Computer Science 112
Art & Science of Computer Graphics
The College of Saint Rose
Fall 2015

Topic Notes: Basics of Surface Images

We will look in more detail at this later, but as it is a handy feature, here is how to include a *surface image*.

To start, we'll see how to make a poster or a billboard of an image.

On the Wiki: Billboard

The important steps:

1. Create a `Mesh` with a single polygon, onto which your image is to be mapped. This polygon is a special one that defines a surface coordinate system on top of the polygon.

   ```
   billboardPic = Mesh()
   billboardPic.addUVPoly([(-1,-1,0), (-1, 1, 0), (1, 1, 0), (1, -1, 0)],
                          [[0,0], [0,1], [1,1], [1,0]])
   ```

   This defines a polygon in a mesh in the xy-plane from (-1,-1) to (1,1), but also maps a *uv-coordinate system* for a unit square onto the polygon with the origin at (-1,-1). More on uv coordinates later.

2. Create a `Material` from an image file.

   ```
   skiPicture = Material()
   skiPicture.surfaceImage("wolfcreek.png")
   ```

   In Ambrosia, the image should be in PNG format and should be placed in a folder named `images` inside the folder where you are storing your model.

3. Add the `billboardPic` to the scene (or in this case, to a group that will define a nicer billboard), using the `Material` we've defined. Note that we scale it up from 2×2 to the actual width and height of the image to avoid stretching and/or squishing of the image.

A `Material` defined with a `surfaceImage` may also be used in other contexts, and you are welcome and encouraged to experiment with it. We will see later how to control the mapping of the surface image onto our objects.

Note: you may find that some surface images map better onto objects if you use the `grainImage` message instead of `surfaceImage` when creating your `Material`.

On the Wiki: Woodenmarble