Catch The Fruits

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ABSTRACT

"Catch The Fruits" is an interactive game in the virtual world. By catching fruits that fall down from the sky the player can collect points until he reaches a total of 10 points. The game offers five different types of fruits but in each round only two given types are allowed to be caught. If the player catches one of the remaining three types he gets a bad point. At the end of the game the time the user needed to collect 10 right fruits is displayed.

1 TOPIC OVERVIEW

The general idea of the game "Catch The Fruits" is to catch the juicy fruits which fall down from the sky before they reach the ground and become muddy and uneatable. Five types of fruits can be caught with a basket the user controls with a wand: bananas, apples, cherries, apricots and pears. To make the game more difficult only two given types of fruits are allowed to be caught in one round. They raise the player's score whereas the three remaining types lower it. When the player reaches 10 points he wins the game and the time he needed is displayed.

The setting of the game consists of some trees on a meadow. The score and the fruits that should be caught are displayed above the player, so he can easily look at them while trying to catch the down falling fruits. The fruits fall down from five different positions in the sky randomly. The positions are arranged around the player so he actually has to turn to the left or the right to catch the fruits with the basket in his hand.
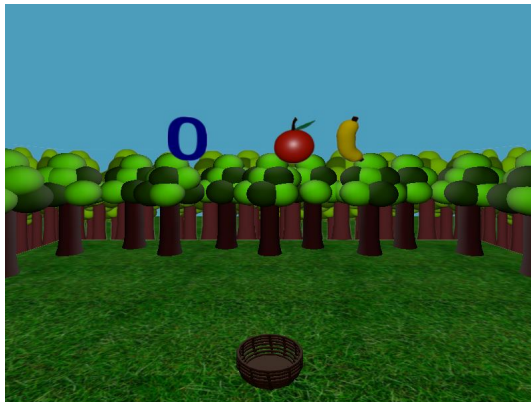

Figure 1: Setting of the game with fruits to be caught

2 USER GUIDE

The game can easily be started by the player by pressing button number one of the wand (right button). As soon as this button is pressed the fruits start to fall down and the basket can be controlled by moving the wand. The player has to catch the fruits with this basket and only a certain radius around the basket leads to a hit with the fruits. When the game is over the fruits stop to fall down and the needed time is displayed. By pressing the same button again the player can restart the game and a different pair of fruits has to be caught.

3 IMPLEMENTATION CONCEPT

3.1 Fruit Animation

The animation of the fruits consists of a translation along the y-axis and a specific rotation around the y-axis for each fruit. The game contains 25 fruits at which there are five fruits of every type. When a fruit has reached the ground it disappears as soon as it went through the ground floor. Then the position of the fruit is reset so a certain fruit can fall down several times at random positions. For this reason processing power is saved because only a limited number of fruits is needed to be animated during the game. Randomly the positions and types of fruits are taken out of an array to make the game more difficult. The time between two fruits to fall down is constant because the goal of the game is to have the shortest time possible to catch 10 right fruits and not to catch as much fruits as possible.
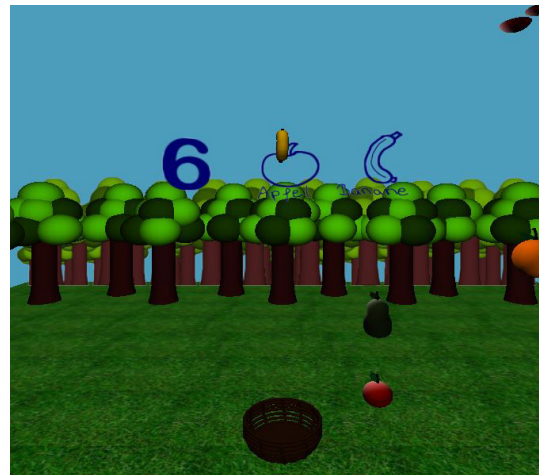

Figure 2: Score of 6 points and falling fruits

3.2 Collision Detection and Scoring

To score the player has to catch a fruit with his basket which he controls with the wand. The collision should only be detected if the fruit is really inside the basket and does not only scratch the outside. Therefor an invisible cylinder that is smaller than the basket was placed into the basket. Only if the fruit collides with this cylinder, the collision is taken into account. To detect a collision the coordinates of both the cylinder (which is connected to the wand) and the fruit are compared.

Additionally each fruit has a name which is the name of the type of fruit. It is added to the fruit with an attachment.
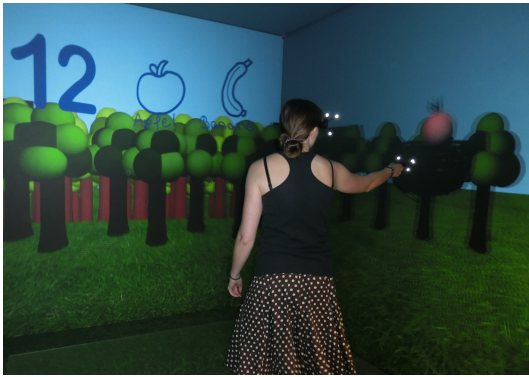
Figure 3: Cave scene while playing the game

To decide if a fruit increases or decreases the score the name is compared with the two given names of fruits that should be caught. The actual score is displayed with a png file containig the right number. Also the fruits that are allowed to be caught and increase the score are displayed as png file in front of the player. By this the player has the chance to see which fruits he is asked to catch during the whole game.

A player can't have less than 0 points or more than 10 points. If he reaches the 10 points the fruits stop falling down and a congratulations text appears in front of the player. Also the needed time is displayed so the player can compare it to friends or opponents.

Figure 4: Game is won and needed time is displayed

3.3 Models

The 3D models for the game (fruits, trees, basket) where built by myself in Adobe Maya and exported in obj files. The environment consists of planes with color and a gras 5 texture [Gras]. Behind the tree models a picture of a forest is displayed on a plane to give the player the feeling of standing between a huge number of trees.

4 PROBLEMS AND OUTLOOK

The most difficult parts of the project were the randomization of the fruits and their positions and the detection of a collision with the differentiation of different types of fruits. The problem of the randomization was solved by adding the fruits to different arrays (moving fruits and fixed fruits) and then pick the fruits out of the array randomly. The same procedure was used for the different positions the fruits fall down from. The problem of differentiation was solved by naming the fruits as described above. Thereby the name of one fruit can be compared to the given fruitnames that should be caught during the game.

To improve the game the models and textures could be designed more real and different stages of fill levels for the basket could be created to show the player how many fruits he has caught already. Also a nice animation when the fruit is caught by the basket would improve the quality of the game.

5 REFERENCES

Textures

Gras:
`http://elemisdesign.com/img/34/1.jpg.`