Arch 226B  Advanced Modeling and Animation in Virtual Environments

Winter 2000  Tue and Thu  4:30 - 6:00pm  CDA Lecture Room
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DESCRIPTION
Advanced Modeling and Animation in Virtual Environments is a course that introduces the students to advanced concepts, skills and theoretical aspects of modeling and animation. The course intends to meet the needs of students with average microcomputer skills. The goal is to provide students with generalized skills and structured knowledge. The applications, which have been selected, are all commonly found in professional offices. Students will therefore also pick up some specific skills related to particular Macintosh and Windows-based packages which they are likely to encounter as they pursue their careers.

The first part of this course (Fall quarter) covered issues related to 2D and 3D dimensional representation, i.e., painting, drafting, modeling, and rendering. The objective of this part of the course (Spring quarter) is to cover issues related to animation, i.e., real-time, kinematics, and inverse kinematics. The course will focus on theoretical issues related to how objects are represented in three-dimensional space, research overview of solid modeling, a close view to cyberspace and virtual reality, different techniques for texture mapping, and ways for creating animated pictures of architectural spaces, behaviors, video editing, and finally a brief overview of interactive systems.

The software packages that will be used in the course include FormZ (solid and void modeling), 3D Studio MAX/Maya (rendering and animation), Cosmo (behaviors and VRML), and RCX (robotics).

In addition, theoretical aspects of advanced modeling and animation will be presented and discussed. This will provide the students with general information about the theory, history, and research. The intention is to make the students think and understand beyond the limits of a specific application and to give them the theoretical background to be able to acquire and critically evaluate new knowledge.

Interested students can meet with the instructor to set a seminar that will take on more advanced themes for discussion and evaluation or a course that will focus into graphics programming.

SCHEDULE FOR SPRING QUARTER
Class 1a:
Overview/Lab Facilities/Account Setup/Lottery

Class 1b:
3D Space - Advanced modeling
Project 1: Create a 3D model (part of an urban block)

Class 2b:
FormZ: Advanced modeling

Class 3a:
FormZ: Advanced modeling

Class 3b:
3D Studio Max: Basics

Class 4a:
3D Studio Max: Simple Animation
Project 2: Create a simple animation path

Class 4b:
Animation: Kinematics

Class 5a:
Midterm questions/answers

Class 5b:
Animation: Kinematics

Class 6a:
Animation: Inverse Kinematics

Class 6b:
Animation: Inverse Kinematics
Project 3: Create a building behavior

Class 7a:
Animations: Video Production (Premiere)

Class 7b:
Animations: Video Production/editing (Afterfx)

Class 8a:
VRML: Basics
Project 4: Create an interactive virtual building project

Class 8b:
VRML: Interaction

Class 9a:
Robotics: Sensors, motors, and batteries

Class 9b:
Robotics: Control, RCX

Class 10a:
Robotics: Feedback Systems Theory

Class 10a: Review, final exam questions/answers