

FE417: Motion Capture for Artists

Spring 2012

Class Location and Time: F105, Monday, 1:00PM to 4:00PM

Lab Location and Time: F105, Available 24/7 –the Impulse system by appointment

Semester Units: 3

▶ **Faculty: Michael Scroggins**

aka@calarts.edu

▶ **TA: Elijah Kleeman**

elijahkleeman@alum.calarts.edu

This course will take the form of a series of lectures, screenings, and demonstrations in support of a production workshop centered on using our eight camera PhaseSpace Impulse 3D motion capture system in concert with Autodesk's MotionBuilder and Maya software packages. In addition to this standard flow we will be experimenting with Elijah Kleeman's custom software to work with HMD point of view tracking and real-time interaction in virtual environments created in the Unity gaming software. The goal is to explore the potential of performance animation in extending artists direct physical gestures into expressive animation (which includes some of the traditional uses of motion capture). In addition to exploring the more conventional uses of motion capture how can we reach beyond these conventions to achieve more innovative work? Some possibilities to be explored will be the incorporation of procedural animation, non-representational imagery, dense layering, and unique remapping of gestures. Students are encouraged to explore areas of personal interest and to incorporate this research into their production work. Taking an active role in class discussions and production teamwork is required to receive the highest mark within the CalArts grading system. The course is offered to both graduate and undergraduate students. Undergraduate students have the option to spend less time in production than that required of graduate students. It is expected that at the end of the course students will have gained an active knowledge of core concepts and techniques useful in working with performance capture within an art context.

The course schedule is dynamic and will gain detail as the semester progresses. A completed syllabus from the 2011 course is available to serve as an example of the shape that course took --and thus provide some sense of the direction this course may take:

http://emsh.calarts.edu/~aka/FE417/FE417_S2011_syllabus.pdf

A dynamic web page functions as key resource for the class. This page will be updated with links to course related materials as the semester progresses:

http://emsh.calarts.edu/~aka/FE417/FE417_S2012.html

Course Schedule:

January 23

- *Discuss course history and explore possibilities for student-initiated projects for this semester's class.*
- *Introduction to Labnet and the course web page.*
- *View and discuss "CalArts Producers Show Intro 2007", "Ghostcatching" (with Paul Kaiser, Shelley Eshkar, and Bill T. Jones), and "let yourself feel" (by Esteban Diácono).*
- *Demonstration of the PhaseSpace Impulse system using a wand to describe gestural paths in 3D space.*
- *Assigned Reading: "Motion Capture", Maureen Furness, <http://web.mit.edu/comm-forum/papers/furniss.html>*

January 30

- *Presentation: "Oscar Fischinger's Performance Animation Instrument: The Lumigraph and Potentials for a Similar Aesthetic Approach in 3D CG Performance Capture".*
- *View and discuss the documentation promo from Robert Abel and Associates 1985 production, "The Making of Brilliance"*
- *Examine the components of the PhaseSpace Impulse system and learn to propagate the spandex suit with markers.*
- *Suit up a student and explore several ways the live data may be viewed in the PhaseSpace Impulse software.*

February 6

- *View and discuss Ke Jiang's CalArts student film "Taxi" and his deliberate use of motion capture artifacts for achieving unsettling affect.*
- *Suit up a student and explore methods for mapping motion data to a puppet within MotionBuilder.*

February 13

- *Presentation: "Chronophotography: The Seminal Work of Étienne-Jules Marey and Eadweard Muybridge in Relation to the Development of Digital Motion Capture".*
- *View and discuss sections of Norman McLaren's 1968 film, "Pas de Deux" as an example of the influence of Marey and Muybridge on McLaren and other artists.*
- *Suit up a student and explore methods for mapping motion data to a puppet within MotionBuilder.*

February 20

- *PRESIDENTS DAY HOLIDAY*

February 27

- *Learn how to use the MotionBuilder plot function to bake animation onto a skeleton so that it may be imported into Maya.*
- *Assign a transparent surface material to the exported MotionBuilder model and apply Maya's nParticle system so that the that the invisible surface may serve as both the emitter and goal for streaming particle systems (with the result that the moving form of the invisible character is described by a coalescing and dispersing of point clouds).*

March 5

- *Presentation: "Best Practices for Skeleton Joint Renaming of Maya Models in MotionBuilder".*
- *Suit up a student, create a T-pose capture, assign markers to the MotionBuilder Actor object, create rigid bodies, and assign the Actor object as control for a specific Character model.*
- *Capture performances*

March 12

- *Demo: Refining motion data in MotionBuilder by retargeting, blending, IK, and setting floor contacts.*
- *Make schedule for student initiated projects*

March 26

- *SPRING BREAK*

April 2

- *Demonstrate the process of calibrating the PhaseSpace Impulse motion capture system.*
- *Student initiated project*

April 9

- *Student initiated projects*

April 16

- *Student initiated projects*

April 23

- *Student initiated projects*

April 30

- *Student initiated projects*

May 7

- *Review*
-

May 14

- ***Final Class***