Computer Graphics

- **Modelling** – creating or storing representation of objects

  There are many ways to represent objects in 3D space. The goal is to develop the most efficient way to describe objects. For example, you can represent a sphere by center coordinate and the radius. Another way is by approximating using triangular surfaces.

  > **Why Triangle?** A triangle can be represented using 3 non-collinear points. When less than 3 points are given, it does not make a surface. When more than 3 points are given, it might not make a surface. It is one of the elegant methods to represent an object surface.

  Using the first method requires only 4 parameters so it will need little space. However, it might require complicated calculations when rendering depending on what you are trying to achieve. On the other hand, the second method requires more space to represent the object accurately. But it is pretty straightforward calculations when rendering compared to the previous method.

- **Rendering** – actually creating and displaying an "image" of the objects

  Rendering includes projecting a 3D object into a 2D image, calculating color for each pixel, and many others. There is a lot of methods for rendering image, such as: ray tracing, pipelining, etc.

- **Animating** – making the object move

  Animation can be thought of as a mapping from time to image. There are many methods which includes interpolating between images and many others.

OpenGL