COSC363 Assignment 1 Report
Synchronized Couple Animation

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Description of scene

The scene features two humanoid objects synchronously kicking a sphere object to each other and the ball travels underneath a windmill-like structure generated using solid glut objects such as cubes; these cubes have been translated and scaled to form this structure. Three triangle fans have been created to mimic that of blades of a windmill, these triangle fans rotate constantly around the centre of the windmill structure with the ball passing between them. One of the humanoids has an upside down code generated as a sweep surface placed on its head.
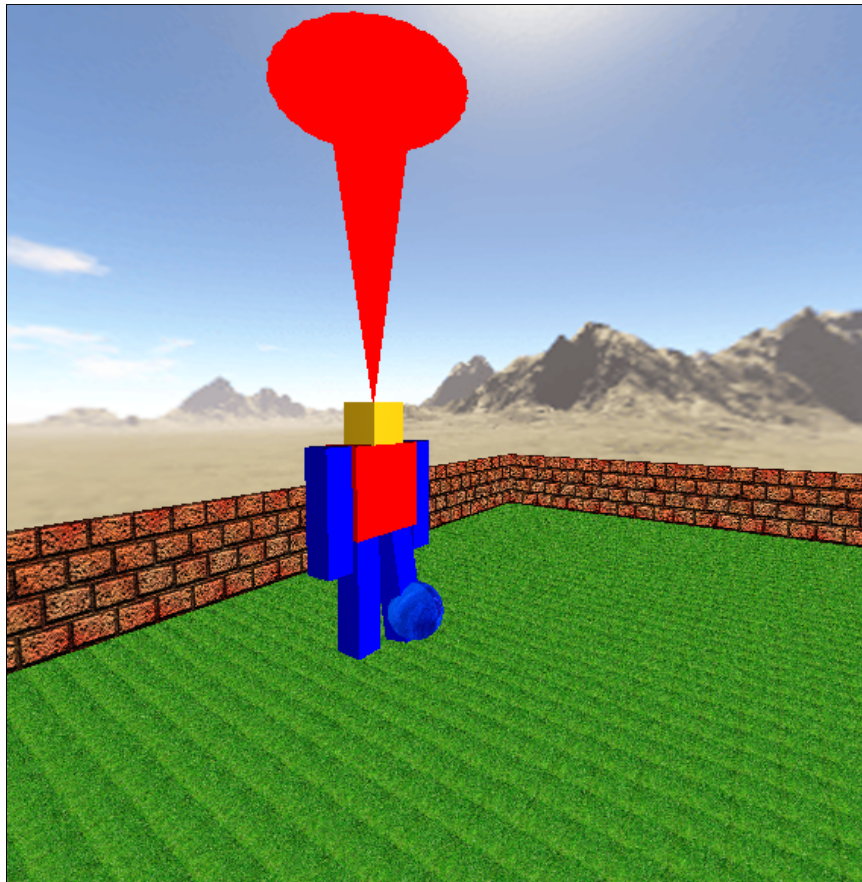
Screenshots

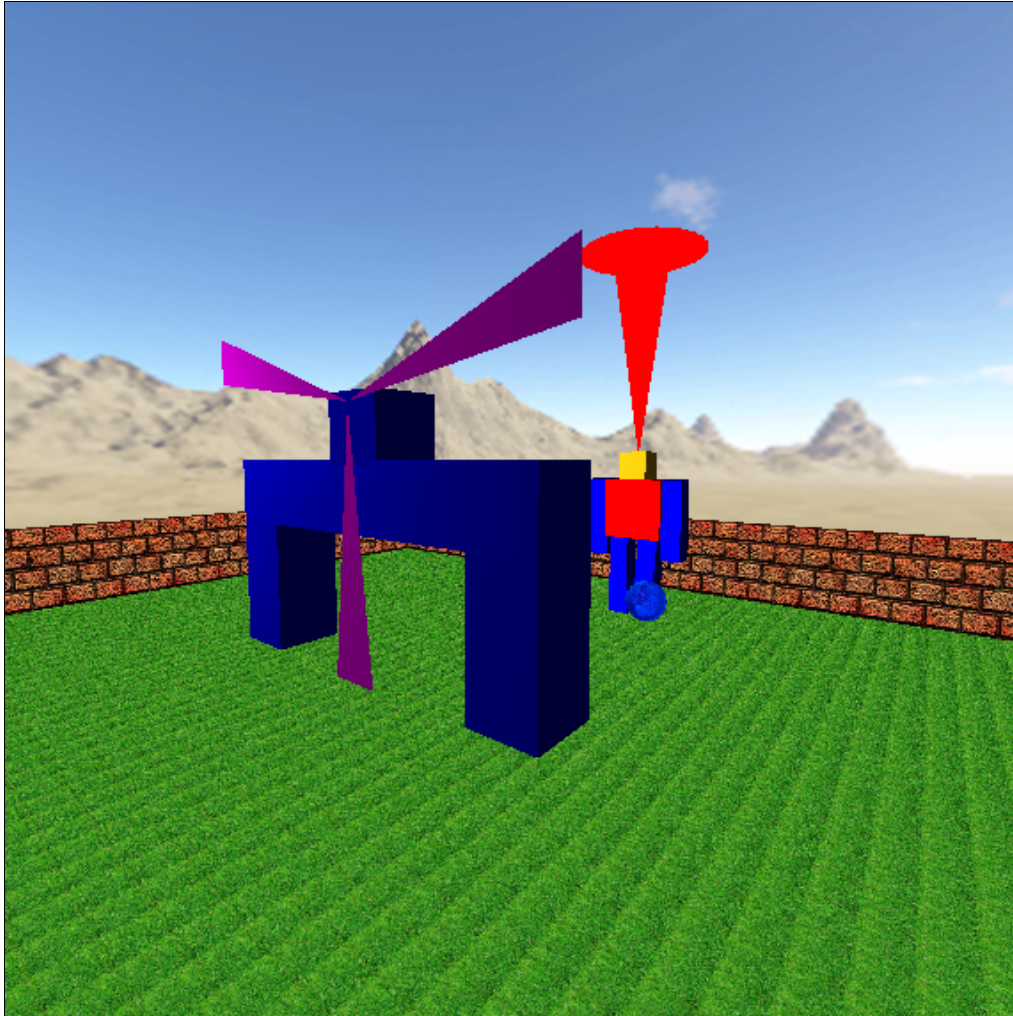*Figure 1: Humanoid kicking sphere object with cone above*

Figure 2: Windmill-like structure containing triangle fans as blades

Extra features

1. **Planar shadows cast by at least one object -** One of the humanoids casts an object, this was done using the shadow transformation matrix

2. **Collision detection -** If you move to the edge of the floor plane/to one of the four walls, you will not be able to move any further outside of this area.

3. **Sky Box -** The scene is textured using provided skybox textures, however the floor, wall, and sphere have their own separate textures.

4. **CmakeLists.txt -** A CmakeLists.txt file has been provided that builds the executable from the source code.

Control functions

Up Key: Moves the camera forward
Down Key: Moves the camera backwards
Left Key: Rotates the camera left by 5 degrees
Right Key: Rotates the camera right by 5 degrees

Build commands to compile and run the program

1. Extract (unzip) the files from the zip file to a directory of your choosing.
2. Navigate inside the folder 'akp41_363_assignment_1'
3. Open the terminal from inside the folder 'akp41_363_assignment_1'.
4. Run the command: cmake .
5. Run the command: make
6. Run the command ./akp41_assignment_1.out
7. The scene should now be displayed with the ability to navigate using the arrow keys

References

Sphere texture -
https://www.vecteezy.com/vector-art/1226007-dark-blue-watercolor-blue-texture-background
Floor texture - https://www.123rf.com/photo_69737695_grass-field-texture.html