

Computer Games Development

Project Report

Year IV

[Muhammad Danial Hakim Bin Nor Azman]

[C00253517]

[Date of Submission]

[Declaration form to be attached]

**Contents**

[Acknowledgements 2](#_Toc54714373)

[Project Abstract 2](#_Toc54714374)

[Project Introduction and/or Research Question 2](#_Toc54714375)

[Literature Review 2](#_Toc54714376)

[Evaluation and Discussion 3](#_Toc54714377)

[Conclusions 3](#_Toc54714378)

[References 4](#_Toc54714379)

[Appendices 4](#_Toc54714380)

# Acknowledgements

I would like to thank the following people who assisted in completing this project including;

John Doe of ACME who kindly agreed to …

I would also like to thank ICME for use of ….

Use this template when writing your research report. As a rule of thumb, the report should be of the order of 10 pages (about 250 words/page).

# Project Abstract

# Project Introduction and/or Research Question

Accessibility for disability in gaming.

Disability is a broad term and there is multiple form of disability, the four that will be mention in this research paper are intellectual, physical, sensory, and mental illness. While mental illness might impair a person's emotional state and behaviours, intellectual disability involves difficulties with speech and memory. Physical disability focuses on long-term impairments, such as being born without a limp or losing bodily parts in an accident. Senses including sight, hearing, and spatial awareness are all impacted by sensory impairments. Due to their limits, people with certain disabilities find it more difficult to perform daily tasks than non-disabled people. This can cause stress to accumulate, and like other gamers, they use games to unwind and let their stress out.

Two distinct sorts of players are well known in the gaming world. Hardcore gamers are the first category. This kind of player plays the game for hours on end to thoroughly understand the multiplayer maps and find the best locations. Additionally, they would spend time studying and memorization the combo and attack pattern to maximise the damage output. They give their all to the game they are playing. In the gaming industry, they are typically the finest of the best. Some people even make a career out of gaming and participate in e-sports. E-sports is a type of video game competition in which professionals compete and are compensated for their victories. Most gamers fall into the next category, which are casual players. Casual gamers engage in the game for entertainment and to release tension and irritation. They play video games at their own pace and take their time to enjoy them. The outcome of the game is typically not important to them because it is not the primary reason they play. Some disabled gamers are hardcore gamers that went on to be professional gamers regardless of their limitation. Mike "BrolyLegs" Begum would be one of the instances. Mike Begum plays with his face as a professional Street Fighter V player. Arthrogryposis, a congenital muscle disease, is his impairment and prevents him from using his hands to operate the controller (Silman, Sep 20, 2021).

One thing that both players can agree on as one of the most crucial components of a video game is immersion. Video game immersions offer the player the impression that they are transported into the game's environment, increasing their sense of identity with the character. This is made possible by cutting-edge graphics, well-planned stories, and excellent game flow. The player is kept engaged and committed to the game, which encourages them to play again. When they watched another player play the game online, several gamers experienced a sense of immersion. Streamers are the gamers who are watched online while playing video game. Streamers would add entertainment value to their streams by taking on challenges. These gamers typically excel at the games they are playing, accomplishing feats that many gamers are unable achieve. Due to their limitations, most disabled streamers would have to find alternative ways to play games. Martin, popularly known as 86hands, is one of the cases, who has received accolades for playing video games proficiently despite having a disability. Martin played the game by holding the Xbox controller between his jaw and a portion of his arm because he was born without hands (Kate, 2022).

There are more ways to enjoy playing video games now thanks to advancements in technology and one of them is eye tracker. An eye tracker is a tool for monitoring eye movements and positions. To help other gamers understand where their focus should be when playing games and to help them enhance their understanding of the game, streamers utilize this in games to highlight their eye positions and how long their gaze is at different positions on the screen. Game sense refer to the ability to take in and process all the information necessary to make the optimal decision, including understanding where the enemy is and when to move to provide the player the best chance of winning the battle.

# Literature Review

**Video games and disability**

Gaming is one of the most well-liked pastimes out there and that there are over 3 billion players worldwide—nearly half of the world's population—comes as no surprise (Jovanovic, 2022). 20.5% of casual gamers had disabilities in 2008. This figure does not account for the professional gamers with a range of disabilities, which would bring the total up even higher (Eyeware Beam , 2022). The majority of computer interfaces and game controllers are designed with non-disabled users in mind. With the development of eye trackers and games that allow the use of eye trackers as one of their optional inputs, options for gamers with disabilities have increased. However, using eye trackers when playing games is different to using them while performing normal chores because playing games requires extreme accuracy and quick thinking. Fortunately, technology has advanced significantly, and specialized hardware like TrackIR or Tobii makes tracking quick enough to be employed in video games.

**The benefits of eye tracker**

Most people play video games with a mouse, keyboard, and controller. However, according to studies by Pedro Santana and Joao Antunes, utilizing an eye tracker increased player immersion (João Antunes, 2018). This includes both unfavourable and advantageous consequences. The player may experience increased annoyance, tension, and frustration as a result. The data shows that the player performs better and achieves greater scores when the eye tracker is turned on. A more entertaining experience all around.

Eye tracking technology has other advantages when utilized in video games apart from immersion. Response time would be another advantage (Tara Qadir Kaka Muhammad, 2022). The test was carried out in Unity, where the player deflates balloons to get points as they appear on the screen. Prior to the game, the player can select their input options. According to the findings, eye input performs better than mouse input in 45% of cases. Therefore, in addition to mouse input, eye interface technology can be used in the gaming sector.

**Usage of eye tracker outside of video game**

Eye tracking technology can be utilized to highlight how long and where you should gaze. (Jorge De Greef, 2018). To teach students how to function more effectively, a medical team used eye trackers. They accomplish this by hiring a specialist to use augmented reality, to whom they attach an eye tracker to monitor where his eyes were directed and how long they stayed there before shifting their focus. Compared to the conventional method, it enables students to learn more rapidly and with more comprehension. Additionally, streamers and professional gamers use this technique to demonstrate to their audience where their gaze would be, which makes it easier for those who have trouble focusing or have a particular sort of vision impairment to know where they should be looking (Eyeware Beam , 2022).

# Evaluation and Discussion

Replace this text with Results and Discussion.

Describe the results using diagrams such as graphs etc. as appropriate and discuss what the results mean.

Example: Results indicate that once the threshold gets over a certain point it significantly reduces player performance and player experience

**Project Milestones**

Replace this text with Project Milestones.

Key project milestone dates and measurement on schedule, was project schedule adhered to, effectively planned for delivery on-time or ahead of schedule if appropriate.

**Major Technical Achievements**

What are your major technical achievements?

**Project Review**

What went right? What went wrong? What (if anything) is still outstanding/missing (i.e., still left to do)? If starting again, how would you approach this project differently? What advice would you have for someone attempting a similar project in the future? Were your technology choices the right or wrong ones? If you chose the wrong technology, provide justifications for why you think this. What were the implications of your technology choices?

# Conclusions

summarise your work and findings.

**Future Work**

Indicate what might be some next steps to try (if a student next year was going to undertake a project in this area what might be an interesting thing for him/her to examine?).

# References

Eyeware Beam . (2022). How Eye Tracking and Head Tracking Help Disabled Gamers Level Up. Retrieved from https://beam.eyeware.tech/disabled-gamers-level-up-head-eye-tracker/

João Antunes, P. S. (2018, May 7). A Study on the Use of Eye Tracking to Adapt Gameplay and Procedural Content Generation in First-Person Shooter Games. Retrieved from https://www.mdpi.com/2414-4088/2/2/23/pdf

Jorge De Greef, V. P. (2018). Evaluating the Benefit of Assistive AR Technology through Eye Tracking in a Surgical Simulation System. Retrieved from https://lirias.kuleuven.be/retrieve/520081

Jovanovic, B. (2022). Gamer Demographics: Facts and Stats About the Most Popular Hobby in the World. Retrieved from https://dataprot.net/statistics/gamer-demographics/

Kate, F. (2022, 3 25). Gamer Born With No Hands Impresses Internet With Setup: 'Such a Boss'. Retrieved from https://www.newsweek.com/tiktok-reddit-86hands-martin-gaming-disability-accessibility-1691729#:~:text=A%20gamer%20has%20been%20praised,scenes%20videos%20of%20his%20gaming.

Sennersten, C. (2004). Eye movements in an Action Game. Retrieved from https://lup.lub.lu.se/student-papers/record/1328850/file/1328851.pdf

Silman, J. (Sep 20, 2021). BrolyLegs on Video Game Accessibility: “We’ve Seen Progress, but Must Continue the Fight”. Retrieved from https://compete.playstation.com/en-ie/all/articles/brolylegs-on-video-game-accessibility-weve-seen-progress-but-must-continue-the-fight?filterNewsO=type.Guides&validatedAge=true

Tara Qadir Kaka Muhammad, H. O. (2022, April 4). Eye Tracking Technique for Controlling Computer Game Objects. Retrieved from http://65.21.159.25/index.php/uhdjst/article/view/903/683

Zalewski, D. (2021, November 4). Eye tracking and video games research. Retrieved from https://tryevidence.com/blog/eye-tracking-and-video-games-research/#:~:text=The%20eye%20tracking%20device%20emits,the%20screen%20player%20was%20looking

# Appendices

Replace this text with Appendices.

This might include ethics application and other relevant material e.g. copy of any questionnaires used.