

**CPSC 360**  
**Assignment 4**  
**3D Sierpinsky Gasket**  
**Due: 1-15 at 11:59p.m.**

**Overview:** The Sierpinsky gasket is a recursive fractal with a long history in computer graphics. To generate a 2D gasket, the following algorithm is applied:

1. Define a triangle.
2. Generate a random point,  $p_0$ , inside the triangle.
3. Pick a random vertex of the triangle
4. Calculate the point,  $p'$ , halfway between the vertex and  $p_0$ .
5. Plot the point  $p'$ .
6.  $p_0 \leftarrow p'$ ; goto step 3

For assignment 4, your task is to generalize this algorithm to 3 dimensions. This is done easily by making the triangle a tetrahedron, with the constraint that no 3 of the 4 vertices of the tetrahedron are collinear. When plotting points, it is recommended that the point color/color intensity be varied to make the 3<sup>rd</sup> dimension easier to see.