Literature Review

The key goal of this project is to measure the influence VR has on the perceptions of reality. Emulating motion within a virtual domain is one way of doing this. Visually induced motion is suggested to significantly enhance self-motion perception within VR (Riecke, 2015). However, Brendan Walker’s creation ‘Oscillate’ suggests otherwise. Essentially, oscillate is a real swing with simulated visuals (Vans, 2015). In adopting the swing idea and using real world motion within a virtual environment, a comparison can be made between swinging in a real and virtual domain. By altering factors within the virtual domain, for example environmental height, it can be seen whether the virtual environment can influence perceptions of increased motion. In contrast, the antithesis of visually induced motion of where the user swings but has a still visual field could produce results, which indicate perceptions of decreased, or no motion. For example, the user sensing stationary motion; whilst slowly swinging in real space.

In order to enhance ‘real locomotion within virtual environment’, research suggests an intense sense of presence may be required via body affordances (Tuchet, 2015). Therefore, the integration of hand tracking may aid in to influencing a user’s perception when altering of the virtual world. In conjunction with this, auditory input of a participant's anthropomorphic appearance could also play a key part in simulating presence and influencing a users sensory perception of an environment.

Creating a sensation of direction is another way of influencing the perception of reality. Grechkin suggests a rotate and walk technique. In his study, if a user is attempting to reach an out of bounds target ‘t’ the user is then prompted to go to a sub target ‘I’. As they walk to ‘I’ the world rotates to encompass the ‘t’ again (Grechkin, 2015). The study deceives a user’s ‘visual’ sensory information to create a feeling of increased virtual space. By incorporating this technique of world rotation, one could evaluate the extent to which a user goes off track in a real domain when following a track in virtual space. Inaccurate trailing of the real world track would suggest VR’s high influence on a users perception of reality. Use of this technique could also be used to address the navigational limitations within VR.

Research indicates little change in the performance of simple activities in real and virtual environments (Heydariana, 2015). Activities include reading speed and object identification. In terms of the project, it would be interesting to measure how a slight alteration of a user perception in a virtual domain would impact performance in the virtual domain.

in performance of office space activities in both real and virtual environments. Activities include Even with increased complexity over distance estimation, results indicate differences in performance to be non-significant ().

This also suggests the future capabilities of VR for rehabilitation, skill training and performance testing.

References

Bernhard E. Riecke; Jacob B. Freiberg; Timofey Y. Grechkin. (2015). Can walking motions improve visually induced rotational self-motion illusions in virtual reality? . *Journal Of Vision*. 15 (3), 3.

Katy Vans. (2015). *Playing mindgames in a neuroscience, art and tech vision of the future.* Available: https://www.theguardian.com/technology/blog/2015/jun/18/playing-mindgames-in-a-neuroscience-art-and-tech-vision-of-the-future. Last accessed 20th Oct 2016.

Luca Turchet. (2015). Designing presence for real locomotion in immersive virtual environments: an affordance-based experiential approach. *Virtual Reality*. 19 (1), 277-290.

Grechkin, T.; Azmandian, M.; Bolas, M.; Suma, E. (2015). Towards context-sensitive reorientation for real walking in virtual reality. *Virtual Reality (VR)*. - (-), 185 - 186.

Arsalan Heydariana, Joao P. Carneiroa, David Gerbera, Burcin Becerik-Gerbera, Timothy Hayesc, Wendy Wood. (2015). Immersive virtual environments versus physical built environments: A benchmarking study for building design and user-built environment explorations. *Automation in Construction*. 54 (-), 116-126.

The Gantt chart below was created in Microsoft Project. Figure 1 contains each parent and child task. Rows highlighted in red are point in which project engagement is halted. Figure 2 Displays the chart itself. The chart only features parent tasks due their high number of nested child tasks.

Figure 3 displays a milestone table, which indicates the expected output of, contain at the end of certain parent tasks.

Questions

Is this good ?

Do I have to list the papers above each paragraph or just leave it to the references and citations?

Cant find a paper for Brendan Walker just website information what do I do?

Reorientaion

http://ieeexplore.ieee.org.proxy.library.lincoln.ac.uk/xpls/icp.jsp?arnumber=7223357

Brenden

<https://www.jisc.ac.uk/news/brendan-walker-licence-to-thrill-15-mar-2016>

New orientation

<https://core.ac.uk/download/pdf/12176156.pdf>

Affordances

http://link.springer.com.proxy.library.lincoln.ac.uk/article/10.1007%2Fs10055-015-0267-3

Moving environment

http://jov.arvojournals.org/article.aspx?articleid=2213267