Course Logistics

Meeting Times:
- MWF Period 4 (10:40am – 11:30am)

Meeting Location:
- Computer Science & Engineering E119 (CSE E119)

Instructor Information

Instructor: Jaime Ruiz, PhD
- E-mail address: jaime.ruiz@ufl.edu (put ‘NUI’ in the subject)
- Office hours: Mondays 1-2,
  Wednesdays 2-3
  or by appointment
- Office location: CSE Building, E572
- Class Web site: https://www.jaimeruiz.com/teaching/cen4725

Teaching Assistant: TBD

Course Information

Catalog Descriptions:
CEN4725 - Natural User Interaction -- Credits: 3.
CEN5728 - Natural User Interaction -- Credits: 3.

Introduces the design, development and evaluation of Natural User Interaction (NUI) technologies (e.g., non-keyboard and mouse technologies such as touchscreen interaction, gesture interaction, speech interaction, etc.). Discussion of the hardware-to-software NUI pipeline and key considerations when developing NUI software, including existing platforms, toolkits and APIs used to create NUI software.

Course Overview:
This is a cross-listed undergraduate and graduate course that introduces students to the field of Natural User Interaction (NUI). NUI focuses on allowing users to interact with technology through the range of human abilities, such as touch, voice, vision and motion; some examples of NUI are touchscreen interactions with iPads and whole-body interactions with the Microsoft Kinect.

This class will serve as an introduction to the design, development, and evaluation of a range of current NUI technologies. In this course, students interact with the material
through reading relevant literature, participating in group discussions, creating relevant presentations, working on an individual or group project, and listening to guest speakers. Students will apply their knowledge in a research project where they design, implement, and evaluate a NUI prototype.

Comfortable experience with one or more of the following languages is recommended for this course: Java, C#, or Objective C. Students who have taken Human-Computer Interaction and/or User Experience Design will be more comfortable in this course, but it is not a prerequisite.

This course will be taught by Dr. Jaime Ruiz, an assistant professor in the Department of Computer and Information Science and Engineering (CISE) at UF.

**Pre-requisites and Co-requisites:**
- COP 3530 with minimum grade of C.

**Course Components:**
This course involves the following core components:
- Lectures – core NUI concepts will be presented and discussed.
- Research paper reading – recent HCI research conference and journal publications related to NUI will be read and discussed in class.
- Creation and evaluation of an interface – in groups, students will (1) create a NUI using one of the covered NUI platforms (e.g., touch/gesture, voice, motion), and (2) evaluate the NUI with their peers using HCI methods.

**Course Objectives:**
By the end of this course, students will be able to:
- Identify and characterize what is meant by the term “natural user interaction” as it is used in the field today.
- Compile and run “Hello World” level introductory applications in each of the covered NUI platforms (e.g., touch/gesture, voice, motion).
- Develop and evaluate a prototype application that uses a NUI paradigm.

**Course Materials**

**Material and Supply Fees:**
- None.

**Textbooks and Software Required:**
No textbook is required for this course. To provide students with access to the latest, most cutting-edge research developments in the field of NUI, weekly assigned readings will be posted to the course website one week prior to the due date. Students will be responsible for downloading the readings from the ACM Digital Library (http://dl.acm.org/). Access to readings on the ACM Digital Library are free when accessing the library on campus or via the UF VPN.
Students will do in-class work on their projects during the Friday meetings, and are therefore required to bring a laptop to class. The following free and open-source software packages may be necessary to be installed by students on their laptops over the course of the semester, depending on the project you choose:

- CMU Sphinx 4 SDK (Java): http://cmusphinx.sourceforge.net/

**Recommended Reading:**

- CMU Sphinx Wiki: http://cmusphinx.sourceforge.net/wiki/

**Course Outline**

**Course Topics:**

- Natural User Interaction as a field and how it relates to Human-Centered Computing / Human-Computer Interaction.
- Touch and Gesture Interaction on smart surfaces (e.g., touchscreen smartphones, tablet computers, etc.).
- Whole-body Interaction using 3D scanners/sensors (e.g., Microsoft Kinect).
- Speech and Voice Interaction using natural language input.
- NUI applications and active research areas.
- Evaluating prototypes with end-users.

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1 Consistent with UF College of Engineering computer requirements: “The University of Florida requires students to have access to a computer. The College of Engineering further requires that students have access to and on-going use of a laptop/mobile computer.” For more information, see http://www.eng.ufl.edu/students/career-resources/computer-requirements/
Grading
The following items will contribute to students’ grades in this course:

**Course Project**
- Project Outline (presentation + paper) 5%
- Prototype Demo (presentation only) 10%
- User Study Report (presentation + paper) 15%
- Final Presentation + Demo 5%
- Final Paper 15%

**Reading Summaries**
You are expected to read the assigned papers for each class and write up your reflections on the research discussed in class. These are due the night before class at 11:50pm via canvas. As a general guideline, your reflections should be between 200 and 500 words. No summaries are required during the weeks that discuss projects instead of research papers.

**Assignments**

**Class Participation, including Reading Quizzes**
Unannounced reading quizzes will be given periodically throughout the semester at the beginning of the Tuesday meetings. These quizzes will cover only that week’s reading(s). Make-up quizzes will have different questions than the original quiz.

**Grading Scale:**
- 100-92 A, 91-90 A-
- 89-88 B+, 87-82 B, 81-80 B-
- 79-78 C+, 78-72 C, 71-70 C-
- 69-68 D+, 68-62 D, 61-60 D-
- 59-0 E

This course will use the Canvas e-Learning course management system to post grades and to communicate with class members. If you have a question about the course that other students could benefit from hearing the answer, please post to the appropriate discussion thread on Canvas rather than sending individual emails to the instructor/TA.

**Expectations for Graduates vs. Undergraduates in this Course:**
Graduate-level sections of this course require more work than the undergraduate sections. Graduate students enrolled in this course must:
- Design and develop a more complex NUI prototype, and evaluate it with more users in the user study assignment.
- Complete one additional reading per week
**Undergraduate Grading Scale Note:**
A C- will not be a qualifying grade for critical tracking courses. In order to graduate, students must have an overall GPA and an upper-division GPA of 2.0 or better (C or better). Note: a C- average is equivalent to a GPA of 1.67, and therefore, it does not satisfy this graduation requirement. For more information on grades and grading policies, please visit: https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

**Graduate Grading Scale Note:**
Graduate students need an overall GPA of 3.00 truncated and a 3.00 truncated GPA in their major (and in the minor, if a minor is declared) at graduation. For more information on grades and grading policies, please visit: http://gradcatalog.ufl.edu/content.php?catoid=4&navoid=907#grades

**Honor Code & Collaboration:**
High level questions, syntax topics, and algorithms can be discussed amongst each other and amongst the groups. Not allowed in this course include the following:

1) **plagiarism** (misrepresenting others’ ideas as your own, can be fixed with simple citation),
2) **copying code,**
3) **social loafing** (e.g., for group work), and
4) **work offensive to others.**

As for other courses in CISE in the past, offenders will be held to the UF Honesty Policy (see below) including reporting incidents to the Dean of Students. The results of this have included failing grades, ethic lectures, and a permanent mark in records (which can lead to expulsion).

**Course Policies**

**Late Assignments:**
Unless otherwise specified, assignments are to be submitted to canvas before the start of class. Specifics will be included in each assignment. Always check the assignment page for due dates. You lose 25% of the maximum possible grade for each extra day. After 2 days, you won't get any credit for the assignment unless you obtain prior permission from the instructor. Electronic submission is closed 48 hours after assignments are due; students not having submitted programs receive an automatic zero on the assignment. The only exception to this rule is if students contact the instructor in writing before the assignment due date.

**Attendance:**
Attendance will not be graded. Engagement in class discussions is graded, however, so if students must miss class, the instructor recommends increasing participation on the other days. If a student is sick or will be absent for a significant period of time, please contact the instructor to work out a way to catch up.
**Make-ups:**
Students who contact the professor **before the due date** with appropriate requests for extension and/or makeup assignments will be given an additional amount of time to make up late assignments equal to the time lost due to the unforeseen circumstance.

There will be no makeup for missed quizzes and students will receive a zero. If a student is unable to attend a quiz due to a **documented** illness, accommodations will be made by the instructor according to university policy.

**Incompletes:**
Incompletes will be granted for only the most extreme circumstances, e.g. medical or family reasons. To be considered for an incomplete, the student **must** 1) let the professor know in advance that they are seeking an incomplete, and 2) provide documentation to support the request.

Requirements for class attendance and make-up exams, assignments, and other work are consistent with university policies that can be found at: [https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx](https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx)

**Classroom Expectations:**
To be courteous to your fellow students, please:
- Turn all cell phone ringers to silent and step outside to take calls.
- Turn off all audible notifications on laptops and phones.
- Refrain from texting during class.
- Use laptops only for taking notes or looking up relevant information (no Facebook, YouTube, Twitter, etc.).

**Guest Lectures:**
In this course, guest lecturers are invited to present material related to their research and how it relates to the course material. These are experts in their fields and are taking time out of their busy schedules to share their knowledge with you. Please respect their time and attend the guest lectures as you would any other meeting of the course.

**University Policies and Resources**

**Honesty Policy**
UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code ([http://www.dso.ufl.edu/scrr/process/student-conduct-honor-code/](http://www.dso.ufl.edu/scrr/process/student-conduct-honor-code/)) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.
Note that failure to comply with this commitment will result in disciplinary action compliant with the UF Student Honor Code Procedures.

**Accommodation for Students with Disabilities**
Students requesting classroom accommodation must first register with the Dean of Students Office. That office will provide the student with documentation that he/she must provide to the course instructor when requesting accommodation.

**UF Counseling Services**
Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:
- UF Counseling & Wellness Center, 3190 Radio Rd, 392-1575, [http://www.counseling.ufl.edu/cwc/Default.aspx](http://www.counseling.ufl.edu/cwc/Default.aspx), counseling services and mental health services.
- Career Resource Center, Reitz Union, 392-1601, career and job search services.
- University Police Department 392-1111

**Software Use**
All faculty, staff and student of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

**Course Evaluations**
Students are expected to provide feedback on the quality of instruction in this course based on 10 criteria. These evaluations are conducted online at [https://evaluations.ufl.edu](https://evaluations.ufl.edu). Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at [https://evaluations.ufl.edu/results](https://evaluations.ufl.edu/results).