Virtual Reality Coursework:

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Assignment report Title: *Group Coursework*
Date (when the work completed): *6th December 2023*
Actual hours spent for the assignment: *90 Hours*

Aims of the world:

The aim of the world is to navigate throughout a treacherous puzzle maze of misinformation and deception symbolised by the enemy which is chasing the player. The impending trap of fake news, used by its perpetrators to ensnare you in their lives and make you their political puppet. Within the world, falsehoods are meticulously created to manipulate the user's perceptions and cause the enemy to catch the user, removing a life. Players are exposed to a greater understanding of fake news and its impact on society. Representation of the fake news is scattered across the world. Within this immersive experience, the player is exposed to possible misdirections as well as manipulations trying to lead them astray. This will create a unique learning experience relying on the user's ability to distinguish misinformation.

The overall mission of the user is to use critical thinking to avoid the oncoming trap and discover the truth. Navigation through the puzzle maze will enable the user to reach the next level as well as empower themselves to determine the integrity of information released within the real life society.

Background and Research:

Background research is a key step in the virtual world development and enables our knowledge and greater understanding to be expanded. This delves into the foundational concepts which will be explored and used to be able to discover the key challenges we may face and have to overcome. The research will have to discern misinformation. Therefore, filtration can take place between factual as well as non-factual content, allowing for the determination of its applicability within the game. Failure to filter misinformation during the research process can lead to considerable challenges and setbacks, particularly in the context of today's digital era. Furthermore, the exploration of the impact the VR model may have on a specific age group as well as the learning outcomes it can lead to. The importance of understanding a target audience is paramount and will be determined and researched to ensure it is considered appropriate. Literacy and critical thinking skills are crucial elements to be able to combat misinformation. Therefore, the conducting of research on how to empower individuals within the group to ensure fact is distinguished from fiction.

Furthermore, the creation of the game had to be researched in order to add unique scripts which would work seamlessly within the game. Different resources were used to be able to differentiate this as well as to ensure all scripts would work well when running together and the virtual world was built. The research was conducted before and throughout the creation of the virtual reality world.

When discussing Virtual Reality in terms of Education, it can offer a unique learning environment which can be arguably effective on players. “VR technologies have been utilised to enhance learning experiences, improve retention, and facilitate deeper understanding through immersive simulations” (Rizzo & Kim, 2005). Studies and research suggest users engage in interactive based learning experiences which replicate a real-world challenge, more information is able to get through due to the immersive learning style.

How to Play:

1) You are greeted with a start menu. Press ‘PLAY’
2) The First room is a demo room; hover your cursor over the books on the tables to read the article titles. Grab the nearby key with E for the article you believe is least likely to be fake news from the two options. There are no repercussions for picking the wrong option in the demo room. Once you have picked up the key, hold it against the corresponding door you wish to open. Press E again to drop the key.
3) Press E to open the door to the next room; this room will have repercussions choose wisely the key you use, following previous instructions.
4) Keep solving puzzles and opening doors till you find a unique room with an object leading to the next level

5) Follow a similar process to the first level to navigate the second. This is the final level; you will win if you complete the maze within the time and without losing all your health

Interacterable Scripts:

Figure 1: Ghost Enemy

Early on it became evident the importance of navigation meshes (NavMeshes), which play an essential part in creating dynamic and realistic virtual reality experiences by providing pathfinding capabilities for game characters and entities while increasing user immersion and engagement. Research of Navigation Mesh technology includes studying its generation using various algorithms and techniques, as well as how optimised pathfinding technologies enhance gameplay experiences. Therefore, enemies were created using this asset. Pathfinding technologies are essential elements in the virtual reality world, providing smooth player navigation. An advanced pathfinding algorithm ensures enemies follow players until the damage has been done or one life is lost by them. The enemy follows the user until despawning, creating an engaging yet challenging gameplay balance. Navmeshes incorporation into gameplay created the basis for how enemies would behave within the virtual world, further increasing the suspense and challenge of gameplay.

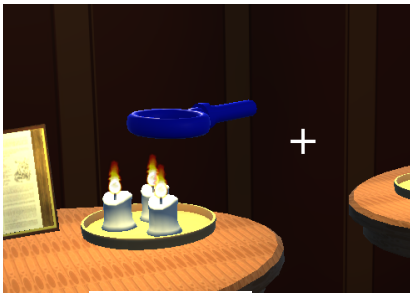

Figure 2: Door key

An engaging feature of our virtual reality environment is the key which symbolises how players may unlock potential doors that lead forward into the puzzle maze's next room. This interaction script controls the functionality of an interactable key designed to be picked up and carried by any character as well as can be dropped anywhere by the user using the 'E' key command.. Once a key has been collected successfully, users can use it to unlock any door they believe leads to another room. Not only is an interactive key an essential and exciting gameplay component, but it is used to increase overall user engagement across all stages.

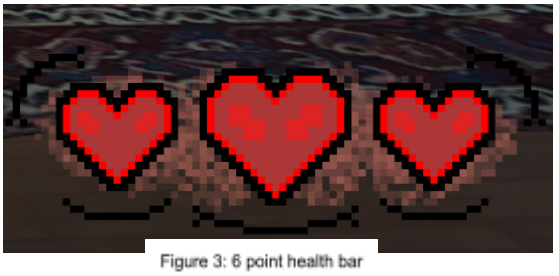

Figure 3: 6 point health bar

Implementing a health bar is integral for the interactivity of the virtual reality world. The script ensures player engagement and immersion via its visual indicator for player health status. If enemies reach into your room to touch players, your health bar is affected and one life removed, leading to consequences from being unable to differentiate real from fake articles in each room, therefore creating tension when making informed decisions in order to protect limited lives available in each game session.

Figure 4: Door requiring key

Furthermore, when approaching an object, text can be seen on the user's screen acting as Promts and a Tool Tips system. This can provide users with clear guidance throughout their embarkment within the puzzle maze hosting misinformation. This implementation is vital to ensure that the players can explore the world seamlessly and without the struggle of not knowing how to access particular areas. This interactive element allows for informed decisions to be made as well as enjoyable gameplay to be conducted without the constraint of failure of knowledge on how to play. When players approach objects such as the locked doors within the virtual mansion, the script has been written to ensure immediate recognition of the required key as well as the display of an informative prompt resulting in an indication of which colour key unlocks the designated

door, regardless of if it is correct or an enemy is behind it. This not only simplifies the gameplay for the player to designate their attention to the aim of the world but also reinforces the player's desire to seek out the correct key based off fact and fiction articles. The incorporation of this feature has equipped the user overall with the necessary information for the user to progress accordingly and within a limited timeframe.

Gameplay and World Instructions:

The game created and titled '*NewsRun: The Chase for Truth'* provides an interactive virtual experience which has been designed to engage the user throughout an educational journey which requires navigation throughout each room decorated as an old-fashioned formal mansion study room host to both real and fake news articles. The requirement of Each level presents more articles for recognition by players before starting another level - one may be genuine, while some others could be falsehoods. Players must correctly recognise genuine news articles and select their corresponding keys, an act which symbolises informed decision-making, in order to navigate through the maze successfully. Making incorrect choices results in encountering an aggressive enemy - an unfortunate side-effect of misinformation which must be dealt with promptly - with six lives available to players and designed so as to be intuitive yet engaging; movement controls include W, A, S & D keys so players can explore at their own pace the detailed mansion-like environment while using jumping adds dynamic dimension when solving puzzles or navigation.

Interacting with game objects such as keys and doors is enabled via the E key for an immersive virtual space experience, where they must physically reach for and interact with them as though physically in front of them. Furthermore, to enhance strategic playback, players may hold down 'Shift' to activate sprinting; this combination of movement mechanics combined with critical thinking elements like distinguishing news articles creates a rich and rewarding gameplay experience; progressing further along levels with more articles to disentangle presents them with puzzles as well as opportunities to consider alternative perspectives when considering misinformation is presented.

Reflection on Interactivity:

Within our virtual reality project it has been demonstrated how interactivity is key for increasing user engagement and immersion, leading to learners taking an increased interest in participating actively in learning activities. We found learners became much more invested when given an opportunity to take part in educational tasks actively. VR simulations give our users the feeling of control and empowerment while remaining fully immersed. Therefore, a more hands-on experience has been created and promoted throughout the entirety of the game, enabling for the user to face more cognitive processing whilst interacting with the game's content. Therefore, a deeper and greater understanding has been gained of the subject matter being transferred across to the user. In this case, the fake news concept can allow for a user to treat the game as a learning experience and reduce their gullibility.

However, ensuring of a balanced implementation of interactivity within the Virtual Reality project was of paramount importance. Finding this equilibrium between the engagement via interactivity as well as the overburdening for users was determined and allows for users to remain focused on the education objectives as opposed to the complexity of the game.

Annotated Screenshots of Gameplay:

Figure 5: This image displays the opening screen when the game is launched. Four options are present on the screen, all with a specific purpose for the user to take. ‘Play’ leads to the initiation of the game, and the user is placed into the first level. ‘Options’ is the host of the volume bar as well as ‘How to play’ hols all the instructions. ‘Quit’ allows the user to exit the game seamlessly. ‘

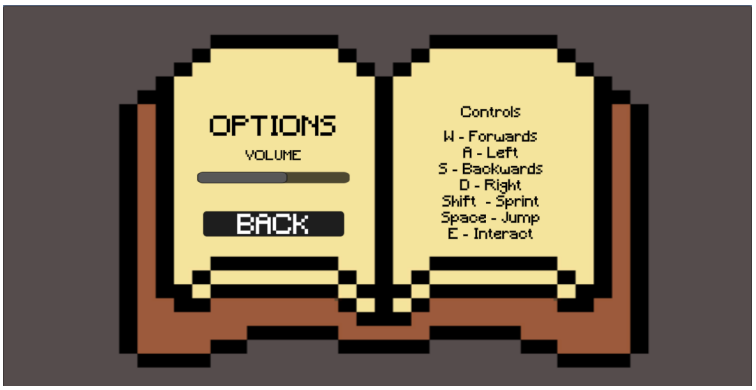

Figure 6: The Options page hosts numerous features which the player can benefit from when making their experience and gameplay more enjoyable. Therefore, the volume can be amended to the player's preferred level as well as the controls of the game can be studied so that the gameplay is seamless and the knowledge of how to play can be found.

Figure 7: On the table sits candles, which are able to act as their own individual light source so that the user has visibility when seeing both the article and the key. When the user looks at the article, text appears on the screen, displaying a possible misleading article or a true one. The user can, therefore, make their decision based on the text they have read.

Figure 8: This is what a non-practice maze room looks like, where your actions have consequences. It is almost identical to the practice room; however, if the player chooses the wrong door, they will be met by ghosts that will chase them and rid them of their hitpoints, introducing consequences of choosing fake media to the player. On the other hand, if they choose the correct door, they will be allowed to proceed into the maze.

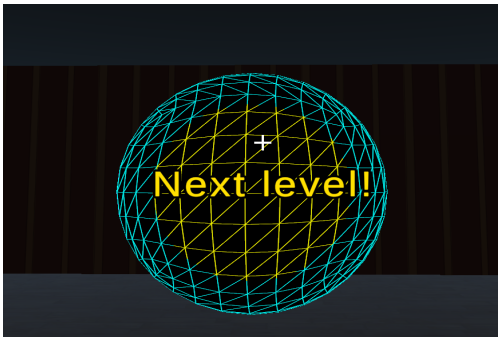

Figure 9: The next level orb is the user's pathway to be able to access the higher level with increased difficulty in terms of the timer and article difficulty. This is only accessible by surviving the maze, deciphering all the correct articles, and distinguishing fact from fiction. This orb is located at the end of the first level map and has its own dedicated door, which all routes lead to.

Figure 10: When the player takes too much damage and all hearts are lost or the time has run out, the player loses the game. Therefore, this screen announces the player's death to the user and allows for them to exit the game using the designated button.

Figure 11: After the player is able to make their way through the puzzle maze and articulate each level, the user has the ability to win the game. When doing so and all levels have been completed, this screen appears, announcing the player's success. The user then only has the option to quit the game after the completion of the game is sucessful.

Figure 12: After failing a choice, the ghosts (enemies) will spawn on the user; they can each negate half a hitpoint. Their behaviour is set to chase, and they will continue this behaviour to either the user is over 20m away, showing that they have passed that room, or intercepting a user. The design choice behind the gradient pink-white ghost is first to make it stand out, signalling its intentions almost as if the AI, a foreign object in this old mansion, sent it.

Figure 13: The player has a timer, replicating a real-world scenario where users are presented with 10 articles a day with limited time, sometimes seconds, to decide whether the article is fake or real.

Conclusion:

"News Run: The Chase for Proof" is an educational game that aims to demonstrate the often overlooked dangers of our fast-evolving digital world. By incorporating AI-generated fake news articles often based on up-to-date topics, the game has successfully proven that even sceptical eyes can be deceived through testing on ourselves.

We have added the game element via this process by incorporating familiar concepts like enemies, map designs, purpose and levels. This will hopefully engage any potential players into using an educational tool that would have otherwise been ignored, really bringing attention to this modern-day challenge that has been rampant with recent advances in AI.

There are still areas that could be improved, notable more levels and news topics to cover better the scope of the issue, maybe leading to a game-time closer to an hour rather than 10 minutes, including new challenges such as identifying double bluffs and article bodies instead of heading. Furthermore, to increase the educational aspect a feedback system could help the user when they get it wrong and identify the giveaways to help them tackle not only future rooms in the game but the issue more broadly in real life.

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