Alternative Design #1

Integrated Virtual Reality and Head Movement Tracking System

TEAM #7

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Alternative Design 1

Our first design is a gaming system inspired mechanism that utilizes the TrackIR 5, which is a premium head tracking device that is used as an addition for gaming. The device sets the user’s head up to a screen which immerses the user completely and allows them to link their head movement in the game to their actual head movement in space. The view is three dimensional for the user. The system can be used for the computer, so it is also an addition to a computer device. This system is unique because it gives the user “6 degrees of freedom”. The head is able to move in 6 different directions and the TrackerIR can support all of them, making it unique to other tracking devices. Figure one, shown below, is an image of the TrackerIR.

Figure 1: TrackerIR System

This system is perfect for the head tracking and is ideal because it already has a screen built in, which will be used to display the eye movement tests. The device will be connected to a portable computer that has the visual stimuli tests installed on it, and instead of showing a game on the screen the user will see the eye tests. The head tracker will very accurately track the head
movements of the user as their eyes follow the test. This design will allow the user to very easily track the head in all directions with minimal discomfort.

In addition to the eye and head tracking device, the auditory system will be installed on the TrackerIR. The auditory stimuli tests will incorporate several small speakers, commonly used in cells phones and other hand held devices. The speakers will be set up to range 20 degrees in every direction, so the patient will not have to move their head to follow the stimuli. A sound will cascade in some fashion across the speakers and the patient will need to follow the sound with their eyes. The speakers are small so multiple speakers will be set up to allow the sound to come from relatively distinct places. This design for the speakers will hopefully allow the user to gather an accurate diagnosis of their condition in addition to the eye movement test.