Advanced Media Technology Practicum
CMIS 4350 Syllabus • Spring 2018
Vertically Integrated Projects Training Practicum
Creative Media Industries Institute

About VIP

The Vertically-Integrated Projects (VIP) Program operates in a research and development context. Undergraduate students who join VIP teams earn academic credit for their participation in innovation (industry-connected creative project work, game design research, and design) efforts that assist faculty and graduate students with research and development issues in CMII Game Design and Virtual Reality facilities.

This team is:

- **Multidisciplinary** - drawing students from all disciplines on campus;
- **Vertically-integrated** - maintaining a mix of sophomores through PhD students each semester;
- **Long-term** - each undergraduate student may participate in a project for up to three years and each graduate student may participate for the duration of their graduate career.

The continuity, technical depth, and disciplinary breadth of these teams are intended to:

- Provide the time and context necessary for students to learn and practice many different professional skills, make substantial contributions to the project, and experience many different roles on a large, multidisciplinary VIP team.
- Support long-term interaction between the graduate and undergraduate students on the team. Where graduate students connect, they mentor undergraduates as they work on VIP projects embedded in the graduate students' research.
- Enable the completion of large-scale projects that are of significant benefit to faculty members' research programs.

Learning Objectives

Through VIP students will:

- Learn and practice professional skills;
- Make substantial contributions to the team project;
- Experience different roles on a large, multidisciplinary team.
**Team Focus**

The core faculty will be training and supervising student project work in virtual reality, augmented reality, motion capture and other VFX work (Martin and Alger supervising), and game design projects (Zhu and Schiffer supervising). This is an inaugural identified double focus; in the coming semesters CMII aims to expand this effort to encompass media entrepreneurship (Strickler) and music industry training as well (Jones).

Students will be working in the newly opened, state of the art, content creation center. The core studio connects advanced volumetric, mo-cap, and VFX camera and capture systems to contracted industry projects and provide the platform for training students on these systems. These are bleeding edge systems; the 4D Views capture system, for instance, is one of only three in the entire world (with the second located outside of Paris at 4D Views headquarters and the other outside Tokyo). Students will be trained on these systems to apprehend asset creation and manipulation, the integration of those virtual/digital assets into games, animation, film and TV applications, and on the protocols for working on an advanced technology set. This work will take place in the main stage studio, in the VR Demo and CAVE labs, in digital postproduction suites, and in the Media Maker Lab. James Martin is the technical director of these core studio systems, and Candice Alger the systems architect for the CMII studios.

Students affiliated with the game design teams will be working on project development, game prototyping, and related research. Ying Zhu will supervise a team that is research oriented and aimed at understanding data visualization, motion mechanics, and game design applications as they connect to different domains of knowledge creation, including computing and computer information systems, database creation and management, and more.

In the first week, students will decide which group to join (VR or game development).

**Semester Overview**

The goal of this training schedule is to build your competencies as they relate to advanced media technologies, and to facilitate that, students will encounter the full range of new facility and faculty resources, are invited to a regular Fall term Friday afternoon speaker series that focus on advanced technology and connects GSU students to regional entertainment and information executives.

This is a sample schedule that would anticipate a SP19 course launch. Project teams meet every Friday, with these specific assignment and other activity deadlines included on particular benchmarked dates:

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Activity/Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>January 18</td>
<td>Introductions&lt;br&gt;Overview of teams’ work&lt;br&gt;Discussion of semester goals</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>STUDENTS ARE RESPONSIBLE FOR WATCHING VIDEO-BASED ORIENTATIONS.</strong></td>
</tr>
</tbody>
</table>

ADAPTED FROM THE MASTER VIP SYLLABUS AT GEORGIA INSTITUTE OF TECHNOLOGY
Week 2  January 25  Bring VIP notebook to class (and all future classes)  
Sub-team selections finalized 
Sub-team meeting times finalized  

Week 3  February 1  Assignment: Self-grade VIP notebook with rubric  

Week 4  February 8  Due: Self-graded rubric  

Weeks 5-6  February 15/22  Project meetings continue  

Week 7  March 1  Web-based peer-evaluations released for students to complete. Online form closes at 5PM Friday this week. Late submissions will not be accepted.  
Turn in VIP notebooks at team meeting for mid-term grading  

Week 8  March 8  Midterm presentations  

Week preceding finals  Apr 15 – Apr 19  Web-based peer-evaluations released for students to complete. Online form closes at 5PM on Tuesday. Late submissions will not be accepted  

Last day of class  Apr 23 or 24  Final presentations  
Turn in VIP notebooks at team meeting for final grading  

Grading  
The premise of VIP is teams working on projects. Much like a real-world team, individual members work on different aspects of the project. Team members range from sophomores through graduate students, from first-time participants to students who have been involved for four or more semesters. The number of credits for which a student is enrolled is taken into account in grading. Zero-credit students (reserved for paid participation only) participate in the same grading process.  

Your grade is based on three areas, along with three requirements. Although each student contributes in different ways, you must demonstrate achievements in all three areas below.  

1. Documentation and records (33%)  
   a. VIP Notebook (not optional);  
   b. VIP Wiki/blog documentation;  
   c. Code (via GT GitHub) if team is developing software.  

2. Personal accomplishments and contributions to your team’s goals (33%)  
   a. Quizzes, learning modules, essays, reports required by your adviser(s);  
   b. Engagement in project;  
   c. Pursuit of knowledge necessary for project;  
   d. Contributions to the technical progress of the team;
e. For more experienced members of the team, contributions to the management of the project may be expected.

3. Teamwork and interaction (33%)
   a. Peer Evaluations;
   b. On-time attendance in meetings;
   c. Actively contributes to overall team goals;
   d. Coordinates activities with other team members;
   e. Assists other team members;
   f. Team presentation(s).

- As part of the assessment of the above, each student is required to:
  a. Maintain a VIP notebook. Scans of well-maintained VIP notebooks are available at the url below. **Each student must understand that if work is not documented in his/her VIP notebook, “Then you didn’t do it,”** (i.e. work that is not documented in the notebook will not count toward your grade).
     [http://www.vip.gatech.edu/vip-notebooks](http://www.vip.gatech.edu/vip-notebooks)
  b. Complete the mid-term peer evaluation. This is a web-based form, and links are available at [http://vip.gatech.edu](http://vip.gatech.edu). **Failure to complete the peer evaluation will result in a full letter grade deduction.** Late submissions are not accepted.
  c. Complete the final peer evaluation, which will be available for one week during the week preceding finals. **Failure to complete the peer evaluation will result in a full letter grade deduction.** Late submissions are not accepted.
  d. Be proactive and self-motivated. The nature of individual tasks on any team requires members to be proactive and self-motivated in order for the project to succeed.
Performance Assessments

Performance assessments will be done once at mid-terms and again at the completion of the semester. The mid-term assessment is advisory.

Notes on Documentation

Notebook Maintenance
- The notebook must be a bound notebook, with a sewn or glued binding, such as a composition book or lab notebook.
- Your name, your project's name, your contact info and your team members' contact info must be recorded on the outer or inside cover.
- Each page must be numbered, dated and signed.

To-Do List Maintenance
- Maintain check-boxes for items to be done.
- Check-off and date items when done.

Meeting Notes
- For meeting notes, include check-boxes for items for which you are responsible and deadlines for your sub team and the overall team.

Usability
- Will your VIP notebook be of use to people who join the team later and need to refer to it? This includes legibility, intelligible technical and meeting notes, and overall organization.

Overall
- An overall rating of your notebook. (Detailed design notes, design decisions, copies of or pointers to code that you wrote, records of important websites, etc.)

Wiki content
- Wiki content refers to documentation produced online, either through the VIP wiki site, T-square, or other VIP-approved site.

ADAPTED FROM THE MASTER VIP SYLLABUS AT GEORGIA INSTITUTE OF TECHNOLOGY
**Academic Honesty**

The main principle in VIP academic honesty is that you will not present someone else’s work as your own. Tests and specific assignments (homework, lab assignments, etc.) must be your own work. For other work you are encourage to consult whatever sources are helpful in learning and understanding the issues associated with the material, but you should always provide appropriate references and citations where such material is included in your VIP notebook, programming code, presentations, etc.

Additionally, to provide a good working environment for all students, you’re expected to adhere to rules given here, posted, or disseminated in class. Academic Honesty is taken seriously and failure to follow these principles will result in disciplinary actions as stated in the Student/Faculty Handbook.

**Accommodations for Students with Disabilities**

Georgia State University offers accommodations to students with disabilities. If you need a classroom accommodation, please make an appointment with the Office of Disability Services. If you have an accommodation letter from the Office of Disability Services and require accommodations, please see me (the team advisor) in my office during office hours or by setting up an appointment with me.

**Labs and Facilities**

VIP has rooms and equipment that are shared by many VIP teams. In order to provide a good working environment, the following rules apply to anyone with access to these rooms and equipment:

1) The room priorities are:
   a. Scheduled team meetings, lectures and learning modules;
   b. Weekly sub-team meetings (multiple groups can use rooms at same time);
   c. Video conferences or special meetings with VIP stakeholders;
   d. Other project-related work (multiple groups can use rooms at same time).

   While the above priorities indicate which events take precedence, a good neighbor policy on using the rooms applies. If you need to access computers, equipment, or work on a project in the room while other activities are going on (sub-team meetings, etc.), you are welcome to do so as long as it does not disrupt a scheduled activity. Similarly, multiple groups may use a VIP room at the same time. Also, where it does not disrupt one of the above uses, VIP participants may use the rooms for other activities such as studying.

2) Everyone is expected to pitch in to keep the rooms clean. Food is allowed in the rooms provided any spills or messes are cleaned immediately. The rooms are monitored by camera, and staff will pull videos to identify offenders. Gum is a particular problem especially in carpeted rooms. Do not place used gum anywhere other than in a trash can.

3) CMII 211 has equipment both for general use and for specific teams. General use equipment includes the projector and monitors in 211. Other equipment may be for general use or dedicated to a team specific purpose (some equipment may be general use one semester and assigned to a team another semester). If you are unsure of whether equipment is available for...
general use, contact the instructor. You should only use equipment for the designated purpose. Some equipment may pose personal hazards if used inappropriately!

   a. Equipment owned by the VIP Program may not be removed from a VIP room without completed an equipment loan agreement, which would need to be approved by one of the VIP Directors.

   b. You will be responsible for the replacement cost of any equipment not returned in good condition.

   c. You must be sure you know how to operate the equipment safely. Written approval to use the equipment does not indicate that the team advisor has reviewed equipment use and safety. You are responsible for knowing the hazards and safe operation of any equipment you use.

4) Computer accounts are issued for your use only. You may not share computer accounts with anyone else, even another team member. All computer usage is subject to rules and policies of Georgia State University, the University System of Georgia Board of Regents, and the State of Georgia. Additionally, you are expected to be considerate of other users. Computer permissions are not authoritative. For example, just because you have file access to something does not indicate that it is appropriate for you to read or modify that file.
## Grading Tools

<table>
<thead>
<tr>
<th>Grading Tool &amp; Link</th>
<th>Required</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peer Evaluations</td>
<td>Yes</td>
<td>Web-based.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not returned to students; instructors need to provide feedback.</td>
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<tr>
<td></td>
<td></td>
<td>Students only evaluate classmates with whom they've worked.</td>
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<tr>
<td>VIP Notebook &amp; General Evaluations</td>
<td>Yes</td>
<td>Web-based.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not currently returned to students electronically. Must be printed and</td>
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<td></td>
<td></td>
<td>stapled to notebooks.</td>
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<tr>
<td>Wiki Activity Log</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

Enter student user ID

Pull/Feed user ID from evaluation page
VIP Notebooks

VIP notebooks, whether electronic or hard-copy, allow students to track and document their efforts. In turn, VIP notebooks allow instructors to assess student contributions to the team. Notebooks are graded twice a semester and explicit feedback is given in categories including: completeness of meeting and design notes; maintenance and check-off of a to-do list; usability by future students who may need to understand why a particular design decision was made, etc.

<table>
<thead>
<tr>
<th>Notebook Essentials</th>
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</thead>
<tbody>
<tr>
<td>Notebook Maintenance</td>
<td>The notebook does not have removable pages.</td>
</tr>
<tr>
<td></td>
<td>Outer Cover: Your name, your project's name.</td>
</tr>
<tr>
<td></td>
<td>Inner or Outer Cover: Your contact info and your team members' contact info.</td>
</tr>
<tr>
<td></td>
<td>Each Page: Numbered, dated and signed.</td>
</tr>
<tr>
<td>To-Do List Maintenance</td>
<td>Maintain check-boxes for items to be done that are then checked-off and dated when done.</td>
</tr>
<tr>
<td>Meeting Notes</td>
<td>Detailed meeting notes;</td>
</tr>
<tr>
<td></td>
<td>Check-boxes for items for which you are responsible;</td>
</tr>
<tr>
<td></td>
<td>Deadlines for your subteam and the overall team.</td>
</tr>
<tr>
<td>Technical Notes</td>
<td>Detailed VIP/design notes, VIP/design decisions;</td>
</tr>
<tr>
<td></td>
<td>Diagrams;</td>
</tr>
<tr>
<td></td>
<td>Copies of code you wrote, or pointers to where the code is stored in a repository;</td>
</tr>
<tr>
<td></td>
<td>Records of important websites;</td>
</tr>
<tr>
<td></td>
<td>Your ideas, even if they are only half-baked;</td>
</tr>
<tr>
<td></td>
<td>Etc.</td>
</tr>
<tr>
<td>Usability</td>
<td>Will your VIP notebook be of use to people who join the team later and need to refer to it? This includes legibility, intelligible technical and meeting notes, and overall organization.</td>
</tr>
</tbody>
</table>
CREATIVE MEDIA INDUSTRIES INSTITUTE (CMII)

VOLUMETRIC MOTION CAPTURE PIPELINE

Course Overview

In this course, you will learn Volumetric Motion Capture, System Configuration and Calibration, Light and Material Data Masking, Processing, Exporting, Viewing & Output.

Instructor
James C. Martin

Phone
786-380-3339

Email
jmartin148@gsu.edu

Office Location
25 Park Place, 212

Office Hours
Monday/Friday

11am – 2pm

Students will learn the steps necessary to properly Configure the 32 Camera 4DViews Volumetric Motion Capture system. Next, students will learn the movements needed to Calibrate the field of view to activate the Volumetric Capture area (3m) using a combination of LED Wand motions. Students will engage in the capturing of the Motion Capture actors performance after a successfully processed Calibration and Background has been learned by the Holosys software. Once captured, students will establish techniques used to mask and refine the Light and Material information using internal Edit Settings, then students will Process the specified areas of the performance out to a photo-real holographic representation of the actor or actress. This can be then viewed by students in the Virtual Production environment. Students will also utilize, Art Direction, Technical Supervision, Stage Qualification, and Content Creation skills over the duration of the course. Students will be required to officially book studio time at the CMII in a professional and organized manner to access the 4DViews system.
Learning Objectives

The primary objective of the course is to introduce students to a content creation system known as 4DViews (Holosys) 32 camera system for the purpose of producing Volumetric Motion Capture.

- How to Configure the hardware. 8 Pods (4) - I pods & (4) Z pods with 4 cameras each.
- How to Calibrate the cameras, after configuration using the LED Wand and calibration motions
- How to Capture motion performance with the Holosys, Background Learning, Stage Rules
- How to Compile Background Masking and Render settings for the purpose of Processing data.
- Students will demonstrate a strong understanding of the 4DViews system hardware setup and Volumetric Motion Capture methods using the Holosys software.

Course Assignments:

- In-Class Assignments where students will learn industry standard procedures for hands on camera configuration, system calibration, background learning, performance capture, and data processing using the 4DViews Volumetric Motion Capture solution.

- A Design Journal (Google Slides) where students will write a weekly entry about a particular experience pertaining to the area of focus and the methods learned during weekly class lectures and visual examples.

- A Volumetric Motion Capture Design for a 10 second performance to be completed using all system production methods, showcasing a solid understanding of the entire workflow associated with the 4DViews solution.

- A Design Analysis where a student will choose an Volumetric Capture and break it down into its various parts to understand the workflow of the Volumetric pipeline, how it was a success or failure, and a short developed concept that would suggest how its methods could be adapted for other technologies, venues, or projects and advanced output deployment.
Grading:

In-Class Assignments 20%
Design Journal 20%
Design Project 20%
Design Analysis 20%
Midterm - Final 20%

Topics

- Volumetric Motion Capture Overview
- Stage Rules and Best Practices
- Stage and Pod Lighting
- Performance Capture
- System Camera Configuration
- Targeting Rod
- Calibration movements and LED Wand
- Calibration Engineering
- Background Preparation
- Background Learning
- Actor Wardrobe evaluation
- Creative Direction
- Performance Capture
- Video Playback and Review
- Preview Frame Processing and Review
- Background Masking
- Volumetric Data Processing
- Volumetric Viewing and Exporting
- Output Deployment
<table>
<thead>
<tr>
<th>Week</th>
<th>Topics</th>
<th>Assigned Course Content</th>
</tr>
</thead>
</table>
| 1     | Introduction to 4DViews Volumetric Motion Capture system (Holosys) | **Lecture:** Students are required to observe Volumetric output in its final rendered form. Students will be given syllabus and Volumetric glossary of terms to be utilized over the duration of the course.  
**Design Journal:** Students are required to create a new Google Slide document for the purpose of creating their Design Journal. This GS document will be named using the students “Last Name” _Volumetric Design Journal. Weekly entries requiring a minimum of 1 paragraph summarizing the in class Lecture and methods covered. Showcasing an understanding of on-stage production techniques week-to-week.  
**Homework:** Students are required to review Volumetric glossary of terms to be utilized over the duration of the course. Quiz to follow. |
|       | *where to meet:* Studio 101 - CMII 1st Floor     |                                                                                         |
| 2     | Introduction to Light Board basics, Stage and POD Lighting | **Lecture:** Students observe how to properly activate the Light Board, while correctly identifying the switches needed to bring up a preset cool temperature setting required for properly setting up the Stage for Volumetric Motion Capture. Students will also be required to gain an understanding of how to properly turn ON and OFF the POD lighting. Students to be supplied a visual aid that clearly gives a basic diagram of the correct Light Board slider positions and POD remote buttons used.  
**Design Journal:** Students are responsible for writing a minimum of a paragraph explaining the proper methods for setting up Stage Lighting using the Light Board and the PODS.  
**Homework:** Students are required to review diagram of proper Light Board settings and POD remote use of terms to be utilized over the duration of the course. Quiz to follow. |
|       | *where to meet:* Studio 101 - CMII 1st Floor     |                                                                                         |
| 3     | Camera Configuration, Targeting and the Targeting Rod | **Lecture:** Students will learn to Start the 32 cameras and observe hands-on methods for Camera Configuration in order to achieve a successful Volumetric Motion Capture session by positioning cameras based on the preset Targeting specifications. All 32 cameras must be properly aligned based on the 5 designated areas located on the Targeting Rod, which must be placed in the exact center of the 3M capture area located on the stage. Students will be supplied with a Targeting worksheet listing cameras and Targeting Rod positions.  
**Design Journal:** Students will give a basic description of the position of cameras 1 through 32, citing the correct Targeting area associated with each of the camera positions in relation to the Targeting Rod placement.  
**Homework:** Students must use the supplied handout to match camera numbers to the coordinating Targeting Rod positions. Quiz to follow. |
<p>|       | <em>where to meet:</em> Studio 101 - CMII 1st Floor     |                                                                                         |</p>
<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Lecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Calibrating the HoloSys software, LED Wand and Calibration Motions</td>
<td>Students learn to use the LED Wand along with a combination of specific calibration motions activating the capture area for all 32 cameras. Students must be able to execute the correct motions on-stage and also be aware of the proper Holosys system settings required after beginning a new capture session.</td>
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<td>Design Journal: Students must record an explanation of the Calibration process covering both physical movements and software settings required to calibrate, this must be a minimum of 1 paragraph.</td>
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<td></td>
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<td>Quiz: Students will be issued a quiz that covers all topics from weeks 1 - 3. Glossary of Terms, Light Board, POD lighting setup and Camera Configuration. The Week 4 quiz will be issued at the beginning of class.</td>
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<tr>
<td>5</td>
<td>Background Learning, Stage Rules and Best Practices</td>
<td>Students engage in the procedures necessary to complete a Background Learning for the Holosys system. Stage rules and best practices will be clearly presented to students for application on the Stage pertaining to chroma-drapes and flooring in relation to the proper Stage lighting settings. Holosys system settings will be covered to coincide with new session Calibration. Students will have a clear demonstration of how Calibrations and Backgrounds must work together.</td>
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<td>Design Journal: Students are required to complete a minimum 1 page summary (3 slides) of Configuration, Calibration and Background Learning processes utilizing a combination of Design Journal entries and knowledge obtained in-class during lectures for weeks 2 - 5.</td>
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<td>Homework: Students are to complete a worksheet outlining the Stage Rules and Best Practices listed during the week 5 lecture and Holosys demonstration of Background Learning.</td>
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<tr>
<td>6</td>
<td>Volumetric Performance Concept Design</td>
<td>Students will review multiple Volumetric Motion Capture output performances focused on Character appearance and performance, then decide what the concept will be for their 10 second performance capture. Students are encouraged to pay close attention to Costume Design and Body Movement.</td>
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<td>Design Journal: Students must use a search engine to harvest 3 images from the web that contain possible Character Design examples. All 3 images must be placed in a single Google Slide separate from the slide generated in the week 6 homework assignment. In the homework, a rough draft must be created from one of the designs chosen.</td>
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<td>Homework: Students will determine rough draft concept design for their Volumetric Motion Capture project, which is to include Character design ideas such as Wardrobe or Cosplay, Motion or Action, or Props and Accessories. Prepare 1 page pitch that clearly states the scope of your Volumetric Mocap draft. Use text and or Images in 1 Google slide.</td>
</tr>
<tr>
<td>Week</td>
<td>Topic</td>
<td>Lecture:</td>
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<tr>
<td>7</td>
<td>Holosys System setup review</td>
<td>Students will observe and review a Holosys system setup complete with Configuration of Cameras, Calibration of Holosys, Background Learning, Performance Capture and 10 Frame Preview Processing. This will showcase freshly produced motion capture data processed after Edit Settings and Background Masking have been introduced to the session.</td>
</tr>
<tr>
<td>8</td>
<td>Volumetric Motion Capture Pipeline</td>
<td>No lecture will be provided during the midterm.</td>
</tr>
<tr>
<td>9</td>
<td>Performance Capture review 2D Camera Playback and Holosys Edit Settings Overview</td>
<td>Students will observe how to activate camera playback for all 32 camera angles for review, while learning how to gain access to frame range tools for select output processing. Students continue to gain knowledge of the Holosys software using the Edit Setting portion of the user interface. This mode allows for access to the Threshold levels and Background Masking Tools. A technical understanding of the Edit Settings will allow for an advanced level of editing of the footage and the corresponding Light and Material data that the system processes.</td>
</tr>
<tr>
<td>Week</td>
<td>Background Masking and Performance Editing</td>
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<td>------------------------------------------</td>
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</tbody>
</table>
| 10   | **Lecture:** Students continue to gain knowledge of the Holosys Edit Setting portion focusing on Background Masking Tools and processing single frame edits using 1 of 4 Background Masks. These tools, show students how to amend or correct specific frames or frame ranges of the Volumetric performance.  

**Design Journal:** Students are to write a brief overview of how to access the Edit Settings and the difference between Threshold levels and Background Masks. (1 Slide).  

**Homework:** Students are to complete a worksheet that illustrates the different colors of Background Masks and what each one pertains to in relation to the processing of the footage and the occlusion of the masked area discussed during the week 9 lecture. |

<table>
<thead>
<tr>
<th>Week</th>
<th>Volumetric Motion Capture Pipeline FINAL FOOTAGE</th>
</tr>
</thead>
</table>
| 11   | **STAGE:** Students will begin Volumetric Motion Capture performances with their final Character designs and movements for a 10 second performance capture. Students not performing will be engineering the capture session in real-time.  

**Design Journal:** Students must reference their final choice for their Character Design along with a photo of the “Character” day-of the shoot. 2 images required - 1 reference - 1 photo (1 slide)  

**Homework:** Students are to write a in-depth critical review of their Volumetric Motion Capture performance, citing acting strengths and weaknesses. This should be a critique of the students own stage performance. (1 slide in the Design Journal)  

Delivery of the students FINAL FOOTAGE will also be taken into consideration and will count for HALF of the FINAL grade. Students MUST complete both the FINAL FOOTAGE processing AND the written FINAL! No exceptions. |

<table>
<thead>
<tr>
<th>Week</th>
<th>Volumetric Motion Capture Pipeline FINAL FOOTAGE (cont)</th>
</tr>
</thead>
</table>
| 12   | **STAGE:** Students will begin Volumetric Motion Capture performances with their final Character designs and movements for a 10 second performance capture. Students not performing will be engineering the capture session in real-time.  

**Design Journal:** Students must reference their final choice for their Character Design along with a photo of the “Character” day-of the shoot. 2 images required - 1 reference - 1 photo (1 slide)  

**Homework:** Students are to write a in-depth critical review of their Volumetric Motion Capture engineering, citing technical strengths and weaknesses. This should be a critique of the students own experience engineering a capture session. (1 slide in the Design Journal)  

Delivery of the students FINAL FOOTAGE will also be taken into consideration and will count for HALF of the FINAL grade. Students MUST complete both the FINAL FOOTAGE processing AND the written FINAL! No exceptions. |
<table>
<thead>
<tr>
<th>Week 13</th>
<th>Processing Volumetric Motion Capture Output, Intro to the Cluster and the Wizard’s Room</th>
</tr>
</thead>
</table>
|        | **Lecture:** Students will review their Volumetric Motion Capture performances in 2D playback, create selections for frames ranges and then learn to process the data. Students will also be introduced to the 4DViews system Cluster, the server and processing Linux-based network comprised of (16) Acquisition Boxes, (8) hard drives (10) networked PCs (1) Control (1) Master. The Cluster is located in both Studio 101 and the Wizard’s Room, which students will be made aware of.  
**Design Journal:** Students will give a complete list of the 4DViews hardware that is installed on location pertaining to the processing of the Volumetric data. (1 or 2 Slides)  
**Homework:** Students must study all topics and production methods used over Weeks 1 - 13 in order to prepare for the FINAL week 14. |
| **where to meet:** Studio 101 - CMII 1st Floor |

<table>
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<tr>
<th>Week 14</th>
<th>Volumetric Motion Capture Pipeline</th>
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<td><strong>FINAL:</strong> Students have acquired both Performance and Engineering skills utilizing the 4DViews Volumetric Motion Capture system. Students will be issued a <strong>FINAL</strong> exam, this will test specifically the technical aspects pertaining to a successful system setup and shoot. Students levels of knowledge of the Holosys software will be evaluated and questions will consist of fill-in-the-blank, multiple choice, and short form. Diagrams and color-coded portions of the exam will also be included in the <strong>FINAL</strong>. Delivery of the students <strong>FINAL FOOTAGE</strong> will also be taken into consideration and will count for <strong>HALF</strong> of the <strong>FINAL grade</strong>. Students MUST complete both the <strong>FINAL FOOTAGE processing AND the written FINAL</strong>! No exceptions.</td>
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<td><strong>where to meet:</strong> Bridge LAB - CMII 2nd Floor</td>
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<th>Week 15</th>
<th>Volumetric Motion Capture Review - 4DViews Player</th>
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<td><strong>REVIEW:</strong> Students have successfully completed the Volumetric Motion Capture Pipeline and have been trained in the utilization of the 4DViews system. Students now have a firm grasp of the technical knowledge needed to enable them to create content for Virtual Productions, AR or VR applications, Previz, Games, Movies and more. Students will take week 15 to use the 4DViews Player application to have a open peer review and open classroom critique of the Performance Captures created on the 4DViews stage at the CMII.</td>
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Weekly course descriptions may be subject to instructor revision without notice.
Grades

There will be plus and minus grades in this course. Grades will be determined according to the following scale:

93-100 A
90-92 A-
87-89 B+
83-86 B
80-82 B-
77-79 C+
70-76 C
60-69 D
Below 60 F

Incompletes: Incompletes are only given in special hardship cases.

Participation

Class participation comprises 10% of your grade included in the In-Class Assignments portion of the students assessment. You are required to be on time and in class for each meeting. Excused absences are only those that are documented medical or family emergencies; all other absences will affect your participation grade. In general, you are expected to attend all class meetings, to actively participate in class discussions and critiques and to demonstrate your command of the assigned material. For each unexcused absence over 3, you will lose 5 points from your Participation Grade.

Assignments and Projects

All projects and assignments are expected to be completed and submitted on time. For every day late a project will lose 2 points from the total number of possible points.
Courtesy

You may use your own phones and electronics in class for class related work. Please refrain from personal use of electronics during class.

Academic Honesty

The university’s policy on academic honesty is published in On Campus: The Undergraduate Co-Curricular Affairs Handbook, available online at http://www.gsu.edu/~wwwcam. The policy prohibits plagiarism, cheating on examinations, unauthorized collaboration, falsification, and multiple submissions. Violation of the policy will result in failing the class, in addition to possible disciplinary sanctions.

Each assignment is expected to be created during the current semester and not used as a graded project for another class.

Withdrawals

Students withdrawing on or before the mid-semester point (see http://calendar.gsu.edu/calendar) will receive a W provided they are passing the course. Students who withdraw after the mid-semester point will not be eligible for a W except in cases of hardship. If you withdraw after the mid-semester point, you will be assigned a WF, except in those cases in which (1) hardship status is determined by the office of the dean of students because of emergency, employment, or health reasons, and (2) you are passing the course.

Changes to the Syllabus

This syllabus provides a general plan for the course. Deviations may be necessary.