CS 4984: 3D Experiences

Spring 2019
Instructor: Dr. Doug A. Bowman
Prerequisites: none

Description

This course will introduce students to the technology used to create compelling three-dimensional (3D) user experiences in virtual, augmented, and mixed reality. It will discuss design principles for effective 3D experiences, and consider a wide range of application areas. Guest lecturers from fields as diverse as art, education, and history will present case studies of successful 3D user experience design. Students will complete a semester project in which they design and prototype their own innovative 3D experience.

Learning Objectives

1. Students will be able to envision new experiences that are enabled by immersive 3D technologies.
2. Students will be able to describe the range of technologies that come together to enable 3D experiences in virtual and augmented reality, and will be able to make informed technology choices to fit the requirements of an envisioned experience.
3. Students will be able to use various design and prototyping methodologies for 3D experiences, including ideation, critique, scenarios, sketching, storyboarding, physical mock-ups, and game-engine-based scripting.
4. Students will be able to articulate the unique challenges that are inherent to 3D experience design and develop techniques for addressing them in the design of a particular experience.
5. Students will understand the benefits of working in a team including the perspectives of multiple disciplinary backgrounds.

Topics to be covered

- Characteristics of successful 3D experiences
- VR/AR display technologies
- VR/AR tracking technologies
- Envisioning and evaluating new types of 3D experiences
- 3D experience design process
- Interaction design for 3D experiences
- Multi-sensory display design for 3D experiences
- Physiological challenges: cybersickness and fatigue
- Perceptual challenges
- Making use of perceptual illusions in 3D experiences
- Social challenges
- Evaluation of 3D experiences