IDSN 599: Special Topics: Applied Creative Technology: Innovating Communication

Units: 2
Summer 2023—Saturday—Time: 5:15-8:25
Location: Online

Instructor: Robert Checchi
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Course Description

The use of creative technology in art, entertainment, education and healthcare is steadily increasing as advancements in new media pave the way for innovative ways to engage the public. The breadth of creative technology applications is so varied and global that it is difficult to keep track of the latest advancements, applications and major players in the field. This course will present the different ways creative technology is being applied today through concrete project examples from across the spectrum of new media. The course will also give students an opportunity to learn first-hand how creative technology functions through hands-on assignments that utilize applications available online.

Through async videos and readings as well as faculty-led Zoom lectures students will become familiar with the latest advances in technologies and industries through specific actual completed projects and applications. Assignments will mix practical research for fictionalized project scenarios and hands-on creation of A.I. text generation, A.I. chatbots, and AR prototypes using the latest machine learning tools. This course will not only teach students where and how to search for the latest technology projects but will prompt them to learn how to think critically about the application in order to analyze the success or failure of each project. Each week students will be presented with a series of technologies related to a single topic. Each technology will be illustrated and explained through an actual experience, project, tool, or company. Students will be challenged to apply the knowledge they have learned through analysis and hands-on activities by designing "concept only" experiences that combine multiple technologies in new and innovative ways. In addition, each module will include a unit devoted to diversity, equity and inclusion highlighting the challenges facing creative technologists in creating products, programs and applications that promote a just and equitable society.

This course will cover creative technology as applied to virtual reality storytelling, A.I. generated storytelling and language processing, interactive sound, body-centric AR, and robotics.

Learning Objectives

- Expose technologists, designers and entrepreneurs to real world applications of creative technology.
- Foster creative technology visionaries who are adept at critical problem solving.

- Equip students with technical, theoretical and historical perspectives to develop new aesthetics, and innovations in creative technology.
- Explore the intersection of technology with other creative technology practices.
- Enable students to think conceptually, critically, and creatively about technology and its impacts upon our world.
- Allow students to actively participate in the writing of a virtual film, creation of an A.I. chatbot, and production of an augmented reality activation in order to foster better understanding of the technology.

Prerequisite(s): There are no prerequisites for this course. This course will be valuable for students working in technology and those with no experience working in technology
Co-Requisite(s): There are no co-requisites for this course.
Concurrent Enrollment: There are no course(s) that must be taken simultaneously

Course Notes
This course will be conducted online, using a combination of synchronous and asynchronous methods. Students are responsible for all additional assigned material, including video lectures, interviews, and reading materials offered by the instructors throughout the course.

Technological Proficiency and Hardware/Software Required
All software applications necessary for the completion of assignments will be browser-based.

Required Readings and Supplementary Materials
Required content and readings may be assigned by faculty and will be drawn from textbooks, articles, papers, cases, and online publications (e.g., articles, op-ed essays) available through a host of available outlets; in all instances, the material will be delivered via computer. Students will also be required to view online videos; complete web-based, interactive exercises; and respond to peer and faculty comments (within an online discussion forum or group discussion).

Description and Assessment of Assignments
Below are brief overviews of each assignment and deliverable across three modules in the course. Unless specified otherwise, all assignments will be submitted within the 2U Learning Management System (LMS). If you experience technical difficulties submitting assignments, email the course instructors directly and utilize 2U student support for assistance. Additional assignment details will be provided separately.

1.1 – What is Creative Technology?
Research two creative technology projects that you find inspiring. They could be an art installation, a digital experience or a product. What are the project's strengths and weaknesses? How could they be improved?

In the first two slides explain each project and why you chose them. What made it unique or especially interesting to you? Explain how the project utilizes creative technology. On the third slide imagine what you might create by combining the technology of the first slide with the technology of the second slide. How might they build off each other to create something new? Don't be concerned with the feasibility or production. The third slide should be concept only. Upload a pdf of your slide presentation to the LMS.

1.2 – Improve an existing film scene as a 3D VR experience
Choose a scene from one of your favorite movies. How might the scene change if, via VR, the viewer was placed in the middle of the 3D scene rather than outside the scene looking at it on a 2D screen.

1: Consider how you might direct the viewer's gaze at important narrative moments of the scene in order to retain cognition of the story.

2: How might the methods of engagement in relation to VR as discussed in class be used to better engage the viewer in the story?

3: How might 3D storytelling change the narrative for better or worse?

Create a slide presentation that outlines the scene and then considers the questions above

1.3 – Scene Script for 3D Virtual Reality Film

Write a 3 page script that builds on Assignment 1.2 for a 3D scene in a VR Film. How can dialogue, environmental audio and scenery direct the viewer's attention in a 3D space. The script should include scene description, audio description, dialogue and at least one predetermined animated character and one live actor as avatar directed to improvise so that the experience is unique to each performance.

How might the viewer interact with predetermined animated characters as well as live actors performing as avatars? How can sensory experiences outside of sight and sound enhance the storytelling? How can the exploration of a digital 3D space be used to tell a nonlinear choice-driven narrative with a beginning and end?

Use the StudioBinder template/format to write your script on 8.5" x 11" pages and upload a pdf to the LMS.

2.1 – Create A.I. Text Generated Content

Using GPT-4 create a minimum 2 page dialogue between two or more (fictional or historical) characters. Regenerate multiple results with different prompts. How did rewording the prompt change the outcome? What are the strengths and drawbacks of using GPT-4 for creative writing?

Using DALL-E2 create illustrations for the dialogue generated by GPT-4. Create at least 4 illustrations to accompany the story.

In an 8.5" x 11" format combine the text and images in a way that simulates a graphic novel, comic book or children's book.

2.2 – Create a Chatbot using Google Dialog Flow

Using Google Dialog Flow create a conversational chatbot that is able to answer 4 questions on a single topic. Chatbot will need to incorporate a series of Intents and Entities within the Dialog Flow platform. Each question should address a different aspect of the topic. Answers to the questions should follow a distinct chatbot persona determined by you. What conversational tone best fits your topic and might prompt further engagement by the user.

On the first page of a slide deck describe the chatbot topic and the conversational persona. Write out the four questions that the chatbot should be able to answer and a link to the Dialog Flow project page. On the second page describe how might a chatbot be used in your industry or as part of your professional scope of work? What other applications might benefit from a chatbot.

2.3 – Create a Deep Fake

Using RunwayML create a machine learning Deep Fake combining a portrait image and a video of yourself speaking. What type of image worked best? As Deep Fake audio and video become more realistic, where do you think this new technology will produce the most damaging effects on society? Are there ways to use this technology to produce societal benefits?

Create a slide presentation with a video of your Deep Fake on the first page. On the second page explain two ways that you think Deep Fakes will cause harm and two ways that you feel they might be beneficial.

3.1 – Create an AR Body effect using Lens Studio

Download Lens Studio to your desktop computer or laptop. Follow the tutorial from the Async video to create an AR effect that tracks your face or body. Test the AR filter on Snap on your mobile device. Take a photo or record a video within Snap of the filter in use at your home. What were some of the difficulties you discovered in creating the filter? What were the challenges in using the filter? How did the base graphic you chose to use change the effect?

Create a slide presentation with either the photos or video of the filter. Upload a pdf of your slide presentation to the LMS.

3.2 – Design your own personal robot

Design your own personal robot. Given the opportunity, what would you desire in a personal robot? How might it assist you? What features would it have? What would it look like? How might it function on a daily basis? Would you use it for chores, cooking, companionship, conversation?

Create a slide presentation with reference photos and a description of your robot. Upload a pdf of your slide presentation to the LMS.

3.3 – Design your own community robot (Group Project)

As a group combine each of your personal robots into a product for the public. How might the features and functionality of your personal robot be integrated into a single entity. Create 3 personas, 2 scenarios and 1 storyboard detailing how a user might incorporate your robot into their daily lives in a manner that serves the community rather than a single individual.

What are the existing public perceptions of robotics? How might those perceptions be revised or embraced through the application of your robot into the community? Create a slide presentation with reference photos and a description of your community robot. Upload a pdf of your slide presentation to the LMS.

Participation

[Credit for participation (if any) should be explained, including what a student must do to earn full credit for participation. Also consider in-class work as participation.]

Grading Breakdown
Table 1 Grading Breakdown

Assignment	Points	% of Grade
Participation	100	10%
1.1 – What is Creative Technology?	50	5%
1.2 – Improve an existing film scene as a 3D VR experience	50	5%
1.3 – Scene Script for 3D Virtual Reality Film	200	20%
2.1 – Create an A.I. Generated Illustrated Story	200	20%
2.2 – Create a Chatbot using Google Dialog Flow	50	5%
2.3 – Create a Deep Fake	50	5%
3.1 – Create an AR Body effect using Lens Studio	50	5%
3.2 – Design your own personal robot	50	5%
3.3 – Design your own community robot (Group Project)	200	20%
TOTAL	1000	100%

Grading Scale

Course final grades will be determined using the following scale:

Table 2 Course Grading Scale

Letter grade	Corresponding numerical point range
A	95-100
A-	90-94
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	73-76
C-	70-72
D+	67-69
D	63-66
D-	60-62
F	59 and below

Assignment Submission Policy

All assignments must be delivered by the date and time (Pacific Time) that deliverable is listed as due per instructor guidelines. The instructor(s) will provide due dates for all assignments and deliverables during the first week of the course. Late assignments will be subject to the late submission policy indicated below. All assignments must be completed in order to pass this class.

Assignments will be accepted after the deadline with the following grade penalties. Do not ask for extensions.

- Submission in the 24 hours after the deadline   10% deduction
- Submission between 24 and 48 hours after the deadline   20% deduction
- Submission between 48 hours and 3 days after the deadline   50% deduction
- Submission more than 3 days after the deadline   100% deduction

Keep copies of all your files and emails until the end of the semester.

Grading Timeline

Instructors will provide feedback and grading on all deliverables in a timely manner, usually within 48-72 hours following an on-time submission.

Correcting a Grading Error or Disputing a Grade

If you don't inform the instructor of missing or incorrect grades within two weeks of those grades being posted, the grades will be assumed correct. Do not wait until the semester's end to check or appeal any grades. If you feel a grade merits re-evaluation, you are encouraged, within one week of the instructor providing a grade and initial feedback, to send the instructor a memo in which you request reconsideration. The memo should include a thoughtful and professional explanation of your concerns. Be aware that the re-evaluation process can result in three types of grade adjustments: positive, none, or negative. (Note: Complaints on the date of a graded assignment's return to you will not be addressed; it is essential to wait one full day prior to raising a concern.)

Attendance

The Academy maintains rigorous academic standards for its students and on-time attendance at all class meetings is expected. Each student will be allowed one excused absences over the course of the semester for which no explanation is required. Students are admonished to not waste excused absences on non-critical issues, and to use them carefully for illness or other issues that may arise unexpectedly. Except in the case of prolonged illness or other serious issue (see below), no additional absences will be excused. Each unexcused absence will result in the lowering of the final grade by ⅓ of a grade (e.g., an A will be lowered to A-, and A- will be lowered to a B+, etc.). In addition, being tardy to class will count as one-third of an absence. Three tardies will equal a full course absence.

Students remain responsible for any missed work from excused or unexcused absences. Immediately following an absence, students should contact the instructor to obtain missed assignments or lecture notes and to confirm new deadlines or due dates. Extensions or other accommodations are at the discretion of the instructor.

Automatically excused absences normally may not be used for presentation days. Using an excused absence for a presentation, such as in the case of sudden illness or other emergency, is at the discretion of the instructor.

In the case of prolonged illness, family emergencies, or other unforeseen serious issues, the student should contact the instructor to arrange for accommodation. Accommodation may also be made for essential professional or career-related events or opportunities. All accommodations remain at the discretion of the instructor, and appropriate documentation may be required.

Zoom etiquette

All students are expected to have their cameras on throughout each virtual synchronous class. If for any reason a student cannot or prefers not to have the camera on please contact the instructor in order to explain the situation.

Academic Integrity

The University of Southern California is foremost a learning community committed to fostering successful scholars and researchers dedicated to the pursuit of knowledge and the transmission of ideas. Academic misconduct is in contrast to the university's mission to educate students through a broad array of first-rank academic, professional, and extracurricular programs and includes any act of dishonesty in the submission of academic work (either in draft or final form).

This course will follow the expectations for academic integrity as stated in the USC Student Handbook. All students are expected to submit assignments that are original work and prepared specifically for the course/section in this academic term. You may not submit work written by others or "recycle" work prepared for other courses without obtaining written permission from the instructor(s). Students suspected of engaging in academic misconduct will be reported to the Office of Academic Integrity.

Other violations of academic misconduct include, but are not limited to, cheating, plagiarism, fabrication (e.g., falsifying data), knowingly assisting others in acts of academic dishonesty, and any act that gains or is intended to gain an unfair academic advantage.

The impact of academic dishonesty is far-reaching and is considered a serious offense against the university and could result in outcomes such as failure on the assignment, failure in the course, suspension, or even expulsion from the university.

For more information about academic integrity see the student handbook or the Office of Academic Integrity's website, and university policies on Research and Scholarship Misconduct.

Course Content Distribution and Synchronous Session Recordings Policies

USC has policies that prohibit recording and distribution of any synchronous and asynchronous course content outside of the learning environment.

Recording a university class without the express permission of the instructor and announcement to the class, or unless conducted pursuant to an Office of Student Accessibility Services (OSAS) accommodation. Recording can inhibit free discussion in the future, and thus infringe on the academic freedom of other students as well as the instructor. ([Living our Unifying Values: The USC Student Handbook](#), page 13).

Distribution or use of notes, recordings, exams, or other intellectual property, based on university classes or lectures without the express permission of the instructor for purposes other than individual or group study. This includes but is not limited to providing materials for distribution by services publishing course materials. This restriction on unauthorized use also applies to all information, which had been distributed to students or in any way had been displayed for use in relationship to the class, whether obtained in class, via email, on the internet, or via any other media. ([Living our Unifying Values: The USC Student Handbook](#), page 13).

Course Evaluations

Course evaluation are an important review of students' experience in the class. Course evaluations will be administered by a student volunteer on the last day of the course.

Course Schedule

	Topics/Daily Activities	Assignments	Deliverables
Week 1	**Instructor/Student Introductions** **Course Overview** **What is creative technology?** ● **LECTURE** Students will get an overview of creative technology and learn the different types of applied technology through real world examples.	**In-Class Assignment #1.1**: Describe two creative technology projects that inspire you.	**Pre-Course Survey Due**
Module 1: 3D Storytelling			
Week 2	**VR: Three Dimensional Storytelling** ● **LECTURE** Students will be introduced to 3D storytelling through the application of non-linear narrative in VR experiential design.	**In-Class Assignment #1.2:** Improve an existing film scene as a 3D VR experience **Assignment #1.3:** Write a script for a 3D VR film	**DUE: Assignment #1.1** Students present Assignment

	VR: Virtual Group Interaction ● **LECTURE** Building on the previous lecture students will explore how group dynamics change how users are able to interact with one another in VR experiences ● **DEI:** How can digital storytelling provide for inclusivity and accessibility?	**READ:** Virtual reality storytelling as a double-edged sword **READ:** A Longitudinal Study of Small Group Interaction in Social Virtual Reality	
Week 3	**Haptic Communication** ● **LECTURE** Students are introduced to haptic technology and will explore how touch can be applied to digital storytelling. **Student Presentations** ● **LECTURE** Students will read their 3D VR film scripts and discuss the implications of 3D storytelling on entertainment as well as other narrative-based industries. ● DEI: How can haptic technology create a deeper experience for the visually -impaired?	**READ:** Applications of Haptic Technology, Virtual Reality, and Artificial Intelligence in Medical Training During the COVID-19 Pandemic	**Assignment #1.3:** Write a script for a 3D VR film Students present Assignment
Module 2: Language Processing			
Week 4	**Machine Learning: Text & Image Generation** ● **LECTURE** Students will learn how machine learning is changing the nature of content creation through text driven content and image generation. **Machine Learning: Language Processing** ● **LECTURE** Students will be introduced to machine learning language processing through the application of conversational chatbots.	**In-Class Assignment #2.1:** Create an A.I. Generated Illustrated Story **READ:** Robo-writers: the rise and risks of language-generating AI **Assignment #2.2:** Create a Chatbot using Dialog Flow **READ:** Chatbots for learning: A review of educational chatbots for the Facebook Messenger	No Assignment Due

	● **DEI:** Designing diversity and inclusion into conversational chatbots.		
Week 5	**What is a hologram?** ● **LECTURE** Students will learn the myths and realities of holograms and how language processing is bringing holograms to life. **Deep Fakes and Virtual Voices** ● **LECTURE** Students will be introduced to Deep Fake technology and explore the implications on our society.	**Assignment #2.3:** Create a Deep Fake **READ:** The Emergence of Deepfake Technology: A Review	**Due: Assignment #2.2:** Create a Chatbot using Dialog Flow
Module 3: Interactive Bodies			
Week 6	**AR: Body Transformation** ● **LECTURE** Students will be introduced to the technology of real time body tracking through the application of AR within the Snap platform. **Sensor Driven Sound Design** ● **LECTURE** Students will be introduced to the way musicians are utilizing new technology to create body-centric instrumentation.	**Assignment #3.1:** Create an AR Body effect using Lens Studio **In-Class Assignment #3.2:** Design your own personal robot **Group Assignment #3.3:** Design your own community robot	**Due: Assignment #2.3:** Create a Deep Fake
Week 7	**Robot / Human Interactions** ● **LECTURE** Students will be introduced to the latest advances in robotic technology emphasizing human-to-machine interaction. ● **DEI:** How might robotic technology promote accessibility through automation.	**READ:** Exploring Behavioral Creativity of a Proactive Robot	**No Assignment Due**

Week 8	Course Evaluation **Student Presentations** ● **LECTURE** Students will present and discuss their community robot assignment and the implications of an increasingly automated society.		**DUE: Assignment #3.3** Students present Assignment #9

Statement on Academic Conduct and Support Systems

Academic Integrity:
The University of Southern California is a learning community committed to developing successful scholars and researchers dedicated to the pursuit of knowledge and the dissemination of ideas. Academic misconduct, which includes any act of dishonesty in the production or submission of academic work, comprises the integrity of the person who commits the act and can impugn the perceived integrity of the entire university community. It stands in opposition to the university's mission to research, educate, and contribute productively to our community and the world.

All students are expected to submit assignments that represent their own original work, and that have been prepared specifically for the course or section for which they have been submitted. You may not submit work written by others or "recycle" work prepared for other courses without obtaining written permission from the instructor(s).

Other violations of academic integrity include, but are not limited to, cheating, plagiarism, fabrication (e.g., falsifying data), collusion, knowingly assisting others in acts of academic dishonesty, and any act that gains or is intended to gain an unfair academic advantage.

The impact of academic dishonesty is far-reaching and is considered a serious offense against the university. All incidences of academic misconduct will be reported to the Office of Academic Integrity and could result in outcomes such as failure on the assignment, failure in the course, suspension, or even expulsion from the university.

For more information about academic integrity see the student handbook or the Office of Academic Integrity's website, and university policies on Research and Scholarship Misconduct.

Please ask your instructor if you are unsure what constitutes unauthorized assistance on an exam or assignment, or what information requires citation and/or attribution.

Students and Disability Accommodations:

USC welcomes students with disabilities into all of the University's educational programs. The Office of Student Accessibility Services (OSAS) is responsible for the determination of appropriate accommodations for students who encounter disability-related barriers. Once a student has completed the OSAS process (registration, initial appointment, and submitted documentation) and accommodations are determined to be reasonable and appropriate, a Letter of Accommodation (LOA) will be available to generate for each course. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodations are not retroactive. More

information can be found at osas.usc.edu. You may contact OSAS at (213) 740-0776 or via email at osasfrontdesk@usc.edu.

Support Systems:

[Counseling and Mental Health](#) - *(213) 740-9355 – 24/7 on call*
Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

[988 Suicide and Crisis Lifeline](#) - *988 for both calls and text messages – 24/7 on call*
The 988 Suicide and Crisis Lifeline (formerly known as the National Suicide Prevention Lifeline) provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week, across the United States. The Lifeline is comprised of a national network of over 200 local crisis centers, combining custom local care and resources with national standards and best practices. The new, shorter phone number makes it easier for people to remember and access mental health crisis services (though the previous 1 (800) 273-8255 number will continue to function indefinitely) and represents a continued commitment to those in crisis.

[Relationship and Sexual Violence Prevention Services (RSVP)](#) - *(213) 740-9355(WELL) – 24/7 on call*
Free and confidential therapy services, workshops, and training for situations related to gender- and power-based harm (including sexual assault, intimate partner violence, and stalking).

[Office for Equity, Equal Opportunity, and Title IX (EEO-TIX)](#) - *(213) 740-5086*
Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

[Reporting Incidents of Bias or Harassment](#) - *(213) 740-5086 or (213) 821-8298*
Avenue to report incidents of bias, hate crimes, and microaggressions to the Office for Equity, Equal Opportunity, and Title for appropriate investigation, supportive measures, and response.

[The Office of Student Accessibility Services (OSAS)](#) - *(213) 740-0776*
OSAS ensures equal access for students with disabilities through providing academic accommodations and auxiliary aids in accordance with federal laws and university policy.

[USC Campus Support and Intervention](#) - *(213) 740-0411*
Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

[Diversity, Equity and Inclusion](#) - *(213) 740-2101*
Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

[USC Emergency](#) - *UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call*
Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

[USC Department of Public Safety](#) - *UPC: (213) 740-6000, HSC: (323) 442-1200 – 24/7 on call*
Non-emergency assistance or information.

[Office of the Ombuds](#) - *(213) 821-9556 (UPC) / (323-442-0382 (HSC)*
A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.

Occupational Therapy Faculty Practice - *(323) 442-2850 or* otfp@med.usc.edu
Confidential Lifestyle Redesign services for USC students to support health promoting habits and routines that enhance quality of life and academic performance.