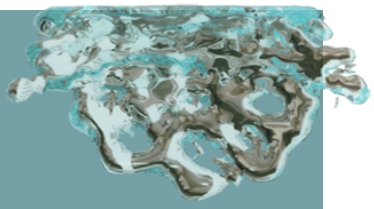
CPSC 8150: Special (Visual) Effects Compositing



11:15 - 12:05
Monday, Wednesday, Friday
McAdams 110E and somewhere in Charleston.

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McAdams 307: Office Hours 10:00-11:00, MWF; or by appointment. (864) 656-0309
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Course Description:
CPSC 8150 Special Effects Compositing 3 (3) Video special effects, compositing problems, effects animation, match-moving, 3-D geometry, color and texture reconstruction from 2-D images; extensive use of scripting languages and high-end software platforms. Preq: CPSC 6050 or CPSC 8070.

Course Information:
This interdisciplinary class is focused on manipulating digitally represented still and moving images for photorealistic visual effects. Topics include history, image representation, visual properties, cinematography, image manipulation, compositing theory, match-moving, lighting, rendering, color grading, planning, workflow, and other topics such as matte-painting, particle effects, simulation, and stereography as time allows. Students learn and apply conceptual and practical material in both technical and aesthetic projects related to visual-effects production.

Required Texts:
The Art and Science of Digital Compositing, 2nd ed., by Ron Brinkmann.
Nuke 101: Professional Compositing and Visual Effects, 2nd ed., by Ron Ganbar.

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

Grades (standard 10-point scale for letter grade assignment)**:**

Technical and aesthetic project work (multiple projects).	45%
VFX production.	20%
Short exercises focused on improving basic skills.	15%
Quizzes, possibly unannounced, based on readings and class meetings.	15%
Quality of engagement in project-work, presentations, discussions, and critiques.	5%

Project Objectives (more specific assignments to be announced):

Realistic and aesthetically appealing composited still images are planned and created using both photographic and synthetic image assets.

Match-moving, image-based lighting, and multi-pass rendering of 3D assets are applied to create similarly composited moving images with photographic and synthetic plates.

Digital image manipulation techniques are developed in a language such as Python or C++; this may be stand-alone or built to run within a related industry application. Similarly, effects-animation code may be designed and written.

Class completes a short narrative film that incorporates 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.

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 photorealistic synthetic images using 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 photorealistic imagery using computer graphics software.

5. Students model, render, and composite sequences of images, presenting their work for group critique.

6. Students work together as a coordinated group to complete a short film project from concept to post-production.

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.

Unless special circumstances are involved, more than three absences may 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.

Boilerplate

As members of the Clemson University community, we have inherited Thomas Green Clemson's vision of this institution as a ‘high seminary of learning.’ Fundamental to this vision is a mutual commitment to truthfulness, honor, and responsibility, without which we cannot earn the trust and respect of others. Furthermore, we recognize that academic dishonesty detracts from the value of a Clemson degree. Therefore, we shall not tolerate lying, cheating, or stealing in any form. In instances where academic standards may have been compromised, Clemson University has a responsibility to respond appropriately to charges of violations of academic integrity.

It is university policy to provide, on a flexible and individualized basis, reasonable accommodations to students who have disabilities. Students requesting accommodations should make an appointment with Disability Services (656-6848) to discuss specific needs within the first month of classes. Students should present a Faculty Accommodation Letter from Student Disability Services when they meet with instructors. Accommodations are not retroactive and new Faculty Accommodation Letters must be presented each semester.

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