SUL ROSS STATE UNIVERSITY
CSAT 3303 INDEPENDENT STUDY - MOTION CAPTURE

SPRING 2022 Time/day by arrangement Motion Capture Lab	Bret Scott, Asst. Professor Office: FAB 208 432/837-8794 bscott@sulross.edu Regular Office Hours: BY APPOINTMENT, due to Omicron

COURSE DESCRIPTION

Motion Capture is the process of identifying the location of key points of kinetic action and quantifying the change in those key points in three dimensional space over time.

Which sounds really daunting. Another way to put it: we're making data out of where feet, knees, hips, elbows, etc, are, and tracking the movement of that data as a character moves.

Rather than invent the huge quantity of data required to accurately animate a full human figure, our goal is to simply record it. The collection of related points in 3D space that collectively move over time, after we capture them, then becomes the framework for computer generated characters…who need not necessarily have the same body shape, size, or even appendages as the person whose body originated the captured data. For example, in real life, Andy Serkis, who played Gollum in *The Lord of the Rings,* looks nothing like a cave-dwelling troglodyte. But Andy's ability to express himself through his body, even captured as raw data, is what brings Gollum to life.

In this class, we'll be looking the use of the 3D motion capture camera system as a storytelling device, how to choreograph scenes, how to evaluate movement, and how to accurate capture motion data and transfer that data to other applications in the CGI workflow. Or, more accurately, YOU will be looking at these things, as this is an independent study course

Production is time and labor-intensive. You are expected to participate in weekend work, and you will have late nights in the capture lab. You will be warned of deadlines well in advance. Plan your schedule accordingly.

Computer Science – Bachelor of Science in Computer Science Program Learning Outcomes

The graduating student will demonstrate that he/she:

- can apply the fundamental concepts of computer science including algorithms and data structures
- can identify and apply modern computer systems, data base, and networking
- displays the ability to implement current programming methodologies
- becomes proficient with system design based on object-oriented programming
- is able to work as a team in workgroup environments

PREREQUISITES

None.

COURSE OBJECTIVES

By the end of this class, students will:

- Demonstrate a working vocabulary of motion capture terminology
- Understand the relationship between anatomy and kinetic movement
- Develop the skills of visual storytelling
- Identify and justify strategies for character choreography
- Demonstrate beginning mastery of PhaseSpace motion capture equipment
- Demonstrate beginning mastery of character movement
- Evaluate and critique merit and functionality of various kinds of visual storytelling / physical movement on a case-by-case basis.

COURSE ASSIGNMENTS:

1) Assembly of system and testing
2) Choreography Project 1, 2, 3
3) Capture Project 1, 2, 3
4) Final Project, including written summary of process successes and failures

Required Textbooks for this class:

None.

Materials Required:

Minimum 8gb flash drive, formatted for Macintosh

CLASS DATES: Assignments and Deadlines

Note that these dates and the details of each class are subject to change at the instructor's discretion

WEEK 1 – Online, due to Omicron. Review documentation provided by manufacturer of PhaseSpace 3D Capture System
WEEK 2 – Assembly and installation of camera grid
WEEK 3 – Cable and test network
WEEK 4 – Calibrate cameras
WEEK 5 – Test cameras. Update software, if required
WEEK 6 – Casting and first choreography
WEEK 7 – Test capture
WEEK 8 – Export test capture to Motionbuilder
WEEK 9 SPRING BREAK
WEEK 10 – Casting and second choreography
WEEK 11 – Capture second project
WEEK 12 – Export capture to Motionbuilder
WEEK 13 – Plan final project w/ storyboards
WEEK 14 – Casting and final choreography
WEEK 15 – Capture final choreography
WEEK 16 – Export final project to Motionbuilder
WEEK 17 SUBMIT FINAL PROJECT

GRADING

Assignments are valued as follows:

1) Full and reliable effort, meeting schedule	10%
2) Choreography Project 1, 2, 3	30%
3) Capture Project 1, 2, 3	30%
4) FINAL PROJECT	30%

Grading Criteria:

A = Exceptional. Demonstrates mastery of material beyond expectation. Professional quality of work. Highest level of scholarship.

B = Above average. Demonstrates mastery of material. Work is of better-than-expected quality, but not quite professional. High level of scholarship.

C = Average. Demonstrates proficiency with material. Work is of amateur quality. Ordinary level of scholarship.

D = Below Average. Less than proficient with material. Work shows errors, careless mistakes, or is just plain wrong. Poor scholarship.

F – Failure. Material incomplete. Work grossly negligent or incomplete. No evidence of scholarship present.

LATE PAPERS

Deadlines are an inescapable part of responsible, professional, adult life. Late papers will lose a letter grade for each day that the paper is late.

If you discover, ***a week or more in advance,*** that you have multiple deadlines converging on the same day, you may request a change in deadline> Such a change may be granted at the instructor's discretion. Once the deadline has passed, it's too late to ask for exceptions. Manage your time and deadlines wisely.

TARDINESS / ABSENCE POLICY

Attendance is 10% of your grade. That's the difference between an "A" and a "B"…or an "F" and a "D."

TARDINESS

Class BEGINS EXACTLY AT THE APPOINTED TIME. It is your responsibility to be prepared to begin BEFORE the class starts.

Three instances of tardiness is equivalent to one absence. See below for the class absence policy.

THE INSTRUCTOR RESERVES THE RIGHT TO DENY ENTRY TO STUDENTS WHO ARE NOT PRESENT AT THE START OF CLASS* – ON THE HOUR. **PLAN ACCORDINGLY**. ON-TIME is EARLY!

*Exceptions will be made only for those with classes located in RAS whose end time makes on-time arrival impossible.

Punctuality is essential in this business. Tardiness will not be tolerated.

Absence Policy, from the Sul Ross State University 2012-2014 Course Catalogue:

CLASS ATTENDANCE

Regular class attendance is important to the attainment of the educational objectives of the University. Each instructor will keep class attendance records, and the instructor's policy on class attendance will be explained at the beginning of the semester or term.

The instructors will drop a student from a course when the student has a total of nine absences. A student will be dropped for excessive absences in remedial courses after nine absences.

An absence is defined as non-attendance in fifty minutes of class; for example, non-attendance in a one and one-half hour class will constitute one and one-half absences and non-attendance in a three hour class will constitute three absences. An absence because of participation in an official University activity is considered to be an authorized absence.

STUDENTS WITH DISABILITIES

Sul Ross State University is committed to equal access in compliance with the Americans With Disabilities Act of 1973. It is the student's responsibility to initiate a request for accessibility services. Students seeking accessibility services must contact Counseling and Accessibility Services, Ferguson Hall, Room 112. The mailing address is P.O. Box C-171, Sul Ross State University, Alpine, Texas 79832. Telephone: 432-837-8203.