Improving Amazon's Permissions Service Usability

Virtual and Augmented Reality: A Viable Sociotechnial Solution to the American Obesity Epidemic?

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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Introduction

For the internet company Amazon, more money means more problems. Amazon has been rapidly growing in the 21st century. In 2018, Amazon was worth $1 trillion, which was "at the time more than any other company in the world" (Dumaine, 2020). With Amazon's massive success comes many growing pains, as older systems are left to be relied upon in a state of dire need of repair. One such antique system is the resource authorization system at Amazon. The older system is issue-prone, as internal workers frequently interface with the system, and need the critical function of the authorization service (to allow people to access the resources they require) to be both usable and security compliant (regardless of if this compliance comes through the product or the consumer). During my internship, I was tasked with creating user suggestions for the service in order to improve security compliance and usability concerns. The final technical deliverable will include two novel features for the internal authorization website that will steer users in the path recommended by usability and security experts.

For the United States, obesity has been an issue. General trends have shown that severe obesity rates amongst all children ages 2-19 have nearly tripled over the last 60 years. To say the least, obesity has been a thorn in America's side for the better part of the last century.There have been a variety of different studies to try to figure out solutions to this problem, but none have been successful at creating change at the macro level. Obesity, a health condition that has been shown to lead to a multitude of other health problems, is pervasive in the United States. The Centers for Diease Control and Prevention states that people with obesity are at an increased risk of medical conditions such as high blood pressure, dyslipidemi, and stroke on top of other conditions (2021). With this widespread impact, it is paramount that this problem be inquired on until a valid solution is found. One of these discussion points on what could help solve this issue

is currently the newly growing field of virtual and augmented reality. The proposed STS research paper will be centered on the feasibility of virtual and augmented reality as a sociotechnical solution to obesity in the United States.

Technical Topic

Amazon, a company founded in 1994, had an issue with usability and security compliance with their outdated internal permissions site. Usability and security are both largely emphasized traits of any system at Amazon, so having a barely usable site paired with an indolent nature towards security was a major concern among management. Because the internal site was barely usable, my managers at Amazon sought out a way to improve user experience quickly. My team and I devised a solution—upgrading the website with new workflow features. I was tasked with making smart suggestions for users on the internal authorization system in order to improve Amazonians' compliance with security standards.

The particular approach I took in order to address this problem was to create two new suggested features for the internal site that would emphasize an easy-to-use interface and a high ratio of security compliance to effort put in. Two features were chosen for the implementation: one feature to quickly reduce authorization redundancies, and another feature to aid in automatic team member management. Feature implementation was done after designing the features fully, analyzing the other potential approaches, and then altering the model-view-controller model for the website. Eventually these features were rolled out to production, with daily feature usage being measured. The observed usage rates were high, indicating that the features were popular and inherently successful. Overall, the project gave me a technical challenge to solve, had improved the experience of thousands of employees internally, and finally allowed Amazon to

properly evaluate me after the internship was finished. The technical deliverable will be a technical report on my project with Amazon.

STS Topic

Despite the technological advancements that have been made in the 21st century, the obesity epidemic continues persists in the United States. Adult obesity, which is described by the Centers for Disease Control and Prevention as a having a "BMI of 30 or greater," was a condition that affected over "42% of Americans from 2017 – 2018" (2020). Obesity is often directly or indirectly associated with the advent of multiple health and potential mental problems in one's lifetime. The Centers for Diease Control and Prevention have linked obesity to a variety of health conditions, stating that those who are obese are at an "increased risk for many serious dieases and health conditions" (2020). Obesity affects certain groups in the United States disproportionately. The relationship between minorities in America and obesity is described as a "complex relationship that varies by race/ethnicity between income, obesogenic behaviors, and adiposity levels among children and adolescents" (Hunt et al., 2019). Obesity rates are higher in persons of black or hispanic origin, where one such reason for this delta stemming from "predominately racial and ethnic minority residents having fewer healthful food options, which may contribute to obesity disparities" (Johnson et al., 2020). These groups have other confunding factors playing a part in their well-being, on top of the surface level reasons, which means that obesity is just another problem that these groups will have to face not only in themselves, but also in their communities.

Gratefully, antique problems do not require antique solutions. The emergence of virtual and augmented reality systems has shown potential in having the facilities to help solve many existing health problems. Obesity is one of those health problems that even though are far from

being completely solved, do show potential of being solved within the realm of virtual reality. In one study to analyze different technologies effectiveness in weight loss, it was found that the virtual reality experimental group "lost more weight, with significant group differences in one of them" (Ferrer-Garcia et al., 2013). With examples like this in mind, virtual and augmented reality systems will be analyzed to determine the feasibility of using those systems as a sociotechnical solution to obesity in the United States.

Currently, there are many ways that people address the issue of obesity. For some, exercise through physical activity such as working out, doing cardio, or playing a sport might suffice as means to lose weight. This method of losing weight is proven to be effective, however this method requires time, motivation, and hardest of all, dedication. People want to lose weight; however, they do not want to have to put in a great amount of upfront work to do so. A study on why the obesity rate has gone up since 1980 presents the notion that "daily activity at work has declined" (Griffith et al., 2016) over the last 50 years or so. As a result, methods that are perceived to be easier or easily accessible are often desired by society. Producers have been constantly attempting to 'solve' the problem of obesity in ways that reduce effort immensely. Weight pills, waist shrinkers, etc., are all technologies that, albeit not proved to be very effective, were a trend in society at one point or another. Similar to this trendy nature of flash of pan solutions, diffusion of innovations is the theory that different parts of society will adopt a technology at different rates. For obesity, these innovations have been diffused to different parts of society at variable rates, however no one in particular has created a truly successful means of reducing the epidemic in America. With virtual reality becoming a more and more mature technology, analysis through the diffusion of innovations framework will be effective in bringing attention to possible solutions to the obesity problem.

Methodology

Research question: How is virtual and augmented reality used as a sociotechnical solution for obesity in the United States?

To answer the question, the diffusion of innovations framework and literature review will be used. To begin, context will be given to the obesity problem in America. Context includes, historical influences, how the problem is framed in the modern age, and why has this problem not changed in many years. The diffusion of innovations theory points to modernity and variable access as reasons for innovations to become widespread. Modernity and variable access being key points of the diffusion of innovations theory means that it is required to determine where in society that VR/AR are already being used, and the potential groups that these technologies can then also eventually influence. Also, argument will be given as to why the diffusion of innovations is a likely framework that applies in this research scenario, and also give flaws that may prevent this theory from being true. A connection will be established between obesity loss in America and the diffusion of innovations, which will then allow me to reasonably presume that VR/AR can be a potential sociotechnical solution in obesity.

To establish this connection, literature review will be used. This literature review will mean that act of finding sources that also show that obesity trends correlate with the novelty of innovations in the health sphere of influence. First, journals that propose VR/AR as a fitness alternative that can actually lead to obesity decreasing in oneself will be reviewed. Next, there will be a search and analysis of literature that describes how certain fitness 'trends' (trends outside of just VR/AR) have had some merit in reducing obesity in people. Finally, literature will be found that shows that these trends can also be spread at macro level, and potentially with government backing, can have a real effect on the obesity rates in America.

Conclusion

This paper details a technical report on the project that I was tasked with during an Amazon internship. The project was based around creating smart suggestions for an older Amazon internal site, in efforts to improve usability and security compliance company wide. With those deliverables finished, it is apparent that the features implemented for the project ended up being a successful endevour. With the high frequency of usage and the glowing internal reviews, it was clear that the Amazon problem had become a little less worrisome than beforehand.

Additionally, this paper also explores the practicalilty of virtual and augmented reality as macro solutions to obesity in America. This will include a literature review of past literature on this subject, with an emphasis on potential areas where already found success can be expanded on. Once discussed, the topic at hand would lead to one of two outcomes—either a new solution is found or no solution is found. However, with either of these outcomes in hand, there are generated expressions of how one may be able to improve on the information found, how this information can be corroborated with another field to come up with a different solution, etc. It is anticpated that this topic research will create a great stepping stone in discovering new potential avenues of using technology, and not just virtual reality, as a way to solve an age old problem.

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