Assignment P5

Michael Tong
mtong31@gatech.edu

Question 1

The existence of the OMSCS program carries both positive and negative outcomes to society. A great benefit is the flexibility of the program's class schedules, but this comes with the consequence of making student to student engagement difficult and subpar in comparison with the on-campus experience.

With the main characteristic of the program being online, most classes offer an extraordinary amount of flexibility, especially in comparison with their on-campus options. Lectures are often prerecorded which allows for students to adjust their class schedules to their life. This flexibility is priceless for those who work full-time and attend the program part-time, which opens up the opportunity for graduate education to an entirely new demographic. With the average student age of the program being 33 (Georgia Tech 2017), flexibility is often a necessity and with the program's format, it certainly provides a positive effect in comparison with on campus degrees.

Unfortunately, with the flexibility of the classes and program, the quality of student to student engagement is diminished. A significant part of higher education is the opportunity to network and meet others, but the online format is not conducive of this characteristic. The very nature of the program being online makes it difficult to simulate the on-campus interactions. In addition to the lack of communication between students, this results in group projects being difficult to manage. Often, projects require a team of three to five members, and gathering a group of that size with similar ideas, complementing skillsets, and in a similar time-zone is difficult to accomplish in an online setting, where communication is often purely text-based.

So how can the program be structured to limit this negative trait while preserving the flexibility of the program? One potential way may be to hire students to run hubs or meet up areas where there is a large density of students. The location can be anything from a coffee shop to a library and serves as an opportunity for students to meet each other on some scheduled basis. This somewhat simulates an on-campus environment but maintains the online aspect of the program and may serve as an opportunity for students to meet and consider taking classes together, leading to more dynamic project teams and better relationships in general. Attendance would obviously be voluntary for a program such as this.

Question 2

Cell phones are a staple technology of the 21st century and there's a chance that you may even be reading this document on one right now. However, ever since the creation of the first phone, and predominantly with smartphones, "bloatware," or preinstalled applications continues to exist across all platforms. It's hard to believe that a majority of users enjoy these applications or would even download them voluntarily, which is likely why stakeholders preinstall these applications to begin with.

To name some of the stakeholders involved in this interface decision, they are the phone manufacturer, application developers, and the users, each having their specific interest in the technology. Beginning with the manufacturer, their goal is to maximize their profit while keeping customers happy to continue purchasing their product over competitors. This creates an interesting dynamic because they are essentially the mediator between the application developers and the users, where they aim to appease both parties. With the application developers in the situation of preinstalled applications, their motivation is to maximize exposure and usage of their product with phone users. Finally, the users are the primarily motivation for the development of phones to begin with, their motivation is leisure, productivity, connectivity, and the other affordances that having one provides.

Manufacturers are motivated politically by the need for capital, and application developers are willing to invest a significant amount of money for these manufacturers to preinstall their software onto their products. This leads to an increase in clutter when the phone is first purchased, often in the form of default applications that the user may have no use for. Manufacturers may be aware that the consumers do not want a particular application preinstalled, and may even reduce the performance of their product, but choose to do so as a result of contracts with developers.

Often the applications cannot be removed without breaking the warranty of the phone, which leads to the next interface alternation motivated politically. Phone warranties exist to provide users comfort in knowing that their investment is protected if someone unordinary occurs. However, in providing this warranty, the agreement often stands that that the phone cannot be modified in specific ways, which often is required to remove the applications. This places a constraint on the user from having control of their phone to allow the removal of the default applications. For some, this is a removal of ease and comfort, where the political motivations have restricted the users control over their device.

While bloatware is often discussed with a negative connotation, it does increase the discoverability aspect of design. The motivation of the application developers could very well benefit the consumer, for instance if a phone came barebones without any applications, the user may not be aware that they need to download an application to open specific files, such as PDFs. The user may think that the device is simply incapable of performing the action and chooses not to discover any further. The motivation of the application developer does not necessarily need to be profit driven and can provide users with helpful software that the ordinary user may not be aware of.

Question 3

After utilizing the Piazza interface for a few classes, there are clear flaws that exist and can be improved upon to better satisfy some of the design principles discussed in unit two of this class. The primary focus for this discussion will be on the design of the posts column where users view all the posts within the Piazza channel. With each login, I have often found the layout to lack simplicity and structure, is inflexible, has poor perceptibility, and has poor discoverability.

Starting with simplicity, at first glance of the column there are a lot of icons for a user to take in; tags, titles, descriptions, dates, view count, statistics, and others. As a casual user, I personally rarely use any of these icons, even with knowledge of their functionality. Most of the icons seem to best suit administrators or frequent users. A redesign of this portion of the interface can be the implementation of multiple views, where the different views hide or display certain buttons. For instance, "full view" can be what is currently displayed in the application, while "casual view" can have a majority of the icons removed and only maintain essential ones. The modification can go as far as to allow people to select what they would like to see button by button.

To take the idea of simplicity a step further, it can be argued that the column display is also fairly cluttered and lacks a simple structure, and a potential redesign is to extend the titles and subtitles into the space taken by the icons and removing them altogether. The excess use of icons consumes a lot of real estate and may better serve to expand the title and/or descriptions, which is often the primary point of interest. In doing so, the structure of each topic's cell better articulates information, potentially improving the user's mental model of the task by removing unnecessary information and emphasizing what is important.

In terms of flexibility the Piazza view column is fairly poor. Specifically with the search functionality, there is no option to perform any advance search options, such as regex or case matching. Especially in classes that are code intensive, it often

helps to search for posts with these functions in place. Integrating an advance search option would improve the interface's flexibility by accelerating interactions for experienced users.

The next redesign to the topics column that can be made to improve the interface is the ability to collapse or hide/delete topics. In doing so, the user can better perceive the current state of the forum by removal of unnecessary topics that may have already been reviewed or are clearly unrelated to them. The perceptibility of the system improves which increase the efficacy of information being transferred to the user.

Lastly, a final improvement to the topic's column can be the display of detailed post information when a post is highlighted but not clicked in order to improve the discoverability of the interface's actions. With the potential hiding of icons as a result of the simplicity alteration, the icons that are removed can be utilized when a cell is highlighted, giving user's the ability to view the additional information while preserving simplicity. Implementation of this design can also display the post number, which currently is found by selecting the hidden dropdown menu on the left of the cell when highlighted and is arguably difficult to discover for newer users.

Question 4

In Manikonda and Choudhury's paper, "Modeling and Understanding Visual Attributes of Mental Health Disclosures in Social Media" (Manikonda 2017), the authors implement computer vision techniques to complement psycholinguistic methods in analyzing an individual's mental wellbeing.

For their research, they pull over two million "self-disclosing" images off Instagram, or images that are tagged with words that may be revealing of a person's emotional status. The images are analyzed through various clustering and supervised learning techniques, as well as professional psychiatrists with the goal of attribute certain image characteristics into revealing the person's mental health condition.

Features include the contrast and saturation of the image, the saliency, and many others. Manikonda and Choudhury have shown in their research that a model can be created to identify the mental state of an individual from their image posts, and may be a first step to flagging the need for intervention.

While the primary driver for this model is computer vision through neural networks and feature detection, the study is paired with linguistic analysis of each post's textual content as well. This is done to reinforce the study, since psycholinguistic analysis has been an active and heavily investigated area in recent years. Implementation of this analysis is done on image descriptors which are filtered to search for key words indicating specific emotions, such as sad, or happy.

This paper is of particular interest to me since my current work is largely in the computer vision domain and the topic of mental health is extremely important in the modern era. As a current computer vision engineer, it's refreshing to read unique applications of the technology outside of the common use case of cars and object detection. The use of the feature detector (SURF) is also atypical, and reminiscent of the unique application of the algorithm I had used on a work project. It's also impressive to see that the field of psychology is utilizing advance computer vision algorithms since they somewhat mimic human behavior. Overall, from the computer vision perspective, this paper was fantastic at teaching me a potentially new application of the subject matter I'm engaged in on a daily basis.

The topic of mental health has become a staple discussion in this decade, and the stigma surrounding the personal disclosure of it is slowly fading. More and more people are coming to terms with the condition and seeking support, which also improves our understanding of the dilemma. From this research, it appears that we are getting closer to being able to diagnose mental health conditions utilizing massive amounts of information more effectively. As someone who has and will likely suffer from mental health issues in the future, the knowledge that it is an active area of research with state-of-the-art technology is a refreshing.

References

1. Georgia Institute of Technology. (2017). *Online Masters of Science in Computer Science , OMS CS 2017 program update*[Brochure]. Author. Retrieved October 28, 2018, from https://www.omscs.gatech.edu/sites/default/files/images/omscsreport2017.pdf

2. Lydia Manikonda and Munmun De Choudhury. 2017. *Modeling and Understanding Visual Attributes of Mental Health Disclosures in Social Media.* In Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems (CHI '17). ACM, New York, NY, USA, 170-181. DOI: https://doi.org/10.1145/3025453.3025932