Melvin Paul-Kamara

Virtual Reality Project Report

Park Ranger Maze Fire Evacuation Procedure

Goal: The goal of this project is to go evacuate a maze within a certain period of time, and in good health. You are a ranger in the park which contains the maze, and a fire has broken out inside the maze. This triggers an evacuation protocol which must be completed within a limited amount of time. Then, you traverse the entire maze looking for people who might be stuck in there to evacuate them. Each person stuck inside the maze will follow you come into contact with them, as a result of their proximity sensor. You succeed if you find all of them before time runs out or your health deteriorates. You fail otherwise.

Modeling: The maze will be situated in a park reserve. The maze itself is acquired from the SketchUp 3D Warehouse. There will be footpaths in the park, which resemble worn out grasses, and the rest of the park will have low cut grasses. The maze itself will be a mixture of a tree maze, and walls in other sections. The modeling will be done primarily with Sketchup, and some parts with Unity3D.

The walls of the maze will be around 5m high, and the tree sections dense enough to prevent the user from seeing through them. The park will be caught on fire, with some of the fire encroaching on the maze, and blocking a passage aisle. The user has to try to avoid going through the fire. The people in the maze will be stuck in a looping movement, and some even on the wrong path inside the maze. Beware not to assume their positions will help you find your way out of the maze.

A proximity sensor will be used to notify the user of the harm that comes from being in close contact with the flames, a touch sensor for confirming that the user has found other people in the maze. Ambient sound will be of people talking lightly, natural sounds, and the kindling of flames.

The user will have three guides on screen – map, timer, and health bar. The map will capture most of the area surrounding the user, as the intent of the game is not to memorize the maze, but rather to be able to keep track of which aisles the user has visited so as to not waste valuable time visiting the same places twice. The map will make it easier for the user to traverse the entire maze – every aisle, every dead-end – to look for visitors who might be lost, or worse stuck or injured. The health bar keeps track of the user's health, and is affected whenever the user comes into contact with the flames. The timer reminds the user how much time they have to complete the evacuation procedure i.e. searching the maze for park visitors.

Implementation:

Vision: 3D models for trees, park benches, and the walls for part of the maze. Textures for the fire to make it look more realistic, and for the tree bushes that form a major part of the maze.

Sound: The sound will be ambient, and it will be the kindling flames at the outset of the fires.

Animation: The avatars will have animated movements, in a loopy movement.

Sensors: There will be three sensors including a proximity sensor, a touch sensor, and a time sensor. The proximity sensor for detection when the user comes close to the flames, the touch sensor to tag people stuck in the maze, and a time sensor to monitor how long the ranger spends inside the maze.

Avatars: These include the people stuck inside the maze.

References:

Jimmy Vegas. "YouTube.com"

Joel H. "SketchUp 3D Warehouse"