CS 6160 Final Project Mid-Project Report

Collision Detection for moving 3D meshes

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I have successfully created a basic user interface that allows interaction with two sphere obj models. The system currently utilizes brute force methods to detect and handle collisions between the spheres and the boundaries. The user can use the mouse to indicate the direction of motion and velocity for the spheres, and collisions between them are detected based on their radius. Additionally, the system is capable of handling collisions between boxes using the AABB algorithm.

Initially, I was unsure which graphics API to use for my project and experimented with OpenFrameworks. However, I realized that it already had built-in functions for handling collision for 3D objects, which did not align with my objectives. Thus, I switched back to OpenGL, which I have used before and will allow me to achieve my goals.

Moving forward, I plan to add a static large sphere at the center and multiple small spheres that will continuously collide with it. I intend to display collision points by changing the color of the impacted area, though I am still figuring out how to do this. To improve efficiency, I will implement a bounding volume hierarchy data structure for the bigger mesh to streamline collision checks. Finally I will compare the time it takes for collision detection in both the techniques.

Note: No changes in scope.

Config requirements for the code: Xcode, OpenGL, GLSL, GLFW

A picture containing pool ball, pool table, poolroom, table

Description automatically generatedA picture containing pool ball, sport

Description automatically generated