

SHARK: Deformation and Animation

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Project Description:

Using the shark from the first assignment of CMPS 160, I will be conducting experiment with free form deformation. A YouTube video within the HTML file will demonstrate something that I would like to achieve as a bonus. With that in mind, first I would like to introduce the main goal of my project. My goal is to create an average length animation of the swimming shark. The shark will be in logical and correspondent movement as it swims in the open water, while the background will be rendered differently through every scene. I have conducted some research on different idea of how this would be done. One of the ideal one would be that I will be conducting a series of poses which takes turn to render at different time using a transition function. Currently I am very optimistic about this idea however making the shark changes its body motion remains a challenge. After receiving ideas from Professor Pang about free form transformation, I began to look for different implementation method. However the free form transformation is something that required artistic skill if and only if I apply that to the shark animation since I would be judge the body shape using the transformation tool then I'll render it on the widget. As the final decision, I will aim to use the first option mentioned above and leave the free form transformation that I will myself create as an extra functionality, with this tool that I create, the user can interact with the shark's shape by clicking on any part of it and that body part will transform.

For the main idea, I would like to further explain how I plan to have the shark move. By creating different poses of the shark, and taking turn to render by calling each function separately, I will be able to create a less costly program. However, a problem I can forth see would be that how will the shark's move look realistic? There would be two options: one is to make about a hundred different rendering functions which draws the shark a bit different than the other; the other option would be to translate the required position of the shark's certain body part based upon the current rendered frame's position. In another word, is to determine, using physic's law, the reaction of each body part of the shark at each scene of the animation and render using the determined coordinate values of that body part.

Components and Features:

Shallow water terrain with rocky bottom

Fully animated shark

Appropriate lighting as the shark moves

Extra Feature: Free form animation (something I can achieve given sufficient remaining time)

Schedule:

I will have about more than 4 weeks to work on this project:

1st week: reprogram the first assignment so that it would fit into the new project's requirement

2nd week: start on programming different poses, positions and movements of the shark

3rd week: coding the background and lighting animation for the shark

4th week: Physically-abide shark animation and applying texture/mipmap for ocean bottom

5th week: debugging and creating the website for the project with html.

Included links with information which related to the project are on the project's webpage