CTIN 499 - Designing for Embodied Interaction, Spring 2017

Time: Thursday 3:00 – 5:50 pm
Location: SCI L 114
Instructor: Andreas Kratky
Units: 2
Prerequisites: none
Office Hours: Thursday 1:30 pm, SCI 201Q
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Course Description

Interaction with computers is in most cases defined by the technological reality of the computer. We tend to design for established platforms such as desktop computers with keyboards and mice, consoles with game controllers, touch-screen enabled mobile devices, or virtual reality headsets. The technological platform determines the design-space available for the creator of an interactive experience. By putting the focus on technology as the framing parameter we lose sight of the physical reality of the player’s body and the space in which the player is interacting. The course Designing for Embodied Interaction invites to shift this focus. It asks students to engage with diverse discourses, such as visual arts, music, performance, choreography, as well as human computer interaction and engineering to create experimental projects that re-envision how we interact with computers and to build experiences such as dynamic systems, sculptures, performances, and alternative interfaces that we can experience in different and unusual situations.

The convergence of computers and art provides a fertile ground to experiment with and rethink the established paradigms of human computer interaction. Drawing from art history and installation art, game design, and computer science the class considers aspects of site-specificity, performance, and social interaction as the framing parameters for the design of interactive experiences. It provides a foundational framework of embodied interaction that considers as central design elements the full range of senses of the player/user and the particular characteristics of the site and situation in which interaction happens. With introductions to various techniques of physical computing, multi-screen displays, projection-mapping, augmented reality and motion capture students get a foundational vocabulary and skillset enabling them to shape the content, aesthetic, and the technological and spatial setting of their projects in order to achieve their expressive goals.

Over the course of the semester students will create one large project that explores a specific setting of embodied interaction, which will be preceded by three short projects. All projects are informed by brief design prompts that allow students to iteratively develop their approach to embodied interaction. As a reflection on the process of conceiving and realizing the main project, students will write a short essay outlining the reasoning and intuition underlying their creative process.
Course objectives

- The class will provide an overview and a basic introduction to different techniques of embodied interaction.
- Students will get an introduction to the art history and aesthetic principles of embodied interaction, tracing a trajectory from early forms of interactive art, the encounter of computers and installation art, to current forms of embodied interaction.
- A foundational terminology of embodied interaction will be introduced to support the design, critique and general reflection on embodied interaction.
- Students will become familiar with concepts of site-research and ethnographic concepts as well as concepts of social interaction relevant to the design of interactive experiences.

Course Notes

The class is a studio class and combines lectures and discussion with practical development and critique of projects. It is expected that students work during and outside of class to realize their projects. Active participation in in-class discussion and critique are important parts of the class. The class will include a field trip to investigate site-specific work and encounter interactive installations. Beyond the field trip students will conduct site-research on their own as required by their projects.

Students will work on four projects over the course of the semester: Three short individual projects, which can be realized in a collaborative manner but under the creative direction of one student. The main project is team-based. If desired, it is possible to realize the main project as an individual project.

Readings are expected to be prepared for the day they are assigned on the syllabus. For presentations please prepare your work such that it is ready to be presented.

Description of Assignments and Assessment

Practical projects:

*Interactive metamorphosis*: Exploration of interactive projection mapping following a brief design prompt; individual project. The project is developed within one week, due in week 3. It will not be assessed.

*hello world*: Exploration of physical computing based on a design prompt; individual project. The project is developed within one week, due in week 5. It will be assessed based on its imaginative engagement with the prompt and on its experience qualities.

*One-minute intervention*: Exploration of the creative engagement with a specific site of your choice; individual project. The project will be guided by a brief design prompt and is developed within one week, due in week 7. It will be assessed based on its engagement with the site and the clarity of its reasoning about the site; an additional aspect of assessment will be considering the experience qualities of the project.
Interaction embodied: Main project, team-based or individual. The project is conceived by the project-team based on an open, formal prompt. It is due in week 15. The project will be assessed based on its engagement with the physical reality of the player/user and the setting in which it is perceived. Additional criteria for assessment are the depth and achievement of the creative endeavor and the experience qualities of the project.

Written Assignment:

Final essay outlining the considerations, research and creative decisions informing the final project Interaction embodied. It will be assessed for the depth of its reflection and its clarity in representing the creative process of the project.

Grading Structure

CTIN 499 criteria for grading are as follows:

- Class participation: 15%
- hello world project: 15%
- One-minute intervention project: 15%
- Interaction embodied project: 40%
- Final essay: 15%
- Total: 100%

Technological Proficiency and Hard-/Software requirements

The class will provide introductions into all techniques and technologies relevant to the class. Pre-existing knowledge about any of the techniques is not required; a certain familiarity with physical computing, arduino, or Unity3D will be helpful and allow you to engage more deeply in the design challenges. If you have specific questions about tools or potential project plans please contact the instructor. I am very open to a wide range of projects and tools, my main interest in this class is the engagement with embodied interaction as a creative challenge.

Required Textbooks

The readings for this course come from various sources and will be made available through Blackboard.
Course Outline:

Part 1: Techniques

1. Week: Jan 12, 2017:
   **Introduction**
   Overview over course structure and class projects
   Introduction to the theory of embodied interaction and its relationship to installation art
   Screening of relevant examples

2. Week: Jan 19, 2017:
   **Introduction to Projection Mapping**
   Workshop on projection mapping, location to be announced (SCA stage)
   Reading: Frances Dyson, *And then it was now*
   Assignment: Project *Interactive metamorphosis*

3. Week: Jan 26, 2017:
   **Presentation Project Interactive metamorphosis**
   Lecture and discussion of concepts of displays and screens, alternative forms of presentation
   Screening of relevant examples

4. Week: Feb 2, 2017:
   **Introduction to Physical Computing**
   Workshop on physical computing and sensing; location to be announced (fab lab)
   Reading: Paul Dourish, History of Interaction; in: *Where the action is*, Dourish, 2004
   Assignment: Project *hello world*

5. Week: Feb 9, 2017:
   **Presentation Project hello world**
   Lecture and discussion of concepts of physical computing, alternative interfaces
   Screening of relevant examples
   Paul Dourish: *Social Computing*; in: Where the action is, P. Dourish, 2004

6. Week: Feb 16, 2017:
   **Space and Site**
   Lecture and discussion of concepts of spatial perception, site-specificity and ethnography
   Workshop: Sensing the Environment - Use of sensors to interact with space
   Reading: Julie Reiss, *Situations*; in: *From Margin to Center*, Reiss, 1999
   Assignment: Project *One-minute intervention*
7. Week: Feb 23, 2017:  
**Presentation Project One-minute pop-up intervention**  
Reading: Edward T. Hall, *Perception of Space*; in: The Hidden Dimension, Hall, 1966

8. Week: Mar 2, 2017:  
**Pitches for interaction embodied project**  
Reading: Edward T. Hall, *Distances in Man*; in: The Hidden Dimension, Hall, 1966

9. Week: Mar 9, 2017:  
**Introduction to Proxemics**  
Lecture and discussion of concepts of proxemics and interaction  
Workshop: Introduction to Uniduino – connecting the arduino to Unity3D  
Reading: Bryan Lawson, *Proxemics*; in: The Language of Space, Lawson, 2001

Spring Break

10. Week: Mar 23, 2017:  
**Body Capture**  
Lecture and discussion of concepts of database cinema  
Workshop: Introduction to Microsoft Kinect as sensor and motion tracking tool  
Reading: Chris Salter, *Bodies*; in: Entangled, Salter 2010

11. Week: Mar 30, 2017:  
**Intermediate Presentation**  
Presentation and peer review of the embodied interaction project

12. Week: Apr 6, 2017:  
**Augmented Reality**  
Workshop: Using Vuforia and Unity3D for Augmented Reality experiences  

13. Week: Apr 13, 2017:  
**Adaptive Architectures**  
Lecture and discussion of concepts of tangible computing and adaptive architecture  
Project workshop  
14. Week: Apr 20, 2017:

**Field Trip**
Visit to the Los Angeles County Museum of Art (LACMA)
Reading: Anna Munster: *Interfaciality*; in: Materializing New Media, Munster, 2006

15. Week: April 27, 2017:

**Final Screening**
Screening of the final versions of the *interaction embodied* project
Class round-up

Exam Week: May 4, 2017:
**Final essays due**

**Additional Policies:**

**Attendance Policy**

Punctual attendance at all classes is mandatory. Students arriving more than five minutes late to three classes, more than ten minutes late to a single class, or leaving early, will be marked as having an unexcused absence from class, unless prior permission has been obtained from the instructor. The following guidelines are from the Interactive Media & Games Division handbook regarding absences and grading and apply to all students.

Guidelines for absences affecting grading:
- Two unexcused absences: lowers grade one full grade point (for example, from A to B)
- Three unexcused absences: lowers grade two full grade points
- Four or more unexcused absences: request to withdraw from course (instructor’s discretion)

Excused absences are:
- Illness (with a doctor’s verification)
- Family or personal emergency (with verification)

**Social Media Use in Class**

Social media use, including text messaging, Internet messaging and email, is not permitted in class unless explicitly permitted by the instructor. A 0.5% grade reduction will result from each occurrence of a student being found using social media in class.

**Missing an Assignment Deadline, Incompletes**

The only acceptable excuses for missing an assignment deadline or taking an incomplete in the course are personal illness or a family emergency. Students must inform the instructor before the assignment due date and present verifiable evidence in order for a deadline extension to be granted. Students who wish to take incompletes must also present documentation of the
problem to the instructor or student assistant before final grades are due. For assignments turned in after the assignment deadline without prior permission from the instructor, a penalty will be imposed equal to 10% of the total available points for the assignment, for each day or part of a day that the assignment is late, up to a maximum of seven days. Incompletes are only available after the week 12 withdrawal deadline.

**Mid-term Conferences**

These conferences allow you to get a sense of your overall progress, areas for improvement and an estimated grade at mid-point in the semester. If you are in danger of failing, you will be alerted in writing and in a conference; we will outline together what steps must be taken in order for you to pass. It is the student's responsibility to be aware of USC's add/drop and withdrawal deadlines.

**Content Warnings**

If you include content in the work that you produce which may cause distress to your fellow students, please make a verbal 'content warning' immediately before you present the work in class, and include a written content warning, either at the beginning of a piece of written work, or in the readme file of a project, when you submit the work for grading.

Students who ever feel the need to step outside class during the presentation or discussion of work that warrants a content warning may always do so without academic penalty. You will, however, be responsible for any material you miss. If you do leave the room for a significant time, please make arrangements to get notes from another student or see me individually. Content which requires a content warning includes graphic depictions or descriptions of violence, sexual acts, racial, sexual or cultural stereotyping, abuse (especially sexual abuse or torture), self-harming behavior such as suicide, self-inflicted injuries or disordered eating, eating-disordered behavior or body shaming, and depictions, especially lengthy or psychologically realistic ones, of the mental state of someone suffering abuse or engaging in self-harming behavior.

If you have any questions about what warrants a content warning, including visual, auditory or tactile depictions, textual or verbal descriptions, and meaning embodied in game mechanics and interaction patterns, please let me (the class instructor) know.

If you ever wish to discuss your personal reactions to material presented in class, either with the class or with me afterwards, I welcome such discussion as an appropriate part of our coursework.

**Fair Use**

Fair use is a legal principle that defines certain limitations on the exclusive rights of copyright holders. The Interactive Media & Games Division of USC’s School of the Cinematic Arts seeks to apply a reasonable working definition of fair use that will enable students and instructors to develop multimedia projects without seeking authorization for non-commercial, educational uses. In keeping with section 107 of the Copyright Act we recognize four factors that should be
considered when determining whether a use is fair: (1) the purpose and character of use, (2) the nature of the copyrighted work, (3) the amount and substantiality of the portion used in relation to the copyrighted work as a whole, and (4) the effect of the use upon the potential market for or value of the copyrighted work. In general, we regard the reproduction of copyrighted works for the purposes of analysis or critique in this class to be covered by the principle of fair use.

Citation Guidelines

Where appropriate, all projects will need to include academically appropriate citations in the form of a Works Cited section, which covers all sources, in order to receive a passing grade. The Works Cited is either included in the project or as a separate document, as appropriate to your project. The style we use is APA 5th edition and you may refer to these guidelines: http://owl.english.purdue.edu/owl/resource/560/01/

Disruptive Behavior

Behavior that persistently or grossly interferes with classroom activities is considered disruptive behavior and may be subject to disciplinary action. Such behavior inhibits other students’ ability to learn and an instructor’s ability to teach. A student responsible for disruptive behavior may be required to leave class pending discussion and resolution of the problem and may be reported to the Office of Student Judicial Affairs for disciplinary action.

Statement on Academic Conduct and Support Systems

Academic Conduct

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Section 11, Behavior Violating University Standards https://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions/. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, http://policy.usc.edu/scientific-misconduct/.

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the Office of Equity and Diversity http://equity.usc.edu/ or to the Department of Public Safety http://capsnet.usc.edu/department/department-public-safety/online-forms/contact-us. This is important for the safety whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. The Center for Women and Men http://www.usc.edu/student-affairs/cwm/ provides 24/7 confidential support, and the sexual assault resource center webpage sarc@usc.edu describes reporting options and other resources.

Support Systems

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Interactive Media Division
USC School of Cinematic Arts

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A number of USC’s schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the American Language Institute http://dornsife.usc.edu/ali, which sponsors courses and workshops specifically for international graduate students. The Office of Disability Services and Programs http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, USC Emergency Information http://emergency.usc.edu/ will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.