

Thesis Project Portfolio

Software Development Internship: Replacing Legacy Software

(Technical Report)

A Care Ethics Analysis of Facebook's Data Privacy Misuse

(STS Research Paper)

An Undergraduate Thesis

Presented to the Faculty of the School of Engineering and Applied Science

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In Fulfillment of the Requirements for the Degree

Bachelor of Science, School of Engineering

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Sociotechnical Synthesis

My technical work and my STS research are connected primarily through the field of cybersecurity, and implementing privacy measures to protect the user. Cybersecurity refers to the practice of protecting computer systems, networks, and data from unauthorized access in order to ensure confidentiality and integrity. This technology is essential for explaining both my technical project as well as my STS research topic, but both slightly deviate from each other in terms of how security is implemented.

My technical project explores the concept of web security in regards to developing a full-stack application for users to access. I developed a fully functional web application during my internship at SAIC, aiming to convert legacy software systems into modern, cloud-integrated solutions. I utilized Java with the Spring Boot framework for backend operations and React Typescript for frontend and UI operations. The application allows for user authentication and authorization using JWTs and implements single sign-on functionality. The results achieved include improved efficiency and time savings compared to the previous legacy process. I hope to host the application on a public domain, enhance SQL database security, and implement continuous integration to better secure the app.

My STS research project also discusses cyber security, but it's more aligned to a larger-scale misuse of data rather than an individual application. It focuses on the relationship between a mega-corporation known as Facebook and its users, and dives into the exploitation and breach of trust committed. To offer context, Facebook allowed for third-party applications to gain access to confidential user data in order to develop targeted advertisements and outreach to more customers, allowing for more revenue on Facebook's end. Tronto's four stages of care ethics were implemented to build my argument that Facebook showed a lack of care towards users' and their private information, as well as a lack of effort towards the aftermath of their inactions. My

paper explores this idea with the virtues of Attentiveness, Responsibility, and Competency to prove that Facebook didn't utilize proper cybersecurity and ethical measures in ensuring data was secure.

Working on the technical project earlier allowed me to better formulate an argument for my STS research. My technical work gave me a deeper understanding regarding user security and HTTP protocols in order to provide accurate context and detailed background information for my research paper. This also allowed me to understand the perspectives of both Facebook and its users, and this enabled me to synthesize an argument around the lack of care they provided. Similarly, the development of my STS research paper allowed me to articulate my reflections on my technical project to better draft the coded implementations in the web application. In summary, working on both my technical and STS research projects allowed me to explore the field of cybersecurity and build a substantial foundation for both the application I built and the argument I intended to make.