

Question 1:

What kind of distortions do you notice with the texture maps you have used? What would be your approach to correcting them?

Answers 1:

In the beginning while using a sphere for a football with a texture image of a football, we observed overlapping black pentagons. We looked into how to get rid of the distortions, and found out about UV Mapping. The UV mapping process involves assigning pixels in the image to surface mappings on the polygon. Later on, when we switched to a football.obj with material and texture, we did not suffer from any distortion. As for field with the grass, we used repeat wrapping to cover the entire field.

Question 2:

Provide a brief write up (1-2 pages) on the design you used for:

- a. scene graph organization
- b. how the position and orientation of lights and the avatar's camera are calculated,
- c. computation of animation, including collision detection/avoidance.

Answer 2:

- a. The football is a child of player 1 or player 2 or none. As the player moves, translate in x or y directions, or rotation about the z-axis, the football will have a superimposition of properties of the player if it catches it. If football is in the dribble state, it will also have this to and fro motion superimposed. This lessens our work. It makes us earlier for us to work only on the components and not on the complete model.
- b. If we make the camera or the spotlight a child of the avatar's camera, this means that the properties of the players are superimposed on them. Due to this, it was difficult to set it to

initial positions. It looks unrealistic and, hence, we treated it as an independent object. We place it on the face of the player. And the same properties as rotation or translation are applied to it, not as a child, but independently. It increases the number of lines of code, but also gives us more flexibility.

- c. The aspects of the animation is described in the above 2 parts in detail. For the detection of a collision, we use the concept of the bounding box. If the bounding boxes overlap, in that case then we consider that there is indeed a collision and hence, we would want the bounding boxes to be as small as possible.

Link To Video: <https://vimeo.com/707586511>