

# **CS 405/805 – Computer Graphics**

**Fall, 2012**

**Instructor: Xue Dong Yang**

## **Term Projects Description and Requirements**

### **Option 1: Ray-Tracing**

*Minimum Requirements:*

Based on the assignment 2, the following two features are to be implemented:

- reflection using the recursive structure (tested with 2 or 3 levels of reflection); and
- shadow calculation

*Optional Additional Features:*

- Refraction calculation
- Texture mapping with rectangular surfaces

### **Option 2: Volume Rendering**

*Minimum Requirements:*

Based on your assignment 3, a user interface is created for interactive manipulations, such as rotation and zoom-in and out

*Optional features:*

- Segmentation for selective display of different density intervals (e.g. the intervals corresponding to soft tissue, skin, or bone)
- Cutting with horizontal or vertical planes

### **Option 3: Perlin Noise**

Implement the basic Perlin noise model in the ray-tracing program and demonstrate it with bumpy surfaces.

### **Option 4:**

Any project in graphics area with my approval.

**Due Date:** Tuesday, December 18, 2012 at 12:00 pm.

**Hand-ins:** the following documents in a single zip file

- Well-documented, complete source programs
- Sample representative result pictures
- Short description of features

**Demonstrations:**

This is required for Option 2, but optional for others.

**Marking Scheme:**

- Mark for the term project is based on the minimum requirements only.
- Additional optional features are welcome. But they are for your own pleasure only and have no influence on the mark
- (1) Program readability, (2) Program structure and (3) Final results carry equal weights in the marks.