience

Customers
User Vision
Microsoft Kinect

Objectives
Understand how easy the gesture control interaction system of the Microsoft Kinect add-on for the Xbox is. Understand how easy a game is to set up and play. Understand how gameplay relates to satisfaction with the Kinect system.

Tools & methods
Tobii Glasses Eye Tracker was used in a twelve-participant exploratory study with eye tracking and questionnaires. Tobii Studio was used for eye tracking data analysis and SPSS was used to test statistical correlations.

Results
The Kinect system is easy to use and intuitive, with the key movement gestures well understood. However, gameplay itself was confusing with poor interpretation of the instruction screen, errors made in launching the game and a failure to understand key in-game instructional messages that were presented.

Eye tracking the gameplay experience highlights opportunities for game designers

Eye tracking was used to explore the in-game experience for players using the motion control console add-on Kinect. The study identified a number of vital issues, in particular, poorly communicated instructions and poor gameplay experience, leading to dissatisfaction with the game and the console itself.

Background

Kinect is part of the motion control generation of video gaming. A motion sensing input device by Microsoft for the Xbox 360 game console, Kinect enables players to interact with the game through movement to create a very authentic game experience.

Objectives

The overall objective of the study was to better understand how easy it is to use Kinect's gesture control system for those unfamiliar with it and how easy games are to play. Testing with eye tracking was particularly important to see whether the instructions displayed on screen were seen and to determine how to better display in-game help.

The study

Of the 12 participants recruited for this explanatory test, none were regular gamers and all but one had no experience of using Kinect. Testing took place at Edinburgh Napier University, where Tobii Glasses were used to collect gaze data in front of the Xbox and Kinect setup.

The task was structured to replicate how a new user would try out the console. Users were asked to set up and play Reflex Ridge, one of the mini-games within the Kinect Adventures game. They were then left to select and play the game without any further interruption from the test leader.

At the end of the test session, scores were recorded and a user satisfaction questionnaire completed.

Analysis of the eye tracking data was performed using Tobii Studio and the results of the questionnaire were analyzed in SPSS to identify data correlation.

Image of the test set-up, with Xbox 360, Kinect and a player wearing the Tobii Glasses.

Conclusions

The study identified that the basic gesture control system employed by Kinect is intuitive and easy to use. However, playing the game itself was confusing at several key points.

Critically, there was no introduction to the instruction screen and several gamers mistook it for the start of the game. They began to copy the movements of the on-screen avatar. Eye tracking data showed that several gamers were not paying attention to the game instructions which caused them significant problems once the game actually got underway.

To launch the game, gamers had been instructed to hold their hands out in front of them, grab hold of the virtual bars and pull back sharply. As few had seen the instructions, players did not know what to do.

"The eye tracking glasses gave us real insights into how people interact with the game, what works and what doesn't. Eye tracking is an important tool for designers and should be used to improve communication and interaction with players."

Simon Duke, Senior User Experience Consultant, User Vision

About User Vision

Web: www.uservision.co.uk
Location: UK
Industry: User experience consultant

User Vision are a leading user experience consultancy providing services throughout the UK, Europe and the Middle East. As a consultancy dedicated to improving the user experience of websites, software or products, User Vision ranges from consulting, usability testing, user experience evaluations and training to testing product ease of use.

The instruction "Grab bars" was repeated at the top of the screen, but as the image below shows, few understood what to do.

Gaze path showing how one player looked between the avatar and the instruction sixteen times before starting the game accidentally.

The eye tracking technology made it clear that although the message was being seen, it was not well understood by players and was adding to their confusion, rather than coming to their aid.

Eye tracking also highlighted the mixed success of in-game instructions, designed to help the player's performance. For example, one in-game message reminded users to "Jump for Speed" but this was largely ignored. Few players saw the message and those who did notice it did not act upon it. However, a warning message was also displayed, reminding players to "Move Backward" to maintain a position in which their movements could be recorded by Kinect's camera. This was more successful, probably because it was displayed in a red triangle, a symbol often associated with a warning.

Finally, the higher the score a player achieved in the game, the more likely they were to think that the Kinect system was easy to use, while those who scored poorly reported lower satisfaction, not only with the game, but with the Kinect console as a whole.

"This reveals some interesting insights for game designers. A game needs to be easy to learn to provide a satisfactory experience for novice users, particularly on consoles like Kinect and Wii which are targeted to a mass market, not hardcore gamers. Improving in-game communication with players is important and to do this it is crucial to understand which messages are ignored or misunderstood. Eye tracking these console games during development could help to answer these critical questions and improve the gameplay experience," says Simon Duke, Senior User Experience Consultant, User Vision

Why Eye Tracking?

"Striking a balance between making a game fun and easy to learn, while also being challenging and difficult to master is extremely difficult. The placement, size and frequency of in-game help are crucial factors to aid game players. These are even more important if the system itself is new – as the gesture control interactions of the Kinect are for many players. The eye tracking glasses were the perfect tool for us to identify the issues in gameplay and refine their design and positioning. The gaze trails in particular were of great value to us," says Simon Duke.

"Especially for highly dynamic and visually rich interfaces such as gaming, eye tracking provides valuable information and analysis that would not be possible otherwise. Gaming has the added challenge of needing to provide important information especially for those still learning to play, while still maintaining the flow and fun of the game," says Chris Rourke, Managing Director, User Vision.

Why Tobii?

"Tobii's new eye tracking glasses have allowed us to eye track the Kinect system in a way that would not have been easy to achieve without them. The glasses were easy to set up, calibration was a simple process and users barely noticed they were wearing them, even while jumping around avoiding obstacles in the game," says Simon Duke, Senior User Experience Consultant, User Vision.

To find out how eye tracking can improve your business, please visit www.tobii.com or contact one of our offices.

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