# CS 380
# Introduction to Computer Graphics

## Programming Assignment #4

TA. YeongBeom Lee

# Objective

- Use OpenGL to render, manipulate, and animate 3D models.
- Experience varying modes for moving cameras and objects.

# Overview of Requirements

- Your Scene
  - At least 3 models (e.g a cow, a beethovan, a lamp)
  - One must be articulated with at least 3 joints
  - One must be read in from OBJ model file
- Your Functions
  - Several Viewpoints
  - Selection (using Back-Buffer)
  - Moving cameras
  - Moving objects

# Requirements

0. All items will be needed are prepared in the skeleton codes or course homepage including reference file.

0. Create a simple scene (at least 2 models)

0. Several viewpoints (camera models)
   - overview camera
   - at least 2 free cameras
   - each of the views with key maps (‘0’, ‘1’, …)

# Requirements

1. Selection using a back buffer
   1) If you type ‘s’, selection mode is enabled.
   2) If you select an object with mouse;
      then only selected object should be transformed.
   3) If you type ‘s’ again, selection mode is disabled.
   4) If you type ‘b’, toggle of showing the back buffer.

# Requirements

2-1. Provide an interface for moving cameras

1) provide pan mode (button ‘p’)
2) provide dolly mode (button ‘d’)
3) provide zoom mode (button ‘o’)
4) provide trackball mode (button ‘t’)

2-2. Provide an interface for moving objects

0) keep all the functions in PA2, 3
1) provide trackball mode (button ‘t’)

# Requirements

3. Draw your articulated object hierarchically
   1) You should use the GL matrix stack (push, pop)
   2) Support to choose each part of the object.
   3) Provide constrained motion.

   (e.g. if you select a certain part and type ‘r’, only selected part should be rotated around joint axis)

4. If you type ‘h’, print all key maps and functions.

# Submission

- Due : May-2 (Fri.) (before 11:59pm)
- File Format

  : StudentNumber_PA4.zip (ex. 20149999_PA4.zip)
  - zip file = modified/added codes and “README.txt”
  - “README.txt” = brief comments about your codes

- Send e-mail to TA, cs380ta@gmail.com
- I will not accept any late submissions