Thesis Portfolio

Medella

(Technical Report)

Biometrics and Data Privacy: An Analysis of Policies

(STS Research Paper)

An Undergraduate Thesis

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Sociotechnical Synthesis

Introduction

Currently, health is in a dire state in the United States. The Charlottesville-based startup Medella aims to address these issues by sending out educational content about health and wellness. The Capstone project involved developing an online platform for Medella to achieve this goal. In this system, users may want to view content about certain topics that are relevant to them, such as diabetes or high blood pressure, without their employers or peers knowing. Thus, it is important to consider privacy when developing such a system.

Data privacy is also important when using biometrics, or the measure of a person's physical characteristics to verify their identity. The STS research paper investigates the way that technology and society have interacted with each other to develop current privacy policies concerning biometrics. In recent years, the use of this technology has increased. The growing use of biometrics results in a greater impact of this technology on society. Thus, it is important to study and critique the policies that currently regulate the collection and use of this type of information to ensure that user data is not being abused. Privacy is especially important with biometric information since this type of data is uniquely linked with a person's biological makeup and cannot be changed in the case of a data breach.

Summary of Capstone Project

The Capstone project involved developing a web application for Medella, a Charlottesville-based startup that aims to reduce health-related issues in the United States. This online platform aims to encourage health and wellness in corporations and individuals by educating users about such topics through various forms of media. To achieve this goal, Medella

employees can create content, register users and businesses, and track user engagement on the website. This media is regularly sent out to users to enable them to think about incorporating healthy habits in their daily lives. In turn, users can view the educational blogs, quizzes, videos, and newsletters created by Medella employees. Corporations registered with this service are able to track their employees' engagement with this website as an indicator of the business's overall health. To accomplish this, the Capstone team developed this web application using Django, a web framework that is based on the programming language Python. This Capstone project also utilized Agile methodology, a software development strategy that emphasizes constant collaboration between team members and customers and evolving system requirements, to build this application. The finished product provides Medella with a platform to send out newsletters and register users with their services in a scalable manner. Overall, this project aims to reduce healthcare costs for its users by educating them about healthy lifestyles.

Summary of STS Research Paper

Biometrics, or a way to measure a person's physical characteristics to verify their identity, is an emerging technology that has become increasingly incorporated into personal electronics. This technology has the potential to become a faster and easier alternative to traditional passwords. However, the security of biometrics is uncertain. Since biometrics utilizes users' sensitive biological data, it is especially important to preserve information privacy and investigate the laws that do so. The STS research paper investigates the following research question: What social factors shaped current laws regarding biometric data regulation in the United States and what is the significance of such regulations? To answer this question, research is organized through policy analysis of various laws concerning the privacy of biometric

information in the United States from 2008, when the first U.S. biometric privacy policy was implemented, to 2020. The STS research paper investigates the development of such policies over time using Thomas Hughes's theory of technological momentum. Through this analysis, the motivations for implementing these laws can be explained by the social and political context in the United States at the time. By investigating how and why these policies came about, the current state of privacy protection of biometric information may be better understood.

Conclusion

Overall, both the STS research paper and Capstone project emphasize the importance of data privacy. The STS research paper highlights the importance of privacy when working with biometric information, while the Capstone project demonstrates its significance with health data. By working on the STS research paper at the same time as the Capstone project, the latter project's web application could be developed while taking privacy into consideration. This resulted in a more secure product for the Capstone project in the end. When information is kept secure and private, users can be assured that their data is not being collected without their knowledge or misused.