

SUL ROSS STATE UNIVERSITY CSAT 3380 MOTION CAPTURE

FALL 2022
MON - WEDS
2:00pm – 3:15pm
Mocap Lab

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Regular Office Hours:
11am-12pm T/TH @ FAB 208 and
1-1:45pm M/W@ Mocap Soundstage
on a walk-in basis. Or by appointment

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 just record it. The info we capture, which is really just a collection of related points in 3D space that collectively move over time, 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.

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

Communication Program Marketable Skills

1. Informative and Persuasive Speaking
2. Audience-centered Writing
3. Critical Analysis
4. Research
5. Effective Message Construction Using Technology

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) Terminology / Definitions Quiz
- 2) Anatomy of a Character Exercise
- 3) Character through Action exercise
- 4) Choreography Project 1 – Single Character
- 5) Choreography Project 2 – Two-Character
- 6) Choreography Project 3 – Adv. Two-Character
- 7) Capture Project 1
- 8) Capture Project 2
- 9) Capture Project 3
- 10) Final Exam
- 11) Full participation in class discussion / critique

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

Class	Date	Topics and Assignments	Location
1	8/22	Introduction. Review Syllabus, Assignments, and Deadlines. Expected outcomes. Safety Review.	
2	8/24	Lecture: What is motion? What is capture? And how is any of this different from Motion Capture?	
3	8/29	Lecture: Human and Animal Anatomy in seventy-five minutes	
4	8/31	Lecture / clips: Anatomy of a Character	
	9/5	LABOR DAY – NO CLASS. THANK A UNION MEMBER FOR STANDING UP FOR WORKER'S RIGHTS AND FAIR LABOR PRACTICES	
5	9/7	Group A Present Choreography Project 1 – Single Character	
6	9/12	Group B Present Choreography Project 1 – Single Character	
7	9/14	Basics of the PhaseSpace System	
8	9/19	Basics of the PhaseSpace System	
9	9/21	Group A Capture Project 1 – Single Character	
10	9/26	Group B Capture Project 1 – Single Character	
11	9/28	Group A Capture Project 1 – Single Character	
12	10/3	Group B Capture Project 1 – Single Character	
13	10/5	Group A Present Choreography Project 2 – Two Characters	
14	10/10	Group B Present Choreography Project 2 – Two Characters	
15	10/12	Group A Capture Project 2 – Two Characters	
16	10/17	Group B Capture Project 2 – Two Characters	
17	10/19	Group c Capture Project 2 – Two Characters	
18	10/24	PLAYBACK	
19	10/26	Workshop Final Project 3 – Advanced Two Characters	
20	10/21	Workshop Final Project 3 – Advanced Two Characters	
21	11/2	Present Revised Choreography Project 3 – Advanced Two Characters	
22	11/7	Present Revised Choreography Project 3 – Advanced	

		Two Characters	
23	11/9	Present Revised Choreography Project 3 – Advanced Two Characters	
24	11/14	Group A Capture Project 3	
25	11/16	Group B Capture Project 3	
26	11/21	Group A Capture Project 3	
	11/23-11-25	THANKSGIVING. EAT RIGHT UP TO THE POINT OF PAIN, BUT STOP THERE.	
27	11/28	Group B Capture Project 3	
29	11/30	TBD – Contingency Day	
Final	12/5	12:30-2:30p December 5th, FINAL EXAM in MOCAP SOUNDSTAGE 12:30-2:30p December 5th, FINAL EXAM in MOCAP SOUNDSTAGE 12:30-2:30p December 5th, FINAL EXAM in MOCAP SOUNDSTAGE	

GRADING

Assignments are valued as follows:

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| 1) Terminology / Definitions Quiz | 5% |
| 2) Peer Critiques for each project. | 5% |
| 3) Anatomy of a Character Exercise | 15% |
| 4) Character through Action exercise | 5% |
| 5) Choreography Project 1, 2, 3 | 15% |
| 6) Capture Project 1, 2, 3 | 30% |
| 7) FINAL EXAM | 20% |
| 8) Full participation in class discussion / critique | 5% |

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.

ADDITIONAL INFORMATION

Libraries

The Bryan Wildenthal Memorial Library in Alpine. Offers FREE resources and services to the entire SRSU community. Access and borrow books, articles, and more by visiting the library's website, library.sulross.edu. Off-campus access requires logging in with your LoboID and password. Librarians are a tremendous resource for your coursework and can be reached in person, by email (rsulibrary@sulross.edu), or phone (432-837-8123).

The Southwest Texas Junior College (SWTJC) Libraries at Uvalde, Del Rio, and Eagle Pass. Offer additional access to library spaces and resources. Del Rio, Eagle Pass, and Uvalde students may also use online resources available through SWTJC website, library.swtjc.edu. The SWTJC Libraries serve as pick-up locations for InterLibrary Loan (ILL) and Document Delivery from the Alpine campus.

Academic Integrity

Students in this class are expected to demonstrate scholarly behavior and academic honesty in the use of intellectual property. A scholar is expected to be punctual, prepared, and focused; meaningful and pertinent participation is appreciated. Examples of academic dishonesty include but are not limited to: Turning in work as original that was used in whole or part for another course and/or professor; turning in another person's work as one's own; copying from professional works or internet sites without citation; collaborating on a course assignment, examination, or quiz when collaboration is forbidden.

Classroom Climate of Respect

Importantly, this class will foster free expression, critical investigation, and the open discussion of ideas. This means that all of us must help create and sustain an atmosphere of tolerance, civility, and respect for the viewpoints of others. Similarly, we must all learn how to probe, oppose and disagree without resorting to tactics of intimidation, harassment, or personal attack. No one is entitled to harass, belittle, or discriminate against another on the basis of race, religion, ethnicity, age, gender, national origin, or sexual preference. Still we will not be silenced by the difficulty of fruitfully discussing politically sensitive issues.

Diversity Statement

I aim to create a learning environment for my students that supports a diversity of thoughts, perspectives and experiences, and honors your identities (including race, gender, class, sexuality, religion, ability, socioeconomic class, age, nationality, etc.). I also understand that the crisis of COVID, economic disparity, and health concerns, or even unexpected life events could impact the conditions necessary for you to succeed. My commitment is to be there for you and help you meet the learning objectives of this course. I do this to demonstrate my commitment to you and to the mission of Sul Ross State University to create an inclusive environment and care for the whole student as part of the Sul Ross Familia. If you feel like your

performance in the class is being impacted by your experiences outside of class, please don't hesitate to come and talk with me. I want to be a resource for you.

AMERICANS WITH DISABILITIES ACT STATEMENT

SRSU Disability Services. Sul Ross State University (SRSU) is committed to equal access in compliance with Americans with Disabilities Act of 1973. It is SRSU policy to provide reasonable accommodations to students with documented disabilities. It is the student's responsibility to initiate a request each semester for each class. Alpine students seeking accessibility/accommodations services must contact Mary Schwartze Grisham, M.Ed., LPC, SRSU's Accessibility Services Coordinator at 432-837-8203 (please leave a message and we'll get back to you as soon as we can during working hours), or email mschwartze@sulross.edu. Our office is located on the first floor of Ferguson Hall (Suite 112), and our mailing address is P.O. Box C-122, SUI Ross State University, Alpine, Texas, 79832.