CSC418 A1 Penguin Project Report by Clark Chen

Penguin, which is first assignment of OpenGL, already gave me plenty excitements to show the capacity of OpenGl. And here I am going to briefly describe my animatic design of this digital Antarctic creature.

Since the animation is compound of basic 2-D multi-shaping objects, particularly circle; square and other multi-sided polygons. The first part will be come up an efficient way to draw those basic parts. For basic squares, the project just used the default way draw the square from center respect to current scale scope. For basic circles, the project uses two types of designs. Type one uses the technique to connect many line segments in order to produce a smooth circle since OpenGl does not have a build-in function to draw the it. Type two uses exactly same technique as type one. Except instead of drawing an empty circle, type two draws a circle with color filled inside. Type one mainly use for most circles in this project, and type only use for the eyeball. Last basic shape is multi-sided polygons. Since all polygons are different, in the polygon drawing function, the project assigned different types to different shapes of polygons (e.g torso=type1). After all those basic parts are prepared, next step is combining them together.

(The project start with the center of torso as root coordinates to build other parts hierarchically)

The last step is added GUI interfaces and controls of DOFS.

The project has eight joints. Neck, left leg, left feet, right leg, right feet, arm, upper beak and lower beak. For first six joints, attach them with spinner control to be able to simulate each of them with one rotational freedom. Last two joints, assign upper beak change rate to 0.1 each frame, and assign the change rate of lower beak to opposite of upper beak in order to simulate the effect of mouth open-close animation.

This concludes the project, the project definitely offered plenty entry-level experience for OpenGl starters.