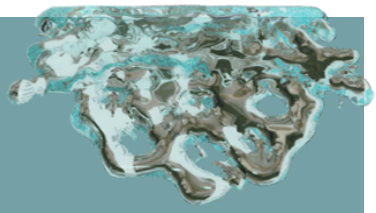
CSC/FST 430: Digital Visual Effects



11:00 - 11:50 a.m.
Monday, Wednesday, Friday
Class: CI 2006
Lab: Digital Arts Lab

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CIS 2031: Office Hours 9:55 -10:55 a.m., MW; 1:15-1:55 p.m., MWF; or by appointment.
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Course Information:
Interdisciplinary class covers aspects of manipulating digital still and moving images for visual effects. Student teams of computer-science and film-studies majors work together to learn and apply theoretical and practical material. Topics include still and moving image representation, digital workflow, lighting, rendering, compositing, morphing, particle effects, dynamics, camera properties, match-moving, filters, and virtual cinematography. Film-studies majors concentrate on planning, story-boarding, and producing short movies that apply visual effects while computer-science students focus on programming and technical implementation issues.

Required Texts:
The Art and Science of Digital Compositing by Ron Brinkmann.
Nuke 101: Professional Compositing and Visual Effects by Ron Ganbar.
CSC: *Practical Maya Programming with Python* by Robert Galanakis.
FST: *The VES Handbook of Visual Effects.*

Optional:
Learning Maya: The Special Effects Handbook by Doug Walker.
Special Effects: The History and Technique by Richard Rickitt.
Matchmoving: The Invisible Art of Camera Tracking by Tim Dobbert.
Maya Python for Games and Film by Mechtley & Trowbridge.
Complete Maya Programming by David Gould.
The Magic of Houdini by William M. Cunningham.
The Digital Matte Painting Handbook by David B. Mattingly.
Cinefex (Journal for Visual Effects in Film).

Useful:
Maya, Nuke, Mudbox, Houdini, Photoshop, Final Cut Pro, etc. on computers in the Digital Arts Lab.

Maya Resources housed in the Randall Library, including these and more:

The Art of Maya
MEL Fundamentals Courseware
Learning Maya: Rendering
Rendering 2D Effects in a 3D Environment
Understanding Maya Shading Networks
MELBot Wars: Virtual Fighting Robots
Polygon Texturing, Lighting, and Shading
Introduction to Animation Basics
Python Scripting in Maya
Mental Ray in Maya Workflow
Character Setup in Maya
Maya Studio Projects: Dynamics
Hyper-Realistic Modeling
Hyper-Realistic Facial Setup
Matte Painting 2
Digital Sets 1: Modeling & Camera
Digital Sets 3: Rendering & Compositing
Creative Essence: The Face
Maya Cloth Courseware
Learning Maya: Dynamics
Patch Modeling for Visual Effects
Particles for Visual Effects
Exploring Advanced Shading Networks
RigidBody Simulations for Visual Effects
Inside the Maya Architecture
UV Mapping Workflows
Artist's Guide to MEL
Photorealistic Car Modeling
Facial Rigging in Maya Intermediate
Hyper-Realistic Body Setup
Concept Art
Camera Projects in Maya, and more...

Grades:

Project 1: Still compositing and more.	5%
Project 2: Match-moving and more advanced compositing.	15%
Project 3: Coding or Production work, TBA.	15%
Project 4: Participation in class final VFX production.	20%
Homework and short exercises focused on improving basic skills.	20%
Quizzes, possibly unannounced -- based on readings, web material, and class material.	20%
Class participation, discussion, and presentations.	5%

Tentative Project Description Summaries:

1. Still photo and CG elements are composited to create realistic, appealing compositions along with preparation work.

2. Using match-moving, image-based lighting, and advanced rendering; 3-D CG elements and video plates are composited to create two shots.

3. Project may involve use of a chosen effect, implemented using Python (or MEL or C++) as a stand-alone element or as an addition to a software package such as Maya, Nuke, or Houdini. Example ideas include particle effects, fluid simulation, crowds, morphing, camera manipulation, etc.

4. Class completes short narrative film(s) that incorporate(s) visual effects crucial for the story. Films are scripted, story-boarded, produced, and edited with effects in mind. Effects will be completed from a variety of methods covered in the course. Proposals are be submitted and approved.

*CSC majors will focus more toward implementing digital image manipulation or 3D simulation using Python, MEL, or C++. FST majors will focus more toward applying production principles to plan, storyboard, produce, photograph, model, animate, and edit as well as post-production techniques to complete effects-driven productions. Either major may complete work from both sides for bonus and are encouraged to do so.

Student Learning Outcomes:

1. Students gain understanding in mathematical, algorithmic, and conceptual techniques related to representing images and sequences of images with digital technologies.

2. Students develop the ability to manipulate aspects of digital images to create and composite photo-realistic synthetic images either through software or code.

3. Students learn aspects of digital cinematography and how physical cameras, lenses, and movement relate to digital representations as well as how to match these virtually.

4. Students learn techniques and aspects of algorithms for rendering photo-realistic imagery using computer graphics software.

5. Students model, render, and composite images and videos completely of their own creation, presenting their work for class critique.

6. Students work together as a large, coordinated group to complete a fully realized short film project from concept through to post-production and screening.

7. Students learn aspects of digital production and workflow as applied in current industry.

Class Policies

Quizzes will cover materials presented in class, whether lecture, video, tutorial, etc., as well as material from the required texts. Quizzes may include written questions or practicum.

General computer literacy is required for this course. Also desirable are artistic and cinematic interests. Projects will be presented in class on their due dates with open critiques and discussion. 3-D graphics work is very time-consuming, akin to a studio, workshop, or programming course. Plan carefully to complete projects in a timely manner. Late work will be reduced in grade by 5 points each day. There are no make-up quizzes. Please contact me in advance, if possible, if you must miss any graded work.

Attendance is required and will both directly and indirectly affect grades -- covered material is very pertinent to completing homework and projects effectively. Unless special circumstances are involved, more than three absences will result in class failure. Students are individually responsible for keeping current with course material and assignments.

Class announcements supersede posted material.

Academic honesty in all your work is required for a passing grade.

This syllabus and course materials may be subject to change with reasonable notice.