Concepts Augmented Reality Lab

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September 1, 2015

1 Assignment

At tilburg University DAF has just opened an augmented reality lab, this lab however has no showcase games as of yet. Four students from the Rotterdam University of Applied Sciences are assigned the task of creating a game for this lab.

The requirements for the game are the following:

- Show off the capabilities of the augmented reality lab

- Create a game that requires people to work together in the augmented reality lab.

2 Concept 1: Survival Game

The general concept behind this idea is to make people work together in a stressfull enviroment. The game will take place from the inside of a vehicle. The players will reside in this vehicle and are expected to fend off oncoming attackers. Each player has it's own responsibilities in the vehicle. There are three unique rolls for players. First there is the driver, this person is responsible for moving the vehicle through the field of oncoming attackers and making sure to keep the damage done to the vehicle to a minimum, the driver sees no more than what the headlights enlighten. The second roll is that of the spotter, this person is in charge of a flashlight to spot oncoming attackers from the sides and back of the vehicle and inform the rest of the team of the location of such attackers. The last roll in the vehicle is that of the gunner. This person is responsible for shooting the attackers and making sure that the oncoming attackers are shot down and do not damage the vehicle. The game is over when the vehicle is damaged too much and the attackers can get to you.

3 Concept 2: Cooking Game

The purpose of this game is to get people to work together based on continuity, if any player at any given point does not do his part it will result in failing the game. The game is a simulation of a restaurant, each player will handle one part of the restaurant. The first player is responsible for handling the orders and payment, this means he has to take the orders and give them to the chef. This brings us to the next player, the chef is in charge of cooking the food that

is requested by the customers, he has to put the right ingredients in the right dishes. Then there is one player left, this player is responsible for preparing the dishes to be served out. The food that the chef has prepared needs to be put on plates in a decent manner, the better the dish is presented, the more points will be received. The feedback from the customers about the dishes will decide the amount of points the team receives. If all players participate properly in the game bonuses can be added for overall performance. The game will have to be played using the controllers that were delivered with the augmented reality lab.

4   Concept 3: Puzzle Game

For the puzzle games the players will have to work together using their intellect. The puzzles will require all the players to participate in practical thinking. One of the walls in the room will show a question that the players need to answer. If the participants cannot answer this question they will need to use the controller as a candle and walk past the other three dark walls. When the controller is near the wall, the wall will partially light up. In this manner the players can search for clues to the answer of the question. Searching for the clues however, costs time and depletes the amount of points the players will receive for answering the question.

5   Issues

One of the issues that can occur is the screen tearing on the edges of the screen, since Unity might not support the synchronization software. This however only forms a real problem when it comes to the survival game, since this is the only game that does not have a static scene. The vehicle is moving at all times and forces the scenes to adjust. This problem can be solved by covering the edges of the screen with the beams of the vehicle in which the players reside.

These games are also highly dependent on the motion controllers from the augmented reality lab and will probably need Unity implementation, otherwise another viable solution might need to be found.

The last and probably most prominent issue might be the synchronizing of the game logic between the scenes. It will be almost certain that there will be four instances of Unity running on each of the slave computers and one more instance on the master computer synchronizing all the game logic between the slave computers and timing the events so that they happen at exactly the right time. If these events are off by even the slightest amount of time the players will experience lag between the four screens. This is particularly a problem with the survival game since this is the only game that does not possess a static scene.