Assignment P5
CS6750 Human Computer Interaction

Sunil Rao
srao374@gatech.edu

1 QUESTION#1

1.1 **Positive Effect:** *Course Structure & Low Cost*

1.2 Positive Effect Ties

Course Structure: Having procured my undergrad with education systems outside of the US, the quality of grad programs originating in the US are significantly of higher standards according to me, especially OMSCS with its course content curated directly from tremendous working research from all possible industries, great minds & cutting-edge technology. This acute emphasis to applied principles directly influence the course structure here which I believe must be inherently accessible to any student across the globe. OMSCS offers this engineered content to any student in any corner of the globe with just access to internet.

Low Cost: Tethering to the point above, with OMSCS offering such highly-engineering course to students from all wakes of life around the globe at a fraction of the cost of a regular Grad program is a huge feat. I personally did not have resources when I was an undergrad student to afford for grad programs and can certainly tell how my career track would have exponentially improved if OMSCS existed back then to offer me the industry exposure and inculcate principles of applied sciences.

1.3 Realistic Positive Effect

Online Grad Programs such as OMSCS have reshaped the notion of learning to a whole new level. While online courses are much ubiquitous these days, providing a well-engineered structured learning online have critically helped students with all levels of exposure & expertise all around the globe to upskill themselves just with a access to internet. And it allows for students to learn at their whim, putting the emphasis on LEARNING and not SCHOOLING. This

has changed the way the education system was perceived and already has been having HUGE social repercussions.

1.4 Negative Effect: *Social Distancing*

1.5 Negative Effect Ties

I was a severe introvert when I got into my undergrad with grave stage-fear and stranger anxiety. My physical interactions with students and professors changed me as a person exposing me to learning how just not to survive in this world but rather to embrace, learn together and perceive world around beyond transactionally. With grad programs offering the luxury of being remotely located and sticking to course-contents, I feel it may unintentionally push students to Social Distancing by letting them remain in their comfort zones avoiding physical interactions. The COVID-19 pandemic has significantly highlighted this effect and multiple studies have indicated at changing social norms due to this.

1.6 Realistic Negative Effect

While physical limitations of being able to access great minds of our generation, professors & students alike, are known factors of online grad programs, not OMSCS particularly, may bring about or sustain the effects of social distancing that will have an impact on quality of human beings largely abstracted.

1.7 Positive Design

OMSCS already employs geo-tagged grouping post registration to let students know of classmates in their city and could perhaps enhance the program by ways of social marketing to encourage physical communions of students that could meet, greet and exchange ideas.

1.8 Negative Design

I can surely speculate that this is already on OMSCS's program technical roadmap - cutting corners by making any infrastructure updates to lessen IT and course administration costs, reduce Staff's billable hours by developing smarter GT ingrown applications would reduce course costs significantly therefore providing capacities to draw more student sign-ups from around the globe where the current costs, albeit low, are still unaffordable.

2 QUESTION#2

2.1 Area: *US Healthcare Software Engineering & IT*

2.2 Describing Area:

US Healthcare Software Engineering & IT involves designing, developing, testing, and maintaining software solutions for the healthcare industry in the United States. It encompasses a broad range of technologies, including electronic health records (EHRs), health information exchanges (HIEs), telehealth, and mobile health applications. These solutions typically require scalable & reliable solutions aiding care co-ordination & reducing healthcare costs.

But sadly enough, as it is infamously known, US healthcare is plagued by high costs, lack of access despite the Affordable Care Act (ACA), Over-Utilization, fragmented care and administrative complexities. Although technologically, we as software engineers can make significant strides in curbing the above-mentioned limitations through strategic and tactically designed solutions the following motivations curb them.

2.3 Stakeholder 1: *Pharmaceutical Companies - its high costs due to Drug Patent Protection*

2.4 Stakeholder 2: *Providers - raising healthcare costs through Fragmented care & Over utilization.*

2.5 **Stakeholder 3: Government -** *Policies & Lobbying*

2.6 Motivations 1:

Pharmaceutical companies are granted patents for new drugs, which gives them exclusive rights to sell those drugs for a period of time (15-20 years); most of them are lifesaving drugs. The longer a drug is protected by a patent, the longer patients and healthcare systems will have to wait for generic versions of the drug to become available. This also bears a strong financial incentive to continue selling that drug rather than investing in research & development of new drugs. This can limit technological advancements and lead to a lack of innovation in the healthcare industry.

2.7 Motivations 2:

Patients may receive care from multiple providers who do not communicate with each other, leading to duplicative or conflicting services. This can increase healthcare costs and lower the quality of care. The pushback on interoperability between different healthcare systems is limiting technological advancements by making it difficult to share patient data and collaborate on patient treatment plans. Providers may recommend or perform unnecessary tests, procedures, or treatments, which can drive up healthcare costs.. I have had such an experience with a proposal for an undisclosable application proposal aimed at bridging specialty access across the globe but was shunned away.

2.8 Motivations 3

The government's funding priorities for research and development slows the pace of innovation and limits adoption of new technologies. I work in the federal (Medicare & Medicaid) area of Software Engineering of US healthcare where it is hard to break through Regulatory barriers to propose any reforms technologically or even bureaucratically. Also, Lobbyists for various interest groups, including healthcare providers, insurers, pharmaceutical companies, and patient advocacy groups, can influence the development of healthcare policies at the federal, state, and local levels. This can include legislation related to healthcare coverage, reimbursement, and regulation.

3 QUESTION#3

3.1 First Paper Selection

Title: *"I Don't Even Remember What I Read": How Design Influences Dissociation on Social Media*

Authors: *Amanda Baughan, Mingrui Ray Zhang, Raveena Rao, Kai Lukoff, Anastasia Schaadhardt, Lisa D. Butler, and Alexis Hiniker*

3.2 First Paper Summary

This paper investigates how social media platforms utilize design to maximize user engagement by inducing normative dissociation - a state in which users mindlessly scroll through content without being fully aware of their actions. The authors conducted a four-week study to gather data from Twitter (Chirp) users

regarding their social media habits and their experiences of normative dissociation. The study found that users experience both absorption and mindless scrolling during their social media use, and these experiences are accompanied by a decreased sense of volition. The paper suggests that social media platforms can design for positive disengagement experiences that can disrupt normative dissociation, and the authors provide examples of effective design interventions such as custom lists, reading history labels, time limit dialogs, and usage statistics. The paper concludes that designing for positive disengagement experiences can maximize the benefits of normative dissociation on social media and prompt self-awareness. Overall, the paper highlights how social media design can influence user behavior and the importance of designing for positive disengagement experiences.

3.3 First Paper Interest

What I find interesting about this paper is its focus on a specific phenomenon that many people likely experience but may not have a clear way of describing or understanding: *normative dissociation on social media*. I appreciate the way in which the paper highlights the role that users themselves can play in disrupting normative dissociation by calling attention to its potential harms and encouraging others to disengage from mindless scrolling. This suggests that while design interventions are important, there may also be value in fostering a sense of community among social media users that supports healthy engagement practices and promotes self-awareness. I think this paper offers valuable insights into a phenomenon that is likely to become increasingly relevant as more people rely on social media as a primary means of communication and information consumption.

3.4 Second Paper Selection

Title: *COVID Student Study: A Year in the Life of College Students during the COVID-19 Pandemic Through the Lens of Mobile Phone Sensing*

Authos: *Subigya Nepal, Weichen Wang, Vlado Vojdanovski, Jeremy F Huckins, Alex daSilva, Meghan Meyer, and Andrew Campbell*

3.5 Second Paper Summary

In this paper, the authors examine how the COVID-19 pandemic impacted the daily lives of college students using mobile phone sensing data. The researchers used data from the students' mobile phones to track their mobility patterns, social interactions, and sleep patterns, among other factors, and analyzed the data to identify trends and patterns over time. The study found that the COVID-19 pandemic had a significant impact on the daily lives of college students; they traveled less, had fewer social interactions, and experienced changes in their sleep patterns during the pandemic. The findings of the study have important implications for public health policy and the management of pandemics. The study highlights the potential value of mobile phone sensing data in understanding and mitigating the spread of infectious diseases and suggests that public health policies aimed at reducing the spread of COVID-19 may have a significant impact on the daily lives of college students.

3.6 Second Paper Interest

What caught my attention is how this research it uses mobile phone sensing data to track the daily lives of college students and gain insights into how the COVID-19 pandemic impacted their behaviors and activities. This type of data collection is relatively new and has the potential to provide valuable information on how people move and interact in their daily lives, which could be useful in developing public health policies and interventions. Another interesting aspect of the paper is how it highlights the disparate impact of the pandemic on different groups of college students, such as those from lower-income households and female students. These findings underscore the need for public health policies to consider the varying impacts of the pandemic on different populations.

4 QUESTION#4

4.1 First Paper Selection

Title: *Designing Sustainable Mobility: Understanding Users' Behavior*

Authors: *Shadan Sadeghian, Philipp Wintersberger, Matthias Laschke, and Marc Hassenzahl*

4.2 First Paper Summary

The paper explores people's behavior towards sustainable mobility and the factors that influence their choices. The study analyzes Reddit comments from both car enthusiasts and environmentalists to find out which motivations and justifications are relevant for their mobility behavior and to determine which factors should be considered in the design of technologies to change existing mobility practices towards sustainability. The paper highlights that while most people have a positive opinion towards sustainable mobility, only a few actually make choices or take actions to change their behavior. The study identifies users' stage of change, opinion towards sustainable mobility, and factors influencing their intentions as crucial aspects to consider in designing technologies. The authors suggest that to change existing mobility practices towards sustainability, technologies should aim for fulfilling individual needs and shaping positive experiences, inform people of the available opportunities and the impact of their individual and collective behavior, and be salient in social contexts and allow connecting to peers.

4.3 First Paper Interest

The reason I chose this paper for this assignment is because I am usually drawn to any topic involving automobiles and interrelates my interests with HCI, our context-crux here in this course. It also employs REDDIT's comments to influence studies which was rather novel to me and hence my selection. The studies are around users' behavior and motivations towards sustainable mobility, with the ultimate goal of designing technologies that encourage more sustainable practices. The authors also suggest the need to consider both conscious and subconscious constructs that influence behavior formation, highlighting the importance of user-centered design approaches that consider users' individual characteristics and motivations. Overall, the paper shows *the potential of HCI* in addressing societal challenges such as sustainable mobility by providing insights into users' behavior and developing technologies that can facilitate more sustainable practices.

4.4 Second Paper Selection

Title: *Object-Centered UI Design in Head-Worn Mixed Reality Environment: A User-Centered Exploration*

Authors: *Yihan Li, Yong Hu, Zidan Wang, Xukun Shen*

4.5 Second Paper Summary

This research paper explores the design of object-centered user interfaces (UIs) in a head-worn mixed reality (MR) environment. The authors conducted two studies to investigate the usability and user experience quality of four different UIs in two different conditions: when real-world objects are in touchable range of the user and when they are not. The results suggest that object-centered UIs have a positive impact on user experience quality in head-worn MR environments, especially when connected to real-world objects. The authors provide four design recommendations for the development of object-centered UIs in head-worn MR scenarios. However, the authors also acknowledge some limitations and future directions for research, such as expanding the sample size and exploring the display methods of object-centered activation UI in MR environments.

4.6 Second Paper Interest

I work in the healthcare industry and have been part of novel projects around implementing accessible healthcare mechanisms to people all around the globe using Augmented Reality. This paper is interesting to me because it provides a practical and relevant contribution to the field of mixed reality, which has the potential to transform how we interact with the world around us. It highlights the importance of considering the physical and visual context in designing user interfaces for mixed reality and suggests new ways of integrating virtual and physical objects in a seamless and intuitive way. The paper investigates the effectiveness of object-centered UIs, which are designed to be more closely integrated with real-world objects and environments. Adaptations from this paper could be tangentially used in healthcare particularly to administer to LTC (Long term care) and Assisted Living (AL) patients.

5 APPENDICES

5.1 Paper-1

Link: https://dl.acm.org/doi/10.1145/3491102.3501899

5.2 Paper-2

Link: https://dl.acm.org/doi/10.1145/3491102.3502043

5.3 Paper-3

Link: https://dl.acm.org/doi/10.1145/3543174.3546833

5.4 Paper-4

Link: https://ieeexplore.ieee.org/document/9995125

(Needs Georgia Tech Signin)