Introduction to OpenGL

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Theme of the Course: Writing Graphics Programs using OpenGL

1. OpenGL is the *de facto* Industry and Academic Standard for cross-platform graphics development
2. OpenGL renders a very wide range of graphical input
3. This Course will attempt to teach you how to render using OpenGL

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Topics

- History of OpenGL
- The X-Window System
  - Programming Graphics in X11
  - Visuals, Colormaps and all that
- The OpenGL System
  - A simple graphical example
  - The need for GLX
  - Running the example in X-Windows
- Defining the User Interface: Motif
  - How to obtain Widget resources to draw on
  - Integrating Menus
  - A more substantial example

Topics Continued

- OpenGL Programming using GLUT
  - Coordinate Systems, Modelview- and Projection-Transformations
  - Defining Simple Objects: Primitive Types and Vertex Arrays
  - Hierarchical Coordinate Systems
  - Lighting and Materials
  - Texture Mapping
  - Evaluators and Free-Form Surfaces
  - The Frame Buffer

Prerequisites

You should have had:

- Some knowledge of Computer Graphics
- Ability to program in C
- A little linear algebra

Projects

Learning By Doing

- There will be two programming Projects
- One will deal will Coordinate System and Hierarchical Structures
- The other will involve mapping textures and calculating shadow maps

Grading Policy

Grading is usually on a curve

- Class Patricipation: 10%
- Homework: 25%
- Quizes: 25%
- Final: 40% [1]

[1] Subject to revision

- Note University Policy on Cheating
- Hand in your own work!
- Problem Sessions are part of this course

Office Hours

- Make Use of Them!
- Will be announced soon

References

- Schreiner, Dave *et al.*, “OpenGL Programming Guide,” *Addison-Weseley*, Seventh Ed., Boston 2009.
- Kilgard, Mark, “OpenGL Programming for the X-Window System”, Addison-Wesley, Boston 1996
- Martz, Paul, “OpenGL Distilled,” Addison-Wesley, Boston 2006