

Mixed Reality Experience Design

LMC-4813F, LMC-6340-JB, CS 4770-A, 6770-A

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Overview

This course gives students an opportunity to learn about Mixed and Augmented Reality (MR and AR) as a platform for interaction design. MR/AR refers to computer systems that combine virtual content with the physical environment, allowing users to interact with these combined physical/virtual worlds in appropriate locations. Students will use the Argon AR Web Browser (developed here at Georgia Tech) to experiment with MR and AR, with a particular emphasis on the creation of mobile, social AR experiences. (For more information about Argon, see argon.gatech.edu). The goal of the course is to learn to design and critique locative media experiences in general and explore the potentials of MR and AR in particular.

In addition to various programming and design exercises, students will work in small groups on a major semester long project. The project will concern a "cultural heritage" experience centering on Auburn Avenue in Atlanta. Auburn Avenue was the center of African-American culture in the first half of the twentieth century. It was also a key site in the Civil Rights Movement in the 1960s. Student groups will learn about various aspects of that rich cultural heritage and design and prototype applications to enrich the experience of visitors or residents of "Sweet Auburn." We will be working with the Historic Preservation Division and the Georgia African-American Historic Preservation Network of Georgia Department of Natural Resources, who will act as clients for this course, providing content and feedback for the project.

Course Objectives

By the end of the course, students will be able to:

- ✦ Apply appropriate design principles and techniques for creating mobile AR/MR experiences;
- ✦ Employ techniques and technologies for programming and content creation for AR/MR experience in an AR browser, such as Argon;
- ✦ Work in a team to realize a significant digital media prototype.

T-Square

In addition to this syllabus, resources (lecture slides and readings), assignments will be available on t-square.

Assignments

The major activity of the class is centered around the group project (below), but there will also be individual assignments. The goal of these assignments is to ensure everyone in the class gains experience and understanding of AR and MR design and implementation. In

addition, in the second half of the semester, each student will deliver an oral report and lead discussion on one article (some of which are listed below).

Readings

- ✦ Auslander, Philip. *Liveness: Performance in a Mediatized Culture*, 2008.
- ✦ Bolter, *Catharsis and Flow*
- ✦ Lombard, M., & Ditton, T. (1997). At the heart of it all: The concept of presence. *Journal of Computer-Mediated Communication*, 3(2).
- ✦ MacIntyre, B., Bolter, J., and Gandy, M. (2004) "Presence and the Aura of Meaningful Places" *7th Annual International Workshop on Presence (PRESENCE 2004)*, Polytechnic University of Valencia, Valencia, Spain, 13-15 October 2004.
- ✦ Barba, E., MacIntyre, B. and Mynatt, E. D., "Here we are! where are we? Locating mixed reality in the age of the smartphone", *Proceedings of the IEEE*, 100, pp. 929-936, (2012)
- ✦ Grau, Oliver. *Virtual Art: From Illusion to Immersion*, 2003. (Chapter 1)
- ✦ Wright, P. and McCarthy, J. *Technology as Experience*, 2007. (Chapter 1)
- ✦ Tuan, Yi-Fu. *Space and Place: The Perspective of Experience*, 1977. (Selections)
- ✦ Buchanan, Richard. "Good Design in the Digital Age." *GAIN: AIGA Journal of Design for the Network Economy*. Vol 1, No 1. October, 2000.

Project Wiki Page

Each project team is expected to maintain a t-square wiki page for their project. This page should be linked of the wiki group page where you list the group members. The wiki should have a summary of the project design concept, links to all the turn-ins and presentations, including the final video and poster of the project. The content should be neatly and concisely laid out on this page, with explanations of what each linked element is (i.e., do not just throw a pile of resource links on a page and expect us to figure it out). All elements must be clearly documented and accessible from your project page.

Grading

Your grade for the class will be determined based on the following:

- 5% short program/design/blog assignments (first half of semester)
- 15% Individual reading presentation (second half of semester)
- 5% Group Progress Report #1
- 25% Group Progress Report #2 (presentation and delivery of prototype)
- 10% Final group presentation
- 35% Final Submission (prototype and design document)
- 5% Class Attendance & Participation

Readings

Unless otherwise indicated, readings will be found in the Resources folder in t-square.

Attendance

Students are expected to attend class and participate in the discussions and presentations.

Disability Statement

Students with Disabilities should report to the Access Disabled Assistance Program for Tech Students (ADAPTS) at: Smithgall Student Services Building, Suite 210; 404-894-2563 (V); 404-894-1664 (TDD) (adaptsinfo@gatech.edu) If you are already registered with ADAPTS and expect to use any of your special accommodations in this class, please let me know as soon as possible so I can work with you and ADAPTS to ensure a good experience for us all.

HONOR CODE

Plagiarizing is defined by Webster's as "to steal and pass off (the ideas or words of another) as one's own : use (another's production) without crediting the source."

If caught plagiarizing, you will be dealt with according to the GT Academic Honor Code. For any questions involving these or any other Academic Honor Code issues, please consult me, or www.honor.gatech.edu.

Schedule

Week 1

Jan 6. Course Introduction

Jan 8. Interaction Design Overview

Design Short Assignment #1

Week 2

Jan 13: Mixed and Augmented Reality Overview; Intro to Argon

Design Short Assignment #1 Due; Argon Short Assignment #1

Jan 15: Intro to Argon

Argon Short Assignment #1 Due; Argon Short Assignment #2

Week 3

Jan 20: Intro to Argon BOLTER AWAY

Argon Short Assignment #2 Due

Jan 22: Auburn Avenue History

Team Building

Week 4

Jan 27: Auburn Avenue History (Lecture by Dean) + Official Project Kickoff

Jan 29: Class Activity: Brainstorming and Critique

Week 5 -BOLTER AWAY

Feb 3: Argon continued

Feb 5: Argon continued

Week 6

Feb 10: Teams present idea

Feb 12:

Students work on initial prototypes and demos

History of Panoramas

Week 7

Feb 17: Class work day: Critique and feedback on methods selection and progress

Feb 19: Flow and Catharsis (two design aesthetics)

Week 8

Feb 24: Class work day

Feb 26: **Progress report #1:** Informal presentations (Methods selection and progress; Prototype design and progress)

Week 9

March 3: Reading and Discussion

March 5: Lecture: Video Documentation (Scenarios and Personas)

Week 10

March 10: Class work day

March 12: **Progress report #2:** Students present working prototypes (Critique and feedback by HPD)

11 SPRING BREAK

Week 12

March 24: Individual Reading Presentations and Discussion

March 26: Class work day

Week 13

March 31 : Individual Reading Presentations and Discussion

April 2: Class work day

Week 14

April 7: Individual Reading Presentations and Discussion

April 9: Class work day

Week 15:

April 14: Individual Reading Presentations and Discussion

April 16: Class work day

Week 16:

April 21: Final Presentations (Video + Poster + 2nd Working Prototype + Short Report)

April 23: Final Presentations (Video + Poster + 2nd Working Prototype + Short Report)