Exploring the differences in performance between gamers and non-gamers when completing everyday tasks viewed from a third person perspective

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1   Introduction

The text in this will contain the following:

- What have I done?
- Why did I do it?
- The background to the subject
- What is new in this study

Purpose To investigate if there is a measurable difference in performance between people whom have played games and people whom have not.

Motivation There is often talk about what negative side-effects of playing video games, especially violent ones. My study investigates one of the possible *positive* side-effects.

Contents A thural investigation of if there is a side-effect of playing video games viewed in third-person or not.

Resources The study has been completed using a custom-made rig consisting of a camera, video goggles, carbon fiber booms, 3D-printed parts, batteries and cables. References to earlier work will also be used.

2   Method

Studies prior to this one have been done on the differences between gamers and non-gamers, such as [7], but none using hardware to simulate the third-person view experienced in games (see Figure 1) in real life. In the following section we will demonstrate our method and the tasks needed to concretise credible results.

This section should also contain the following:

- Give an overview/introduction over/to how this study was completed
  - What kind of tasks
  - Rig design
  - Task design

- • Performance benchmarking
- – References to earlier works
- – Description about things to take into account
- – Explaining the form every participant has to fill in

2.1   Survey Design

This section will describe the function and the design of the survey that the test subjects need to fill in prior to the experiment. The survey should include questions about:

- – Name
- – Age
- – Gender
- – Hours per week spent playing games
- – If the subject considers itself a gamer or not
- – What types of games the subject plays

2.2   Task Design

In order for to get the required measurements with high credibility the tasks performed by the test subjects needed to be carefully planed, prepared and executed. To get as wide spread results as possible a few different types of tasks had to be completed by the test subjects:

Ball Control Test The test subject rolls a ball and hits a target in order for it to successfully complete the task. Number of tries required will be noted.

Balance Test The test subject will have to walk on a thin straight line placed flat on the ground for as far or as long as it can. Number of seconds and distance will be noted.

Precision Test The test subject walks forward facing thorough a preplanned course on flat ground marked with cones as fast and precise as possible. This task is then repeated, but backwards facing. Number of errors and time will be noted

Task 4 *Might add one or two more...*

2.3   Rig Design

In order to see the difference in performance a rig was constructed to produce a game-like third person view, see Figure 1. The test-rig consists of three major parts:

1. **Video Camera**: Constantly recording the test subject and generating a live stream.
2. **Mount**: Which the camera is mounted upon in order to get the correct angle.
3. **Video Glasses**: Covering the test subjects eyes so he/she cannot see anything other than the live video stream from the camera

The final result of what the rig looks like when put together correctly can be found in Figure 2.

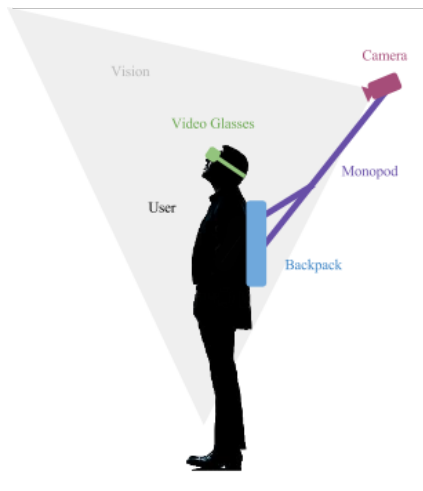**Fig. 1.** A typical third-person view in the game *Grand Theft Auto: IV*.

Fig. 2. A detailed overview of different parts of the rig.

3   Results

This section will cover the results from the tests that where done and;

- The results from the tests
- Diagrams comparing the results
- Results of earlier work
- Compare the performance between the different groups

4   Discussion

A general discussion about the study such as;

- What part/conclusion in my study could be biast/not reliable
- What does my results mean?
- What kind of limitations/problems does my solution have?
- Earlier work, how do they compare to my work and what does that mean?

4.1   Conclusion

As a finish, and a complement to the abstract, the conclusion should contain;

- What to take out from the study
- How this study can be made more in-depth
- Future work

References

[1] Göran Hägg. *Nya författarskolan.* Wahlström & Widstrand, 2012.
   There are some interesting parts in this (Swedish) book that basically says
   that when a reader is reading a book it doesn't matter if its written in
   first-person or in third-person, the reader quickly adapts. This means that
   in writing there isn't really a significant difference between the two writing
   types, at least not for the reader.
[2] Joshua M Knapp and Jack M Loomis. Limited field of view of head-mounted displays is not the cause of distance underestimation in virtual environments. *Presence: Teleoperators and Virtual Environments*, 13(5):572–577, 2004.
   There are some very interesting parts in this article, but the most useful
   is probably the result; ' ' This result indicates that the significant under-
   perception of distance observed in several studies on distance perception
   in virtual environments is not caused by the limited field of view of the
   head-mounted display ' '. This means that it shouldn't really matter what
   quality and FOV the video glasses I use for the study. Of course this is
   something that needs to be tested.
[3] Ricardo Nakamura, Lucas LM Lago, Alexandre B Carneiro, Anderson JC Cunha, Fábio JM Ortega, João L Bernardes Jr, and Romero Tori. 3pi experiment: immersion in third-person view. In *Proceedings of the 5th ACM SIGGRAPH Symposium on Video Games*, pages 43–48. ACM, 2010.

As this article focuses on AR mostly it is not that relevant to my study. Although I find the method very interesting, especially since they target games with this study.

[4] Richard Rouse III. What's your perspective? *ACM SIGGRAPH Computer Graphics*, 33(3):9–12, 1999.

Even though this is a very old article about games I still think it is very relevant. It talks about different perspective in games and the benefits from each some thing that is very interesting since the 1990:s where when graphics in computer games grew more and more powerful.

[5] Patrick Salamin, Tej Tadi, Olaf Blanke, Frédéric Vexo, and Daniel Thalmann. Quantifying effects of exposure to the third and first-person perspectives in virtual-reality-based training. *Learning Technologies, IEEE Transactions on*, 3(3):272–276, 2010.

This study is *very* similar to mine in many ways, especially how the test the third-person view building a similar rig as I plan to build. It does not however focus on the performance differences between gamers and non-gamers

[6] Patrick Salamin, Daniel Thalmann, and Frédéric Vexo. The benefits of third-person perspective in virtual and augmented reality? In *Proceedings of the ACM symposium on Virtual reality software and technology*, pages 27–30. ACM, 2006.

In my early experiments building the rig I've notice a very disturbing outer-body-experience that is hard to put into words. Even though I can see my own limbs it is very hard to understand that the limbs I see are my own. When reading this article on VR and AR I noticed they described this very well.

[7] Mike Schmierbach, Michael P Boyle, Qian Xu, and Douglas M McLeod. Exploring third-person differences between gamers and nongamers. *Journal of Communication*, 61(2):307–327, 2011.

This study also focuses on some differences between gamers and non-gamers but it doesn't (at least not to my understanding) focus on trying this out. It is more based on surveys than hands on testing. I should say that I have not yet read the whole article since it's so long.