INFO3170 – User Interface Design
UI Design and Evaluation Group Project
Semester I, 2018-19

This term you will undertake a group project (3-4 members preferably, min 2, max 5 people) to evaluate some computing-related task/problem, to develop interface design alternatives for the task/problem, to implement a prototype of your design, and to evaluate your design. This project should provide you with hands-on experience with the tasks that interface designers face every day. The problem must be interesting (and not trivial) from an interaction design point of view. Ideally (not a requirement), the topic of the project will be a problem that matters to some "real-life" people, e.g. in terms of social and development issues, local and global such as described in the new Sustainable Development Goals (SDGs) that were unveiled in 2015 by the United Nations.

Each project group will be graded as a team, that is, each person receives the same grade. I will poll team members, however, to make sure that all members are contributing. Lack of participation will precipitate an individual reduction of grade. Within the team, you must negotiate on how much and what each person will contribute. Think carefully about your team members: Where do people live and what hours do they work? Where will you meet? What skills do the different individuals bring to the group (computing, programming, design, creativity, writing, evaluation, etc.)? I would encourage you to form a heterogeneous team of individuals with complementary skills.

Project Report Book

Each part of the project will include a deliverable report. This report will be submitted in an electronic format (Microsoft word); we do not want a paper copy to be handed in. In any case, it should be professionally prepared, concise yet expressive, grammatically sound, illustrative of your efforts and process, and easy to view and understand. A good design effort can easily be hampered by a poor communication of what was done. We will also meet in tutorial and discuss the project after each part is submitted.

Part 0 - Topic Definition – written proposal due Friday Oct 19 in class

This first part of the project is relatively simple. You must list the members of your team and identify the problem area that you will be working on. Choose

one of the listed project ideas. You may also come up with two or three ideas; they must be substantial enough to be the basis for a project, but not too much for a semester project, and I must approve it. Each group will present their ideas in a tutorial and/or meet with me to discuss these ideas. Please avoid any projects that directly benefit some company, unless said company is willing to discuss an agreement with the department.

Part 1 - Understanding the Problem – due Friday November 2

The key goal of this first substantive part of the project is to deeply understand that problem space that you are addressing, its set of pertinent users, and the issues and constraints that are involved in the problem. If the task has an existing system/interface, you should perform an interpretive evaluation of that system to help you learn more about it. Most important is to identify important characteristics of the problem that will influence your subsequent design.

In class and in the readings you will learn about different techniques for acquiring this kind of information. Feel free to utilize the techniques that you feel are most appropriate to the particular task you are examining. However:

- **you must use at least two methods of data gathering**: either interviews and/or focus groups and at least one other method.

Your report and deliverable for this part should deeply examine the problem of study. Who are the potential users? What tasks do they seek to perform? What functionality should the system provide? Basically, you are setting up a set of constraints for your subsequent design. What criteria should be used to judge if your design is a success or not?

More specifically, you should develop the following items in this part, and you should communicate them through your report:

- An overview of what the system will do and why it's needed.
- A description of the important characteristics of the users of the system.

A task analysis consisting of:

- A description of the important characteristics of the tasks performed by users.
- A description of important characteristics of the task environment.

- *An analysis of the problem using diagramming methods that we will give further details on.*

- An analysis of the existing system, automated or manual, and up to 3 similar systems, including their strong points and deficiencies.
- A description of the larger social and technical system or context in which your design will intersect, i.e. has to operate in.
    - The social context is the real-world situation that your system needs to operate in and how that will affect your system.
        - This might mean a situation where the users or stakeholders have particular grouses or attitudes, or where physical security is an issue, or there are some infrastructural problems, or anything about the society or organization that may affect your proposed system.

      You want to know this in case your design may have to be adjusted to handle these issues. The social context does not have to focus on negative issues only. There may be positive aspects that may make your design objectives easier.
    - The larger technical system:
      Systems that your design has to communicate with or work with, e.g. if your system has to communicate with a web server or external database or a mobile network, if power is unreliable, etc.
- An initial list of usability criteria, or principles, that should be used in the eventual evaluation of your design, including a high-level description of how you could measure the successful adherence to these principles (usability goals and user experience goals).
- A brief description and justification of how the above information was gathered

Most important: A discussion of the implications of what you learned above. The last item in the list above is critical. Don't just describe the target users, tasks, environment, etc. You must also tell us how these attributes should/will influence your design. Are there any implications to be made from the user profiles and other data you learned? We will be very careful to look for this information in your report.

Part 2 - Design Alternatives – due Thursday November 8
The key goal of Part 2 of the project is to use the knowledge gained in Part 1, as well as that from class, to develop a set of design alternatives for your problem. This is the stage of "informed brainstorming". These multiple design alternatives should explore the potential design space for the problem.

In this part of the project you will develop mock-ups, storyboards, and sketches of your interface designs. That is, you should provide pencil-and-paper or electronic images of the interface at various stages; you do not need to build a working prototype. Your design sketches should be sufficiently detailed for a potential user to provide useful feedback about the design, however. Along with your design mock-ups, you should provide a brief narrative walk-through of how the system will work. Perhaps most importantly, you should also include your justifications for why design decisions were made, and what you consider to be the relative strengths and weaknesses of your different designs.

The design process you follow here is important. You should seek to create some fundamentally different design ideas, concepts all over the potential design space for the problem you have chosen. The key is to push the boundaries of the space of design possibilities.

- One way to generate alternative design ideas is to have a brainstorming session with all team members present to generate alternatives. This often works well in industry. However, sometimes the group only comes up with one idea and gets stuck trying to come up with the other ideas, or the other ideas end up being a small variation on the first idea. This is **not good.**
- Another way to generate alternative design ideas is to have individuals create different design ideas, and then have a group brainstorming session to give each other feedback and refine the designs. **This is the recommended approach for this class project,**

Your project report should include all the explanatory material mentioned above as well as all the design sketches, drafts, storyboards, etc., that you generated. If some of your sketches are on paper, either scan or photograph the material and convert it to an appropriate electronic format. Make sure that

your report adequately reflects the design process that your group undertook. The key in this part of the project is to come up with many different design ideas, **not just a small set of variations from some basic design**. You should plan on turning in at least three different designs.

We will utilize a tutorial as a demo session near the end of this part of the project. Each group will show their design ideas in a presentation in tutorial. Everyone will then circulate and interact with the designers. The idea here is that each group can use this opportunity to get feedback about their design ideas as they narrow their design space and head into Part 3 of the project.

After discussing your design with me and the class in tutorial regarding Part 2, and before doing your Part 3 prototype, you need to create a final version of your paper design, which combines the best elements of your three designs from Part 2. This will make your task in Part 3 easier. You will show me and the class this final paper design in the very next tutorial before doing Part 3. This means that you (and I) should have less surprises when you do your prototype.

Part 3 - System Prototype and Evaluation Plan – due Thursday Nov 15

In part 3 of the project, your group will implement a detailed prototype of your interface. You can use any prototyping tools that you would like to assist this process (e.g., Axure, Balsamiq, InVision, Lumzy, Java, VB.Net, Web/PHP, Adobe Flex, Web/Javascript, etc.), but the tool(s) you use must be approved by me.

- You should be able to get much of the interface functionality working, but clearly you will not be able to implement all back-end application functionality.
- However, your prototype should **appear** to have most of the back-end functionality – for example, instead of accessing or updating some data which is **supposed** to come from a database or across a network, your prototype may access or update a list or array within the prototype.

Additionally, you must provide a set of initial usability specifications for your system and a plan for an evaluation of it. To develop usability specifications, consider the objectives of your design. For example, if you are working on a

calendar manager, you might specify time limits in which you expect a user to be able to schedule or modify an appointment, or a maximum number of errors that you expect to occur. Basically, you should list a set of criteria by which your interface can be evaluated.

Further, this part of the project should include an initial evaluation plan for the system. What kinds of benchmark tasks would you have users perform to help evaluate the interface? What kind of subjective questionnaire would you deploy to have a user critique the interface? You will need to actually carry out some of this evaluation in Part 4, so you should do your best to set it up now. The key here is not to do some exhaustive description of a usability evaluation plan, but to motivate why the particular plan you propose is appropriate for this interface.

- Note that developing an initial evaluation plan is also a good way to figure out how much of the interface you need to develop. You should be able to build and connect enough of the application functionality to be able to conduct an initial usability evaluation with the benchmark tasks as you are proposing here.

Your write-up for this part should include a description of your system prototype. You can include screen dumps to help explain it and text to describe how a user would interact with it. Discuss the implementation challenges you faced. Were there aspects that you wanted to build but were unable to do so? The key component to include in your project report is a justification of why you settled on the design that you chose. What's special about this particular design with respect your problem?

The report for this part also must include the usability specifications that you established and a description of the evaluation that you are planning. This need not be too detailed here as the actual evaluation will occur in Part 4. We will try to give you helpful feedback about your plan here to assist with the testing in Part 4.

After this part is complete, each group will demo their system for the lecturer in their tutorial. In fact, informal demos during tutorials for feedback prior to the actual demo are a good idea.

Part 4 – Evaluation – due Thursday November 22

In the final part of the project, your group will conduct an evaluation of the prototype developed in part 3. You should utilize the evaluation measures that you identified in that part as well. We expect that your evaluation will involve sample users interacting with your system. These users will likely be your client(s) and maybe other students from class or other people who would fit your target user population. Give the users a few simple benchmark tasks and have them interact with your interface. Closely study what occurs. Deploy a questionnaire to get their subjective feedback about the interface and interaction.

Your write-up for this part should include the following components:

- A description of the evaluation techniques, tasks and users involved in your study
- Design rationale for the evaluation tasks and materials you employed
- Description of the results of the study (data presentation)
- A discussion of the results
- The implications that you make from the results with respect to your design
- A description of how the prototype design could be improved in light of the implications

The key to this part of the project is not to simply describe your evaluation methodology but to rise above that and describe what you learned from it. Explain why you chose the benchmark tasks that you did. Why did you ask users what you asked? What conclusions can you draw from the studies? What aspects of your design "worked" and what failed to meet your specifications? If you had more time to work on the design, what would you now change and improve? Remember, no designer ever gets a system "just right." We will reward teams who honestly and carefully assess their design and who clearly provide a plan for its improvement.

Submissions
All reports should be submitted electronically (in Microsoft word format), emailed to uiDesign.uwi@gmail.com. The Microsoft word format allows me to write comments on the report with the tablet pen. Prototypes or links to the them should also submitted electronically.

All reports will be reviewed and discussed in tutorials. If I decide that a report needs to be redone after review, the final grade for that report will be half the difference between the grade for the original submission and the revised submission. For example, if the grade for the original submission is 12/20 and the grade for the revised submission is 16/20, the final grade will be 14/20.

Final Project Presentation
The design project will culminate in a session in which each group presents their system to the class and (if possible) to their clients. Each group will be expected to give a professional 15-20 minute summary and walk-through of their design and prototype. It is important that you do a good job communicating all your efforts for the semester. You want to make sure that your objectives in the project are discussed, your system is clearly presented, and that your design process is communicated. Also describe what you learned from your usability study. Practice your presentation! Fifteen minutes is not long -- plan accordingly.

Parts adapted from Colin Potts, Georgia Institute of Technology