

# COL781 Computer Graphics

## Assignment 1: Ray Tracing

**Due Date : 29.1.2018**

This assignment involves implementation of recursive ray tracing as discussed in the class with the following features

- a. A scene with objects of the type: polygon (plane), and sphere, quadric and a box. While specifying the object one needs to give the geometry and material properties.
- b. Local illumination model (Phong) with diffuse, specular and ambient components.
- c. Multiple light sources.
- d. Global illumination with reflection, refraction and shadows.
- e. Implement anti-aliasing using supersampling.
- f. Input using a file (your own format or a general format e.g. povray compliant)
- g. Specify eye/camera in viewing coordinate system (VCS) as done in the viewing pipe line.
- h. Perform intersection computation in world coordinate system (WCS). This would require appropriate transformation from VCS to WCS and vice versa.
- i. The final image can be rendered using OpenGL (3.0 or above) or any suitable image preview/display tool.

Note:

- The assignment can be done in any programming language, however it is recommended that C/C++ be used as it will be simpler to embed OpenGL in the subsequent assignments.
- The submission will happen through moodle and exact instruction will be given soon for how to submit.
- The assignment can be done in a group of size 2 max. It is assumed that both partners will participate in the assignment and accordingly evaluation will be done. Once the partners are formed they can not change for subsequent assignments.