ARCH 423/523 Spring 2022

COMPUTER ANIMATION & STORYTELLING
CRN 33871 / 33870 - Tuesday Thursday 10:00-11:50 am in Location TBA

Instructor: Visiting Associate Professor Earl Mark, emark@uoregon.edu

“animators are great observers, and there’s this childlike wonder and interest in the world, the observation of little things that happen in life”

— John Lasseter

ARCH 423/523 COMPUTER ANIMATION AND STORYTELLING is an interdisciplinary hands-on class that explores moviemaking through exercises in 3D computer animation. Five short-length animation exercises constitute the work of the term culminating in a final 3 minute (+/-) movie project. Individual projects may range in subject area according to the background and interests of the student. The animation software, Maya, is widely used such as for different kinds of artistry, design, full environmental and physics-based simulation, biomedical engineering, 3D character animation, scientific visualization, and cinematic production. The work of the seminar will be informed by screenings of student exercises and other movies. Discussion of perceptual phenomenon will provide a conceptual framework for the development and critique of this work.

There are no perquisites or expectations of prior knowledge. The course is targeted to all students within the College of design, and open to students from other disciplines. All software is free. Questions about the class may be sent to emark@uoregon.edu. Details about the class are posed on the web at https://blogs.uoregon.edu/cast/.
LEARNING METHOD:
Learning to work with Maya doesn't require advanced preparation or a technology background. It is used for geometrical modeling, simulation, and animation with state-of-art tools. For example, it is used by Pixar and Walt Disney studios to meet the needs of creative workflow and production, by designers to explore dynamically changing environments with realistic simulation of physical phenomenon, and others, such as biomedical engineers to predict the interactions required within an operating room, or computer musicians to imaginatively expand the reach of their work. Hands on tutorials are incrementally sequenced with direct one-on-one support.

SIMULATION:
Simulation includes the application of Newtonian forces (i.e., gravity, mass, friction, attraction and repulsion, collisions, etc.) to objects and their environments. It includes fluid dynamics applicable to wind, air, liquids (e.g., molasses, water, fountains, ocean surfaces). Particle generation is applicable to instances of many types of objects. (e.g., snow, rain, clouds). Mechanical objects (e.g., springs, hinges, pin joints, mass), fabric (e.g., clothing, tension membrane fabric), and other kinds of physical phenomenon (hair, skin, grass) will be included in classroom tutorials. Techniques in characterizing human and animal movement, such as inverse and forward kinematics, skeletons, joints, and materials, modeling people and working with motion capture data provide a number of ways that will be used to study human movement. Recorded or synthesized sound will be applied to generate animated sequences and forms. Highly realistic simulation of light, atmosphere, and materials, based upon advances in global illumination technology, will be used to simulate artificial lighting, reflective and refractive atmosphere conditions, and natural daylight. Academy Award winning V-Ray plugin to Maya, granted by Chaos Group for the animation course previously, may also be used.

MODELING FORM:
An exploration of NURBS three-dimensional modeling will be the basis for representing built and natural environments, sculpting characters and creating other complex geometrical forms. The scales for individual projects may range from short narrative movies to the analysis of micro-scale environments or larger scale architectural and landscape architectural settings.

CORE REQUIREMENTS:
The five exercises each consist of short animation of roughly 1 to 3 minutes. The first four animations count as roughly 15% of the course. The final animation counts towards roughly 30% of the course. Class participation / attendance counts towards 10%. The evaluation of student work will be based more upon storytelling idea rather than technical competence. There are no exams. All costs are covered.

INSTRUCTOR:
Visiting Associate Professor of Architecture Earl Mark, PhD, has expertise in 3D computer animation, geometrical modeling and moviemaking. His work in computer visualization and animation has been on long term national exhibition, such as at the Smithsonian, Monticello, Historic Jamestown, and the National Building Museum. He studied filmmaking under direct cinema pioneer Ricky Leacock. He has taught animation and moviemaking at the University of Oregon (2019), the University of Virginia (where he is presently tenured), MIT, and Harvard.