Oregon State University

Project #2: Noisy Elliptical Dots

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1 Description

1.1 Set up

GLSL and glman are used to render geometry covered with noisy elliptical dots in the project #2.

1.2 Program Description

In this project, the program is designed to make noisy elliptical dots on the given 3-D sphere. The 3-D sphere and the ellipse dots have a white and a red color respectively. The Noise Amplitude and Noise Frequency in the program change the surface of the sphere, deforming the original elliptical dots.

According to the lecture note, we define "uniform sampler3D Noise3" to create a 3D noise texture and places it into Texture Unit 3, and the noise vector (nv) is also defined for texturing:

$$uniform\ sampler3D\ Noise3;$$

$$vec4\ nv = texture(Noise3,\ uNoiseFreq\ *\ vec3(vST,\ 0.));$$

Then, we need to set the range of the noise function:

$$float\ n = nv.r + nv.g + nv.b + nv.a;$$

$$n = n - 2.;$$

$$n\ *=\ uNoiseAmp;$$

Lastly, a new elliptical equation, similar to previous project, and scaling is needed:

$$float\ ds\ = st.s - s\_c;$$

$$float\ dt\ = st.t - t\_c;$$

$$float\ oldDist\ = sqrt(\ ds\ *\ ds\ + dt\ *\ dt\ );$$

$$float\ newDist\ = oldDist + n;$$

$$float\ scale\ = newDist/oldDist;$$

$$ds\ *=\ scale;$$

$$ds\ /=\ ra;$$

$$dt\ *=\ scale;$$

$$dt\ /=\ rb;$$

$$float\ drst\ = ds * ds + dt * dt$$

1.3 URL

Video Link(bitly): `https://bit.ly/42AHUeK`

Video Link(original):
`https://oregonstate.zoom.us/rec/share/5YojZqqgjnHBg4L18QYeLaIh23QfRp76ddrfoa8TdMmiDAQs4nl7Q-a`
`z_RzQV9TtiMdiW6e`

1.4 Test Result

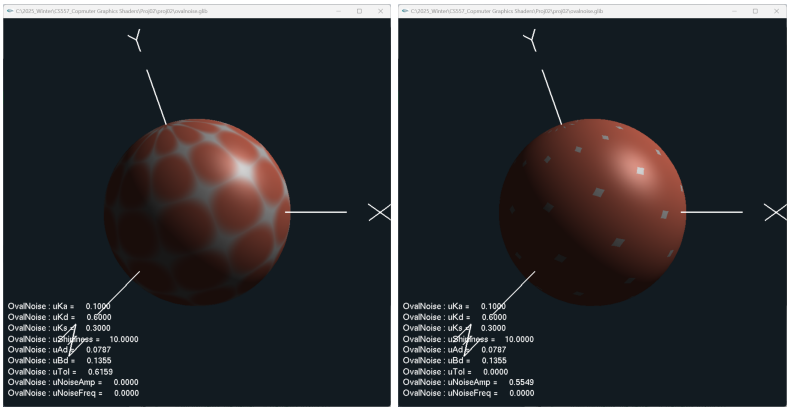

Figure 1: No NoiseAmp (left) and NoiseAmp(right)

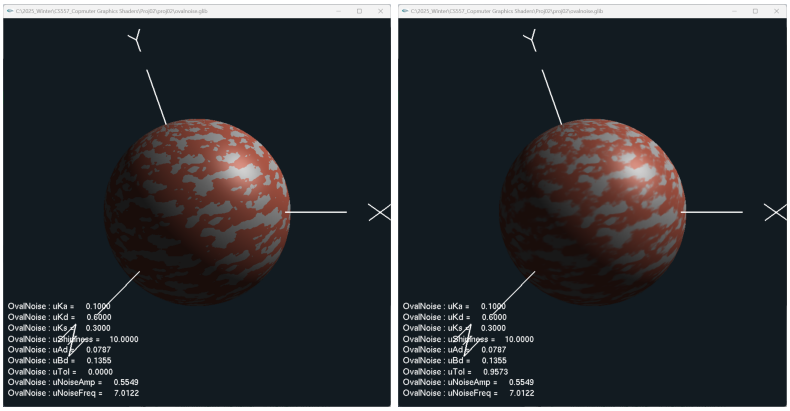

Figure 2: NoiseFreq (left) and NoiseFreq with uTol(right)