COMPUTER GRAPHICS FINAL

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VIDEO LINK

- https://youtu.be/SVOqaEIBCQ0?feature=shared
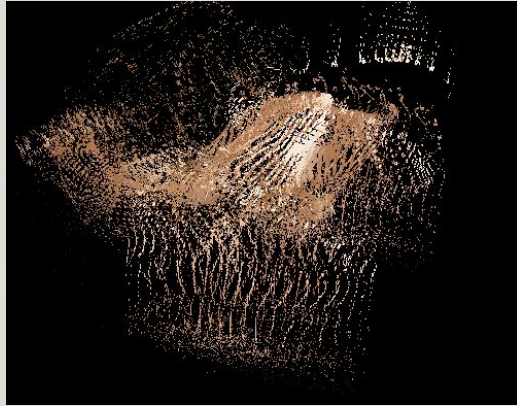
THEME: EXPLOSION

- In this assignment, my main target is to make the object reaches an explosion effect

- To implement this effect, I make each pixel of the object flyout from its normal and fly away as time pass

MODES

- Explode:

- Merge:

- Spin:

METHOD: GEOMETRY SHADER

- For the input part, it will get gs_in[] array from vertex shader with view matrix, perspective matrix and texture coordinate. These are for the vertex manipulation.

- For the uniform variable, time is for the scale changing and way for the pixel moving way.

- For the pixel action, calculate its moving vector by getting its normal.

NORMAL CALCULATION

- First use interpolation to get the normal of each pixel based on its vertexes and sum up and average it.

- Then calculate the coordinate that should be added to the original position to get the new ones.

- The formula will be the normal times square of time and scale = 10.

- Finally added to the gl_position to move the pixel to the target place.

METHOD: MAIN.CPP

- For the main.cpp part, besides building and passing the model and texture to the shaders, it the count the current time to decide the pixel moving distance in geometry shader

- For global variables, the integer way will decide the pixel's moving way , in or out

- For isrotate is nearly same as the sample code , will decide the model is rotating and start to accumulate angle as time goes

METHOD: VERTEX AND FRAGMENT SHADERS

- For the vertex shader it will set gl_position of the model and pass it, texture coordinate, view matrix and perspective matrix to geometry shader

- For the fragment shader it will use the texture coordinate and map to the texture map to color the object.

REFERENCE

- Formula: https://medium.com/chenjd-xyz/using-the-geometry-shader-to-achieve-model-explosion-effect-cf6d5ec03020

- Shader reference: https://www.geeks3d.com/20140625/mesh-exploder-with-geometry-shaders/