Assignment P5 (Fall 2018)

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Question 1

There are many positive effects of programs like Georgia Tech's OMSCS. The classes and education are offered online and at a lower cost than traditional on-campus programs. Lower cost can be appealing to many students since it prevents them from student loan burdens and also attracts people with lower income to pursue higher education. People who have fulltime jobs can afford to take courses without having to attend an actual classroom. This will help students with their jobs and pursue a Master's degree while having a fulltime job. More professionals will be able to take courses. Online courses give the flexibility of taking classes regardless of one's location. This provides opportunities for people who don't want to relocate for the purpose of education. Students who live in different countries will have access to quality educational material through programs such as OMSCS.

Negative effects occur quite often with online courses such as OMSCS. One substantial negative effect would be towards people who do not have frequent access to the Internet or a computer. Utilizing OMSCS program is not feasible in this instance. Loss of direct contact between students and instructors is another negative effect. There is less feedback from the instructor to the student. The concept of office hours where students can have conversations with professors is not available for online students. Feedback of instructors is important to students in order to succeed. Interaction with peers is limited in online courses. Networking opportunities are plenty in universities. Learning in an actual classroom can be rewarding if someone prefers to be more social in his or her learning process.

The OMSCS program can be designed to have more positive effects and curb the negative effects up to some level. Utilizing services such as Piazza and Slack to improve communication and interactions would be one of the methods to get

students and instructors more engaged in discussing course materials. Having group projects encourage students to work together and form teams to study together. Group projects help to build and improve relationships among students. Maintaining weekly discussions forums where student are allowed to post and respond to subject related matter is another way of increasing engagement of the class participation.

Question 2

My current job position is an example where I encounter political motivations are determining the design of technology. I work with different companies who operate Oil refineries. My employer operates an IOT platform where conditions (temperature, corrosion levels, Gas leaks) of assets installed in oil refineries are monitored and provide real-time data (collected by sensors installed on site) to clients. My tasks are to onboard new devices to the platform in a way that the clients (Mostly engineers who work on-site at oil refineries) can start monitoring the devices for changes in conditions. Typically the stakeholders will be the clients who monitor the conditions. Many meetings are held in order to determine what information to be provided through the platform. The clients provide requirements of how the data should be displayed. They have motivations to make their jobs easier and they don't consider how difficult is the requirement from the technological perspective. They also want to know how many hours would it take for me to complete each of their requests in order for them to calculate the costs. My team and I have a set of hours to work on tasks and have to come up with explanations if the work stretches beyond the expected timeline. This means they also have motivations to save money. Another motivation is the security within the application and being able to hide or show parts of the implementation to different user groups.

The motivations described above are affecting the design of technology in many ways. Creativity is one of them affected. Designing the platform to view data in an easy to use creative ways are shot down in order to have them implemented in a way which fits the mental models of a few individuals of the client side. This

will affect the experience of many users since they don't typically survey the opinions of their employees for need finding.

Our team has to find ways to justify the costs involved in development and implementations. We have to work within a window defined by time and cost. The cost is the main trigger for a client to inquire about our work.

The security aspects of the application also affect the design of technology. It decides which user can see what and when depending on the group each user belongs to. Clients have specific instructions on which users can access the information and how they should be accessing it. Our job is to implement the security protocols as they request.

Question 3

I would redesign the single message threads and how they are presented to the user. As I go through Piazza, I'm constantly searching for message threads that may have some relevance for me or may have an answer to a question that I have posted. I would try using the principle of simplicity by providing a view of messages that the current user has written or commented on. Also, adding a follow list based on the topic would preview the messages relevant to the topics once the user opens Piazza. In that way, Piazza can be a clean interface without too many posts. If users want to browse all posts, there will be an option to view Piazza where all the posts are included.

Adding search feature where users can use filters such as date range, author, topics, keywords would incorporate the predictor and processor views of HCI. Adding options to categorize and pin posts of interests will help to reduce the cognitive tasks of users, as they don't have to remember the exact date range the post was written. Every time I want to look up a post, I spent a considerable amount of time searching through long lists of posts and comment threads. The ability to save or marking posts/comments in order to find them at a later time would be a nice feature to have. This would reduce the cognitive load of the users and save time trying to find the posts/comments related to them. Creating alerts for relevant messages, posts that users are tagged, commented or marked would be a way to integrate visual perception for the Piazza platform. Visual notifications on the desktop when an answer has been received would make

users aware of the fact that their question has been answered. Users can select how they want to receive the notifications. Notifications can be in the form of text messages, desktop notifications, push-notifications (For Mobile Piazza users). Giving the users the ability to hide the post on piazza would reduce the clutter on the screen. This approach might prevent from displaying an overload of information while searching through. This would give a user a sense of direct manipulation in the interface. Giving users options to customize the interface would be another way of making it invisible. Items, which can be dragged around the interface to be placed, can make the experience of using Piazza more personal. For an example, I would like to drag the posts with important information to the right side of the screen for later references. This would have been possible if the interface is interactive and it would make the interface invisible and giving the sense of direct manipulation.

Question 4

Title: Patterns for How Users Overcome Obstacles in Voice User Interfaces (2018)

Authors: Chelsea Myers, Anushay Furqn, Jessica Nebolsky, Karina Caro, Jichen Zhu.

In this paper, authors analyze how users interact with Voice User Interfaces. They are monitoring what obstacles are faced and what tactics users to overcome them. VUIs have many unresolved challenges. Natural Language Processing (NLP) errors and struggles of users to make correct mental models are mentioned as the main challenges. Invisible nature of the interface and imperfections of NLP makes them difficult to use. New interaction techniques and better algorithms are needed to make better VUI experiences for users. After conducting an empirical evaluation with 26 participants, authors observed that there are 4 obstacle categories faced by users and 10 tactic categories used by users to overcome them. NLP error obstacles are the most common type of obstacles. The unfamiliar intent failed feedback and system errors were the other obstacle categories. Also, participants were observed to be guessing to

overcome the obstacles. Some users are not fully aware of how VUI suppose to work. NLP couldn't parse or interpret some utterances. Failed feedback was also noticed. NLP mishearing the utterances were also common. Participants misinterpreting the feedback and ambiguous feedback were noticed. There are much more observations, which could be useful when designing a voice interface, can be found in the paper.

Among the tactics used by participants to overcome obstacles, "Hyperarticulation" was the most commonly used tactic. Participants trying to speak louder and/or slower, trying to clearly articulate the utterances was observed by almost every participant. Constructing new utterances, using more information, relying on GUI, Settling for the feedback and quitting out of frustration was noticed as tactics by participants. The goal of the paper is to understand better what obstacles people face when using unfamiliar VUI's and how they overcome them. Their research indicates that although NLP errors are the common, other obstacles causes more frustration and confusion to the users. Improving VUI's requires further research in both NLP and interaction design.

Since voice interfaces are becoming a common way of interacting with computers, I thought this paper to be really interesting to get insights about VUIs and challenges of using them. In my M assignments, one of the prototypes was a voice interface. This paper gave me more insights into what users might experience while using voice commands to achieve tasks through VUI's.

References

1. Udacity Lecture Videos.