Tangible and Embodied Computing (CCTP 556)

Wednesdays 5pm - 7:30pm in the CCT Studio
Class website: https://blogs.commons.georgetown.edu/cctp-556-fall2013

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      Office Hours: Thursdays 2-4pm CCT 311 B (offices to the left)
TA: Stevie Chancellor (sc1257@georgetown.edu)
      Office Hours/HW Help: Mondays 2-4pm (in the CCT studio)

Summary

The maturing field of Tangible and Embodied Computing seeks to bridge the gap between physical and digital objects and spaces. In addition to exposing students to methods in interaction design, this course will provide hands-on experience in the programming of tabletop computer systems. Coursework will revolve around a Microsoft Surface Table (video here: http://www.youtube.com/watch?v=kr1O91704jI), and students will learn practical aspects of iterative design and incremental application development as they build toward constructing a unique application for the Surface Table. Application domains should follow individual student interests and can range from interactive media and art, to workflow productivity tools, to games and educational experiences, and beyond.

Class sessions will typically consist of short lectures on relevant topics in computer programming and interaction design followed by hands-on in-class tutorials, and programming homework assignments. Although no prior programming experience is required, and programming techniques will be taught, this course will require extensive programming in the C# language. Therefore, students with little or no programming background should expect to commit substantial amounts of time outside of class to master the required techniques.

Course Goals

By the end of the semester, students should have the following:
- Sufficient knowledge of the C# programming language, WPF, and event-driven programming to complete a functional MS Surface application
- Knowledge of key topics in HCI, user interface design, and computer programming
- The ability to formulate good questions
- The knowledge, skills and confidence to learn how to develop applications in other computing environments

Student Expectations

Responsibilities for the class include completing all homework assignments (roughly 5-6) and completing a functional MS Surface application. Students will be expected to check the class blog frequently, and ask and answer questions on the blog. Students will be expected to help each other learn both inside and outside of the classroom.

Attendance and participation in this class will be essential. Participation not only includes participating in class, but also participation in answering and asking questions on the website.

Course Website and Q&A System

The course website will have a digital copy of the syllabus as well as links to homeworks, demos, tutorials, and downloads for your assignments. This will be the most up-to-date resource for the class.

An important part of this class will be the collaboration of students on solving programming problems. To this end, the website will have a question and answer system for students to work together on solving problems that arise as they work on the homework assignments and the final application.

When you encounter bugs/errors that you cannot solve on your own, your first line of assistance is to post your code to the course website for other students to answer. You are expected to post questions and help others solve their problems as well.

 It is advantageous to you to post questions to the homework with enough time for others to answer - frantically asking a question at 9am on Wednesday will probably not get a sufficient response to correct the assignment. Any questions asked after midnight on Tuesday will not be answered in time for homework due on Wednesday.

Homework

Homework is assigned to reinforce the concepts taught during lecture, to introduce new concepts, and to help you develop a code base for future work. Every homework is different and has different expectations, these will be made clear at the time the homework is assigned.

Homework will be due at the start of class and should be submitted through the Blackboard assignment system. Homework is to be completed and submitted individually- group homework will not be accepted. DO NOT COPY SOMEONE ELSE'S CODE. Your implementation should be unique. However, you can and should work at solving problems together. This could mean organizing into study/work groups or simply posting questions on the blog.

Final Project

The final deliverable will be a completed and functional Microsoft Surface application of your own design, and a short design rationale and user guide for the application. These should outline the design problem the proposed application is aimed at solving, detail what a user should expect from the application, and instructions for using it. More details on this project will come later in the semester.

Grading Breakdown

Homework & Tutorials: Complete all of these for 30%
Attendance/Participation: If you ask or answer questions frequently, on the blog and in class, you will earn 30%
Final Project: If you complete a final project application and user guide you will earn the final 40%

Weekly Overview - 14 Weeks Total

Week 0: Intro to the Surface (9/4/13)
Lecture: Overview of class, How the Surface Works: Software, Survey, intro to blog, intro to simulator, intro to itel, intro to visual studio.
Tutorial: using the IDE and surface simulator for Running XAML in class
Homework: take the survey | blog post: "intro + who are you + what app would you make?" | watch Lynda video on XAML: "*Working with XAML elements and Property attributes*" (4m 56s) from Silverlight 5 Essential Training

Week 1: No time like the present (9/11/13)
Lecture topic: Software, WPF, XAML example/Syntax Example
Lecturecise: XAML surface elements - follow along with the tutorial in class
Homework: Create a Movie Viewer
                Lynda C# Video 2

Week 2: From XAML to C# (9/18/13) - Basic coding
Lecturecise: Tutorial on basics of C# - Tutorial 2
Tutorial/Homework: Create Surface Elements - ListItem of images in C# and in XAML - instruction sheet
                Lynda C# Videos 3 and 4

Week 3: Programming 101 (9/25) - Intermediate basic
Lecture: Control flow/variables/ functions and methods/arrays, Lists
Lecturecises: Calculator
Homework: Debugging the calculator
        Lynda C# Videos 5 and 7

Week 4: Would you say you are Object Oriented? (10/2/13)
Lecture/Tutorial: An overview of OOP +lecturecise creating a basic class (object, constructor, methods, inheritance)
Homework: Super awesome Tweet class

Week 5: Review + Catch-up (10/9/13)
Lecture: Stevie helps out with questions
Tutorial/Homework: 5 minute, 3 slide pitch on proposals, finish OOP HW

Week 6: Interaction design (10/16/13)
Lecture: 5 minute proposal presentation, discussion of ethnographic design
Homework: ethnographic observation, study and write-up, project proposal

Week 7: Events I + Proposals Due (10/23/13)
Lecture: What is an event and why does it matter
Tutorial: TBD
Homework: Basic Event Handling

Week 8: Events II (10/30/13)
Tutorial: Some serious events
Homework: Advanced Event Handling

Week 9: 3d Modeling and Printing(11/6/13)
Project Development

Week 10: (11/13/13)
Project Development

Week 11: (11/20/13)
Project Development

Week 12: (11/27/13)
Project Development

Week 13: (12/4/13)
Final Prototype Demo