Create a basic horror Virtual Reality game which senses a player’s heart rate. Configure our horror game so that if a player’s heart rate goes a set percentage above their resting heart rate, the player will lose the game. Make our horror game capable of changing in real time in response to a player’s emotional responses.

Scene 1: Forest

Scene 2: Urban Rooftop

Scene 3: Horror Hospital

Scene 4: Ice Sea

Objective

We developed a platform for dynamic gameplay changes based on involuntary player responses through the following objectives:

1. Create a basic horror Virtual Reality game which senses a player’s heart rate through an accessory wearable device.
2. Configure our horror game so that if a player’s heart rate goes a set percentage above their resting heart rate, the player will lose the game.
3. Make our horror game capable of changing in real time in response to a player’s emotional responses.

Methods

To retrieve the heart rate data and use it in the Unity game, we created an Android wear application to sense heart rate data and send it to the paired phone, an Android service to receive the heart rate data and broadcast it to the Unity game, and an Android wear application to sense heart rate data and send it to the paired phone.

ABSTRACT

Despite the prevalence of vast sensing capabilities in consumer devices, video games are lacking in their ability to detect the quality of a player’s game experience, and to respond to it. To address this shortcoming, our goal was to create a platform that allows games to sense a player’s involuntary responses during the game. Doing so could allow the game to change itself in real time based on this data to vastly improve players’ experiences.

To demonstrate our work, we created a Virtual Reality horror game called Heartbeat Horror. The game senses a player’s heart rate in order to determine their fear level, and changes the game accordingly. The game can detect what game objects the player’s fear level responds to, and generates more of these objects dynamically during gameplay. Additionally, the player can lose the game if their heart rate gets too high, adding a unique extra element to the gameplay experience since the player must learn to control their fear response to improve their score.

CONCLUSIONS

We successfully created a playable version of Heartbeat Horror with scripted player movement through four scenes, which can be seen in the pictures below. Our game included the necessary functionality and meets all three of our stated objectives. Our game demonstrates a working proof of the concept we are attempting to demonstrate.

The next step in improving the game itself is to add player-controlled movement and ways for a player to interact with the game environment. Giving a player more utility within the game will allow them to become more immersed in it, making sensed data more genuine. Additional player features would also provide more sensing opportunities to more precisely gauge subconscious player responses to game aspects, and would allow for more complex feedback based on observations the game makes about a player. We would also like to add the ability to monitor verbal player data, which would give us even more information about a player’s response. The prototype scenes below are examples of the more complex scenes that we could implement with more complex player behavior, and additional features based on sensed player response that aren’t possible in our current implementation.

Acknowledgments

This project was completed as part of CS 234/334 Mobile Computing (Winter 2017), taught by Prof. Andrew A Chien with TA support by Gushu Li and Ryan Wu. We gratefully acknowledge the generous support of Samsung in providing GearVR equipment.

REFERENCES


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