Snowflake

FINAL PROJECT

Megan McCormick | CS557 | 3/15/20

Images

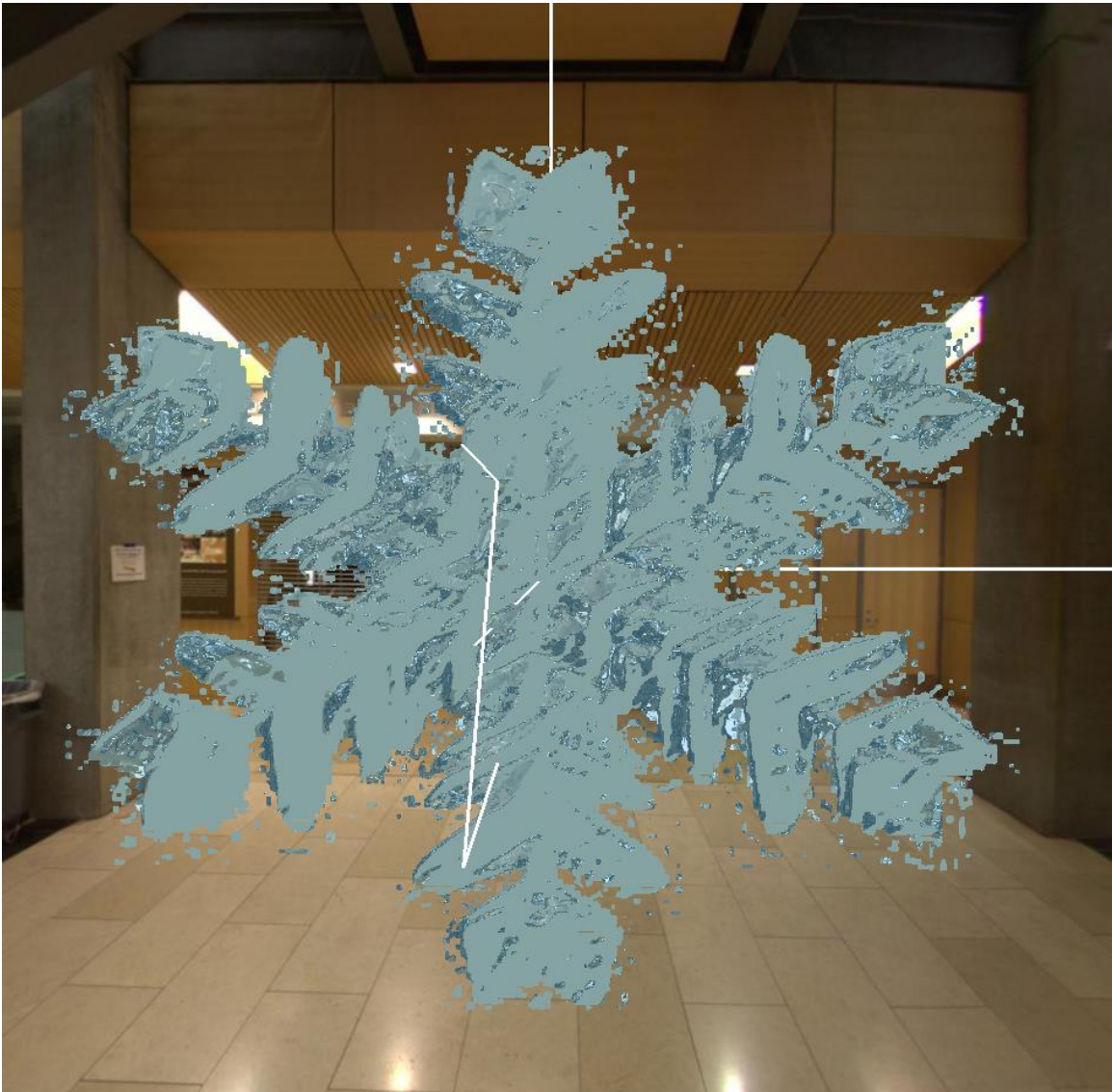Figure 1: Snowflake in reflective mode to really show Bump Mapping

Figure 2: Adjustment of refraction

KEY CODE

```
float refin;

vec3 Normal;
vec3 Light;
vec3 Eye;

Normal = normalize ((texture2D(uNormalTex,vST.st).xyz*2.0 - 1.0));
Light = normalize(Ls);
Eye = normalize(Es);
 if ( texture2D(uColorTex,vST.st).b > .99){
      discard;
```

```
        }
        if ((texture2D(uNormalTex,vST.st).r)> .9){
              refin = uif;
        }
        else if ((texture2D(uNormalTex,vST.st).r)> .6){
              refin = uelseif;
        }
        else{
              refin = uelse;
        }
    vec3 vRefractVector = refract( Eye, Normal, refin );
      vec3 vReflectVector = reflect( Eye, Normal );

    vec4 refractcolor = textureCube( uRefractUnit, vRefractVector );
    vec4 reflectcolor = textureCube( uReflectUnit, vReflectVector );
    refractcolor = mix( refractcolor, BLUE, .40 );
    gl_FragColor = vec4( mix( refractcolor, reflectcolor, uMix ).rgb, 1. );
```

VIDEO LINK

https://media.oregonstate.edu/media/t/o_uv21uc88

COMMENTS

This project took a lot of time to get it right. Originally, I started with a snowflake object and then implemented bump mapping using a normal map but it would flatten my snowflake object and there was no bump mapping. It also altered the color which wasn't Ideal. Then I tried to debug my bump mapping on a quad and it worked like a dream, I didn't want the quad to be there though because it should be a snowflake. A friend of mine suggested I try and "cut out" around the snowflake. Thus I was able to utilize discard to cut out the snow flake!