

VREmote: Sadness

Game Design Document

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Executive Summary

The VREmote: Sadness environment is a Virtual Reality (VR) environment where the participant will have a first-person view from the player character's perspective. The environment is an experience making use of the interaction that is available in VR to draw out emotion from the participant – which in this case is sadness. The participant takes on the role of a pet owner that goes and picks the dog, their new pet, and then interacts with it. For the participant, the goal is interacting with and forming a bond with their newly acquired pet. For the experience, the goal is to elicit sadness from the participant.

Interaction is emphasized to create a strong bond between the participant and the pet with the environment having the capability of setting the amount or level of interaction from the start. This allows different levels or amounts of potential interactions and the emotions they elicit to be compared and provide a greater understanding of these emotions.

The AI of the environment will also be a focus with the intent to create more dynamic and realistic reactions from the environment. This is done by the use of an AI Director which influences the overarching narrative as well as adding differing personalities to the dogs.

Story and Theme

The environment is set in a modern world - though the background of the world is unimportant. The narrative is formed between the participant and the pet and the events that surround their interactions. This narrative starts with them choosing the pet at the store, playing with them in the park and being led to interesting discoveries until the dog is hit by the car and the final piece of narrative occurs at the vet where the participant is told that their pet will not survive. These narrative elements are the core narrative of the experience, but there will be dynamic changes that occur around them based on the AI Director (which will be discussed in the AI Section).

The theme is realism, with the imagery, controls and interaction all mimicking those which would occur in real life. All the character and object models will embody this theme, but the assets will not try to achieve hyper-realism.

Environment and Scene Design

There will be 4 Scenes in the environment, each intended to deepen the bond between the dog and the participant or have events which elicit emotions due to the formed bond. An exception is the first tutorial scene where the participant is shown controls and chooses which hand is their predominant one. The environments will differ vastly as they occur in very different locations and the interactions that occur in each will as such also differ.

Tutorial Scene

This scene will be a clean barren scene that will give the participant some instructions so that they will need less indications when they are participating with the rest of the environment.

Pet Store Scene

This scene will take place inside a small room which is styled like a pet store and allows the participant to choose their pet from a selection of three different dogs, starting the bonding process. These dogs will behave differently both in the store and in the following scene, giving each a sense of personality.

Park Scene

This scene is where most of the bonding between the pet and the participant takes place. It is a large open area that looks like a park where the participant will be able to navigate around and interact with the dog. There will be various objects in the scene that the participant can interact with or beautiful features that they can observe – as will be detailed in the following section. This scene is where most of the changes implemented for this project will be apparent from the existing environment and it will end shortly after the dog is hit by the car.

Vet Scene

This scene takes place in a room that is styled like a vet waiting room and is where they are told that their pet will not survive. This scene is to give the participant the sense of loss and where the most elicitation of sadness should come from.

Controls, Feature and Interaction Synopsis

The controls available to the participant will be linked to the level of interaction that is set where the lower levels of interaction will have fewer controls than the higher levels of interaction. There are three levels of interaction with each level above the previous including all previous interactions and features along with additional ones or variations.

Base Level

This will be the first level or 'control' environment where the interactions will be very similar to the already existing environment.

Existing Interactions

The existing environment currently has a few interactions which will remain as a control. These interactions are as follows: The participant can select the dog from one of three at the pet store and the participant can throw a ball for the dog at the park.

Remove Selection of Dog

The participant will no longer be able to choose between three dogs, but instead there will be only one. The player will still be able to feel that they are picking up their new pet and form a bond, but the agency of the interaction is removed as there is no longer a choice. This is done to create a greater contrast of interaction in the later levels.

AI Implemented

The AI changes will be implemented from this level, but which will be discussed in the next section (AI Implementation) in detail.

Tutorial Instructions

The tutorial scene will give instructions for basic controls such as selection with the VR equipment as well as instructions as to how to throw the ball. This also gives the participant time to get used to VR experience and be more focused on the emotional part of the experience. The participant will also be able to select their predominant hand in this scene.

Mid-level

Most of these changes are implemented in the park scene and most of the interactions focus on either giving the participant a greater sense of agency or providing more interactions between them and the dog to attempt to strengthen the bond between them.

Choice of Dog

This interaction is re-added in this level to allow the participant to choose one their pet from a selection of three dogs. This will give back the participant's agency in the pet store and increase the bond due to the feeling of choosing the one over the other two. This will also be the first time the dogs' different personalities will be apparent as they will behave differently (Detailed in the next section)

Multiple Object Interactivity

The participant will be able to pick up and throw different objects at the park scene, from sticks they come across, to rocks, to objects their pet may bring to them. The dog will react to the picked-up objects depending on their personality as well as the object picked up and if held to the dog's mouth, it may grab it. Objects thrown that are reacted to positively by the pet will increase the bond between the participant and the dog. It also creates more interactions between the two which should further increase their bond.

Dog Fetches Objects

Depending on the dog's personality and the location it ends up at in the park, the dog may bring back the participant a fascinating item. This may be a bone, a teddy bear or a squeaky toy. The dog will be more positive towards actions with this item and its behaviour may change slightly depending whether more or less interactions are done with it.

Navigation in Park

The participant will be able to navigate through the park. This will be done through ray controls where they can teleport to a location where they place the arc reticule. This technique is taken over artificial locomotion through a trackpad as it avoids possible motion sickness. The navigation is added to give the participant more agency and allow them to approach their pet.

Handed Ball at Vet

In the vet scene, the participant will be handed the ball which they may take from the vet. The ball will have the pet's name on it, facing towards the participant. This interaction is added to try and increase the sense of loss that the participant experiences.

Tutorial Instructions

In addition to the previous instructions, the user is also shown how to pick-up objects and how to use the navigation tool.

Higher-Level

This level adds more interactive events which occur between the participant and their pet and allows more continuous interaction between them.

Hand Gestures

The participant will be able to use hand gestures to communicate with the dog. The primary one will be to call the dog over in the park, but they will also be able to try and teach the dog a trick (to sit or roll over). The pet's response to the gestures will depend on their personality and the effort put into teaching them.

Butterfly interaction

There will be locations added to the park where the dog will try and lead the participant. These secret locations will either be a flower grove or a patch of butterflies. Each location will be designed to create a sense of beauty that the participant feels when seeing it, but the main reason is to increase the bond they feel at these shared experiences with their pet.

Stroking the Dog

In the pet store as well as in the park, the participant will be able to stroke the dog when they are nearby. The dog will react to being stroked to give the participant a sense that the dog is experiencing it. This will affect the dog's behaviour slightly depending on how much care they are given.

After the Accident

After the dog is hit by the car, the participant will be able to see their pet lying on the floor (or limping) and approach it. Once they approach it they may stroke it or pick it up before it cuts to the vet scene. This is to strengthen the bond for a last time as they feel that they are there supporting their pet before they experience the loss.

Special Object at vet

If the pet found a special item (The teddy bear or squeaky toy) the participant will be handed that instead of the ball with the name on it. This brings back the companionship and bond they had formed to try and increase the loss they experience.

Tutorial Instructions

In addition to the previous instructions, the user is shown how to stroke the dog as well as how to perform the hand gestures.

AI Implementation

The AI will be implemented in two major ways, the first will be through an AI Director that makes changes to the environment and overall narrative based on the participants actions and the second will be the AI of the individual dogs. Both are being implemented to try and create a more dynamic and realistic environment.

AI Director

The AI Director will primarily react to the participants actions, or lack of them. Based on the number or types of interactions that have occurred, it may trigger events to try and cause more interaction. For example, if the participant is not interacting with the dog very much, the AI Director may alter values for the dog to make it go and fetch an object and bring it to the participant. It may also cause noises to direct the participants attention towards a desired direction. It will also be responsible for causing events based on time or place, such as causing the dog to approach the location where it will be hit by the car, being hit by the car, or leading the participant to beautiful secret locations. Essentially, it will make changes to ensure that the pacing of the narrative is as desired and that a conducive bonding experience occurs. This will be done through decision trees.

Dog Personality AI

The main changes in the dogs will be giving them a sense of personality with differences in behaviour between each as well as more realistic behaviour. The pathfinding of the dog will not be touched upon as that won't be changed.

State Machines

There will be a large amount of states that the dog will be able to be in but may only be in one state at a time. This is the method/algorithm that will be used to decide the dog's current actions. There will be variations for each state, and this will be achieved through the use of Emotional Behaviour Decision Trees. This same method will be used to decide which state the dog will go to from each state. For example, a state may be *fetching* the ball or *exploring* the park – these activities or states are carried out in a near similar way each time but the way it carries out these actions, such as enthusiasm or animation, will be dependent on the inner Emotional Behaviour Decision Tree within the state.

Emotional Behaviour Decision Trees

This method is used for the decision making for the dogs and allows for each to have a different personality as it causes them each to have different reactions to certain events. It works the same way as a decision tree, but with the probabilities of the dog to take certain actions being dependant on certain "emotion" values of the pet. These values may be set from the start but will be altered slightly through events or interactions between the pet and the participant. The "emotion" values that have been chosen are: *Curiosity*, *Playfulness*, *Patience*, *Bond*. The choice of the first three have been chosen as they help direct what the pet would want to do, how likely they are to want to explore the park, play with the participant – or rather bug them to play with them, or to listen to the participant. These values would be altered through interactions such as navigating through the park, they would want to explore initially, so curiosity would be increased; or continually trying to teach the dog tricks may decrease its patience. Bond has been chosen to alter all interactions based on how the dog has been treated. For instance, petting it and playing with it will increase the bond whereas ignoring it will decrease the bond. A dog with a higher bond is more likely to bring the participant to one of the beautiful locations or listen more when gestured to come. This technique allows for the variation in personality as well as more dynamic behaviour changes based on how the pet is treated.