

Computer Vision & Graphics

EE2041

Lecturers: Prof. Adrian Hilton
Centre for Vision, Speech & Signal Processing

a.hilton@surrey.ac.uk

Objectives

- Introduction to fundamentals of computer graphics
- Introduction to computer vision:
 - Camera models & image processing
- Implementation of graphics algorithms
 - OpenGL API (standard)

Pre-requisites

Basic programming in a structured language (ie C)

Basic mathematics: geometry/trigonometry/matrix algebra

Introduction to Computer Vision & Graphics

Lectures:

1. Introduction
- 2-3. Geometry and Object Representation
- 4-5. Computer Vision: Camera Models and Viewing
- 6-7. Lighting & Reflectance
8. Rendering
- 9-10. Animation

Laboratory exercises (1 hour supervised lab. each week)

- weeks 1-5: 1hr. laboratory exercise using OpenGL & C
- weeks 6-10: OpenGL assignment

Assessment

Assignment: OpenGL Project (30%)

Set week 5, to be handed in week 11.

Examination(2hrs.): 3 questions on course material (70%)

Books

Recommended:

**Angel - 'Interactive Computer Graphics'
A top-down approach with OpenGL,
Addison-Wesley**

Background:

**Forsythe & Ponce: 'Computer Vision: A Modern Approach'
Prentice-Hall**

Woo - 'OpenGL Programming Guide' Addison Wesley

Hill - 'Computer Graphics Using OpenGL', Prentice Hall

Hearn - 'Computer Graphics' C Version, Prentice Hall

Web-resources:

[**http://cvssp-data.eps.surrey.ac.uk/Personal/AdrianHilton/EE2041**](http://cvssp-data.eps.surrey.ac.uk/Personal/AdrianHilton/EE2041)

Links to online resources for OpenGL:

OpenGL libraries

OpenGL Programming Guide

Utilities for OpenGL

Online learning resources for OpenGL