

HOW TO MAKE A HORROR GAME SCARY: A CASE STUDY

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ABSTRACT

Nowadays, horror is a relatively popular game genre. Successful horror games like *Man of Medan*, *Blair Witch*, *Walking Dead* and *Resident Evil 2* demonstrate that game designers are able to make players feel scared and captivated at the same time. It is interesting from both psychological and technological perspective how this effect can be achieved, and how player emotions change during interaction with the game. In order to learn individual instruments that contribute to the overall atmosphere of the game, we set up a simple horror-themed game based on a freely available Unity project — *John Lemon's Haunted Jaunt*. Our goal is to add, modify and remove specific game elements and study their impact on user perception of the game. The present paper discusses our ongoing experiments and preliminary findings.

INTRODUCTION

Horror is clearly a negative emotion, and yet horror books, films, and video games enjoy a wide and loyal following. Why do people enjoy horror entertainment? There is no clear and definite answer to this question. A large number of research works are dedicated to the phenomenon of a horror genre, and different explanations have been proposed. For example, Zillmann's excitation transfer theory argues that our enjoyment is caused by the feeling of suspense, followed by resolution [1]. It has also been suggested that enjoyment can be associated with the portrayal of destruction, with excitement, and unpredictability [2]. Furthermore, researchers observe that the very experience of emotional arousal is attractive on its own [3].

While most studies in this area are seemingly devoted to horror films, horror video games also attract the attention of researchers. Being inherently interactive and immersive, video games often rely on techniques that can be notably different from the instruments used in horror books or movies. There are extensive essays of the history of the horror game genre, as well as discussion of the elements implemented in successful horror games [4, 5].

Our primary goal is to explore how such elements translate into immediate user experiences, and whether the users subjectively perceive the game as more or less scary and/or exciting as a result of modifying specific game components. While this work is still at an early stage, we were able to trace how gradual introduction of certain game elements has turned our test project into a real albeit very simple horror game, as confirmed by independent testers.

FEATURES OF THE TESTBED GAME

Our starting point is a very simple escape game called *John Lemon's Haunted Jaunt* [6] initially created as an educational project for beginner Unity developers. In this game, the player needs to control a cat who has to hide and eventually escape from the ghosts haunting an old mansion. Technically it can be classified as a horror game, but the overall style is so adorable that it looks more like a game for kids (see Fig. 1). Therefore, this game can serve as an appropriate setting for gradual introduction of more "horrifying" elements.



Figure 1: John Lemon's Haunted Jaunt

Following observations found in the literature, we decided to focus on the following aspects of the game for now: 1) positioning the camera; 2) altering the enemy AI system; 3) introducing sudden changes in the game environment and events. Sixteen test subjects volunteered to help us in testing the game. This group consists of five females and eleven males with age between 18-30. Seven test subjects played horror games before, while others never tried.

IMPLEMENTATION DETAILS

Change of Player's Vision

John Lemon's Haunted Jaunt is originally a third-person game. The camera faces a fixed direction and is placed far away from the player character, which makes ghosts easily noticeable. Such choice of camera positioning has a notable effect on horror experience. A fixed camera for horror games has an advantageous capability to force the player to experience certain horror plots. However, it also has certain issues like non-camera-relative controls, which could be confusing when the player has to escape certain danger quickly [7]. To evaluate the impact of a fixed-angle camera, we have changed the camera from a third-person to a first-person view. We also added free camera control, which enabled the player to gather more information from the

environment and have more control over the game in general. Furthermore, first-person view makes the game experience more vivid and real (see Fig. 2).

All of our test subjects prefer the first-person view rather than a fixed-angle camera in the game, since it provides a more immersive experience and creates a more horror-like atmosphere. Five testers also think a third-person view with a player-controllable camera can be effective for creating a horror atmosphere as well, like in *Dead Space* and *Resident Evil* games, where the player is able to see character surroundings, which also can be horrifying.

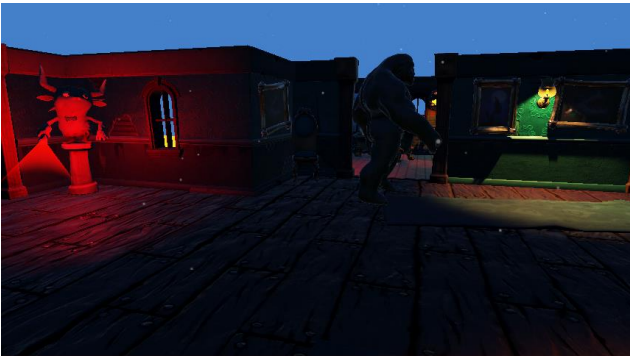


Figure 2: First-Person View in *John Lemon's Haunted Jaunt*

Enemy Characters

Enemy characters play an important role in horror games. We added two new enemy ghost types in addition to two types originally built-in into *John Lemon's Haunted Jaunt*.

The simplest type stands still and checks the player's presence with a flashlight. If such a ghost notices the player, the game ends immediately. We placed three of them in different areas. Another type of a ghost just walks in a predefined route until the player is nearby. The player has to find ways to avoid them, or else the game will be ended. We also placed three such ghosts in different paths. The third type can sense the player's location. It will find the player character and follow it everywhere. We included just one ghost of this third type. We believe that in horror games harmless yet troublesome obstacles can also make players panic and mad. Unlike other AIs, the third ghost type is harmless but annoying. It will find and follow the player character to hinder its movements, providing a somewhat traffic jam-like experience. The last (fourth) enemy type will hang around randomly in the house. When the player is too close, this enemy will chase it. If the player keeps distance in a specific range, this enemy will move around the player slowly until the player gets further away, and then the enemy will get back to walk, or the player gets closer to the enemy and trigger chase. There is also just one ghost of this type in the game. If the player cannot escape it, the game will end (see Fig. 3).

According to the testers' reports, the first and the second ghost types are commonly considered to be cute rather than scary. However, these types catch the player most frequently, because their cuteness lowers the player's guard easily, which makes it harder to the player to escape from the maze. Ten of the testers think the third type of ghost is scary because they did not know this ghost cannot kill them, so they try to avoid

it. Since this ghost is always moving towards the player character, the testers feel they have to move all the time. After they realize this ghost cannot kill them, they just consider it annoying. Finally, all of the testers agree that the fourth enemy type — the zombie lady — is scary because of her appearance and animation. The behavior of the zombie lady is also one of the reasons they get scared.



Figure 3: AI-Controlled Enemy Characters

Sudden Changes in Game

Whenever people watch horror movies or play horror games, they feel unsafe when the environment is being dramatically changed, and some events happen suddenly. Thus, they feel the need to escape as soon as possible. Grip observes that good horror games actually offer scarce terrifying moments, mostly providing the atmosphere of suspense and anticipation of horror. He offers a "roller coaster" analogy: the actual ride (and especially the scariest moments) do not last long; the whole experience is built largely on the anticipation of the ride, on emotional expectation [9].

In our game, we have currently implemented a trigger at the door of the bathroom. Once the player gets into the bathroom, the room's walls will change to the walls with arms and eyes, the floor will be bloody and red. The shower ghost in the bathtub will become the third type of ghost to start to chase the player. Besides, a loud screaming sound and a hell-like sound effect are played. Generally, people will be frightened by loud sounds when they are in a dramatically changing environment, so we believe they will panic when facing this situation. When the player leaves the bathroom, all the above-mentioned effects disappear (see Fig. 4). We also made several jump scares in the game: once the player activated the trigger, there would be a red giant monster jump out and scream for seconds. During jump scare activation, player vision is blocked by a black scene (see Fig. 5).

Jump scares do play an important role in horror games, and all of our testers think the jump scares are the scariest elements in the game because they appear unexpectedly. Some of our testers mentioned that the black scene during jump scare activation also makes them feel panic and anxious.

Bathroom location changes are not that scary: eight testers perceive them chill rather than horrifying. They do not understand what to do when they are facing this situation, but after getting used to new conditions, they do not feel afraid anymore. One of our testers missed the bathroom location completely. The rest of the testers were frightened by the sudden change in the bathroom and impressed by the wall arms and sound effects.

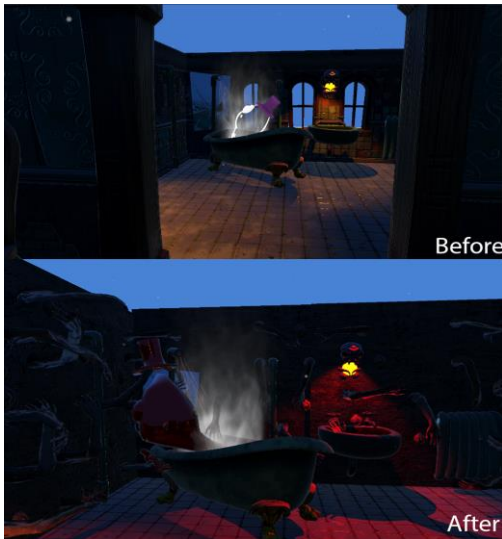


Figure 4: Effect of a Trigger in the Restroom Location



Figure 5: Example of a Jump Scare

DISCUSSION

It is known from past studies which elements can be used to create a horror-like atmosphere in a computer game. While it is clear that one cannot add or remove them in a straightforward, mechanical manner, it is still interesting to analyze the relative contribution of individual elements and their perceptions by the gamers. We believe that one possible approach for this kind of a work would be to create a game world where such elements can be easily introduced, and to study actual user reactions.

In the current work we were relying on user interviews. While providing a certain degree of reliability, they can hardly serve as an objective measurement of players' emotional responses.

Our next goal is to employ a more objective method of analyzing player reactions. Two possible options include breath sound detection and heartbeat rate measurement. Since breath and heartbeat are directly affected by our emotional state, it should be possible to identify measurements corresponding to strong emotions like fear.

CONCLUSION

In this paper, we show how individual elements can help to build up a complete horror game experience. We have changed the camera to a first-person view, implemented new AI-controlled enemies to chase the players and make them panic, added a trigger causing a dramatic change in the in-game environment, and introduced jump scares to frighten the player. We believe the obtained results are promising, given that the test subjects think the current version of the project can be considered a real horror game.

In our current experiments "horrific" elements are treated as independent, though one may argue that in successful horror games they all work in synergy to build the right atmosphere. Also, we recognize that there are numerous factors affecting user perception of "terrifying" game aspects, of their recognition as "cool" or "annoying". For example, our current implementation of the "Sudden Changes" element is probably too straightforward, and should be elaborated in subsequent revisions of the game project.

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