CS 174A
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Fish are Friends, not Food

Team Members:

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High Level Description

We plan to make a fish tank simulation/game. We will implement a 2D fish tank resting on a table. Inside the tank, we will have one or more fish swimming inside. The player can use their mouse to feed the fish by clicking anywhere inside the water in the tank, causing food to appear. Additionally, the player can observe a certain fish by clicking on them. Depending on our progress, we will add additional features, such as having the fish grow as they consume more food, having the fish multiply once they reach a certain size, or having different types of fish.

We hope that our simulation/game can be a relaxing pastime for our fellow students in this class, allowing them to relive the experience of raising their childhood pets free from the restrictions of their Westwood apartments.

Implementation

Each fish in our fish tank will be a three-or-more-level hierarchical object. For example, the fish body, the fish's head, and the fish's eyes would be a three level hierarchical object.

To demonstrate camera tracking, we would like to implement the ability to click on a specific fish in order to begin tracking this fish. This feature will allow you follow a specific fish by automatically moving the camera to follow it.

The fish will be constructed using custom polygons and textures. Along with that, their movements will use a parametric curve or surface to model their movements.

One of the advanced features we are planning to implement is Collision detection and response. Our fish needs to be able to swim within the boundaries of the fish tank, colliding with the walls of the tank appropriately. Another advanced feature we are planning to implement is mouse picking. We want to be able to click on the water to drop a food pellet to feed the fish. This will cause the fish to move towards to food and consume it.

Division of Work

Our tentative division of work is as follows:

All: Creating the environment (making the tank and fish)Textures
Grand - Collision (fish tank boundaries)
Kenny - Camera following

Jonathan - Mouse picking

Challenges

We expect the game logic to be the most difficult part of the project. For example, having the fish determine whether there is any food nearby, having the fish move towards the food, deleting the food once the fish have eaten it, etc. will require a lot of effort.

Along with that, we expect the camera tracking to be fairly difficult, since we will need to have the camera match the motion model of our specific fish without losing focus or losing track.

Finally, simulating relatively realistic fish behavior will be another challenge. From the buoyant floating of the fish, to the flapping of their fins, it will be a challenge getting the movement of the fish to be as natural as we can.

In the instance we find ourselves running out of time to finish our project, we will prioritize camera tracking, then game logic, then realistic fish behavior, in that order. Although having natural fish motions is our goal, we believe that the other two are more fundamental to a smooth user experience.