

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

Arvid Bräne

Department of Computing Science
Umeå University, Sweden
arvidbrane@gmail.com

Abstract. Here goes the actual text of your abstract.

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
- References to earlier work such as [1], [2] and [3]
- Description of what third-person view is

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 a constantly ongoing debate, [4], about whether playing video games produce negative side-effects or not. My study investigates one of the possible *positive* performance differences, such as few number of errors and low time consumption.

Contents A conclusive investigation of if there is a performance difference 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.

Studies prior to this one have been done on the differences between gamers and non-gamers, such as [1], but none using hardware to simulate the third-person view experienced in games (see Figure 1) in real life.

Studies in writing have previously shown that most readers do not have any recognition about whether a book they have read was written in first- or third-person [5].

2 Method

In the following section we will demonstrate our method and the tasks needed to concretise credible results.

2.1 Overview

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

2.2 Survey Design

After each test subject finishes his/hers precipitation in the experiment they were prompted to fill in a form regarding the experience and their prior experience with video games. The survey included the following seven questions:

1. Do you consider yourself a *gamer*?
2. What was the hardest parts about the experiment?
3. On an average, how many hours per week do you spend playing video games?
4. How many years have you been playing video games?
5. In total, how many hours have you spent playing a game viewed from a third-person perspective?
6. If any, please name some of these third-person games you have played.
7. Did you find this experiment fun?

Each test subject also fills in details about name, age and sex so the results from the test data can be paired up with the survey. The details were later removed in the results in order to protect the test subjects anonymity.

2.3 Task Design

In order for to get the required measurements with high credibility the tasks performed by the test subjects were 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:

Accuracy Task The test subject rolled a ball in order to try and hit a target placed 10 meters away to successfully complete the task. This test measured the participants precise accuracy- and ball control through the number of tries required in order to hit the target.

Balance Task The test subject walked, in their normal walking speed, on a thin straight line, measured at 10 meters long, placed flat on the ground for as far as he/she can. This test measured the participants balance skills through the distance covered before stepping outside the line.

Movement Task The test subject walks forward facing, in their normal walking speed, thorough a pre-planned course around 30 meters long, on flat ground marked with cones as precise as possible. This test measured the participants movement skills through the required time in order to complete the task.

Each task was performed three times by each participant, in three different configurations resulting in a total of nine results for each participant. The different configurations were completed in the following order:

1. Wearing the rig, video goggles *off*.
2. Wearing the rig, video goggles *on*, viewed from *first-person*
3. Wearing the rig, video goggles *on*, viewed from *third-person*

2.4 Rig Design

In order to simulate a game like outer-body experience and a third-person perspective, see Figure 1, without leaving the participants nauseated and the rig had to be as rigid as possible. The main parts in the rig are:

Third-Person Video Camera The video camera, constantly generating a live video stream, was mounted circa a meter approximately 45 degrees above/behind the participants head and slightly tilted downwards in order to frame the video correctly. Since a large field-of-view, a compact- and lightweight design are the most important requirements for selecting the video camera a *GoPro Hero 3: Black Edition* was chosen.

Mount Which the camera is mounted upon in order to get the correct angle. This meant constructing it out of light weight and stiff materials such as carbon fiber, ABS- and polymorph plastic.

Video Goggles To cover the subjects eyes and view the live video stream a pair of specially deigned video goggles were used. These goggles, a pair of *SkyZone SKY-01 V2*, have a field-of-view at around 30 degrees.

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.

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



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

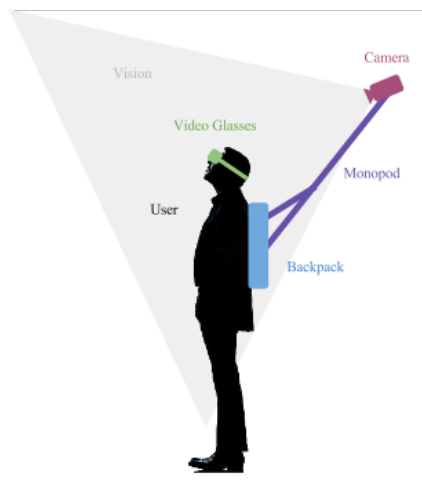


Fig. 2. A detailed overview of different parts of the rig.

4 Discussion

A general discussion about the study such as:

- What part/conclusion in my study could be biased/not reliable
- What do my results mean?
- Earlier work, how do they compare to my work and what does that mean?
- References to earlier work such as [1]

4.1 Limitations and Drawbacks

Due to the time and budget limit there are several ways to improve upon my study, ways of doing this might include:

- Building a more rigid rig.
- Using a more comprehensive camera mounted on a stabilized gimbal.
- Using more sophisticated video goggles, such as the Oculus Rift.

4.2 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] Schmierbach, M., Boyle, M.P., Xu, Q., McLeod, D.M.: Exploring third-person differences between gamers and nongamers. *Journal of Communication* **61**(2) (2011) 307–327
- [2] Salamin, P., Thalmann, D., Vexo, F.: The benefits of third-person perspective in virtual and augmented reality? In: *Proceedings of the ACM symposium on Virtual reality software and technology*, ACM (2006) 27–30
- [3] Nakamura, R., Lago, L.L., Carneiro, A.B., Cunha, A.J., Ortega, F.J., Bernardes Jr, J.L., Tori, R.: 3pi experiment: immersion in third-person view. In: *Proceedings of the 5th ACM SIGGRAPH Symposium on Video Games*, ACM (2010) 43–48
- [4] Valadez, J.J., Ferguson, C.J.: Just a game after all: Violent video game exposure and time spent playing effects on hostile feelings, depression, and visuospatial cognition. *Computers in Human Behavior* **28**(2) (2012) 608–616
- [5] Hägg, G.: *Nya författarskolan*. Wahlström & Widstrand (2012)
- [6] Salamin, P., Tadi, T., Blanke, O., Vexo, F., Thalmann, D.: Quantifying effects of exposure to the third and first-person perspectives in virtual-reality-based training. *Learning Technologies, IEEE Transactions on* **3**(3) (2010) 272–276
- [7] Rouse III, R.: What's your perspective? *ACM SIGGRAPH Computer Graphics* **33**(3) (1999) 9–12
- [8] Knapp, J.M., Loomis, J.M.: 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) (2004) 572–577

A Appendix

Third-Person Tests

Thank you for participating in our study about *Exploring the differences in performance between gamers and non-gamers when completing everyday tasks viewed from a third person perspective*. Your information will be kept secret and anonymous once the scientific results are published, we collect them just so we can tell the different test subjects apart.

Name

Age

Gender

☐ Male ☐ Female

1. Do you consider yourself a “gamer”?

“Gamer” as in “Video gamer”

☐ Yes ☐ No

2. What was the hardest parts about the experiment?

Circle as many as you like and/or add your own

The tasks themselves

The third-person view

The first-person view

Unclear instructions

The resolution in the video goggles

Trusting in the rigs design

Other hard parts?

Survey continues on the back!

3. On an average, how many hours per week do you spend playing video games?

Circle the number closest to your answer

0 0,5 1 1,5 2 2,5 3 4 5 7 8 9 10+

4. □How many years have you been playing video games?

Circle the number closest to your answer

0 0,5 1 1,5 2 2,5 3 4 5 7 8 9 10+

5. In total, how many hours have you spent playing a game viewed from a third-person perspective?

Circle the number closest to your answer

0 1 3 5 10 15 20 25 30 40 50 60 80+

6. If any, please name some of these third-person games you have played:

As many as you can think of

7. Did you find this experiment fun?

☐ Yes ☐ No