Thesis Project Portfolio

Acceptance Testing at Capital One: Technologies and Processes to Simplify the Testing Process for Developers

(Technical Report)

The Facebook-Cambridge Analytica Scandal: An Analysis of Care

(STS Research Paper)

An Undergraduate Thesis

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

University of Virginia • Charlottesville, Virginia

In Fulfillment of the Requirements for the Degree

Bachelor of Science, School of Engineering

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Spring, 2024

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Sociotechnical Synthesis

My STS research and my technical report address the underlying problem of how technological advancements can lead to varying outcomes on society, sometimes leaving negative impacts on users. Ever since the birth of the Internet, we have lived in an era where information can travel around the world in seconds and where economies and societies are driven by technology. This period, sometimes referred to as the "Information Age," has been characterized by rapid growth and development of technology and technological advancements in order to progress society. These advancements and developments usually bring benefits to society; however, sometimes new technology can harm or even violate members of society. My STS research and my technical report address the opposing sides of this problem. In my STS research, I analyzed the case of the Facebook-Cambridge Analytica scandal, in which a technology that was released brought harm to Facebook users through mass violations of user privacy. My technical report details a project I undertook as an intern at Capital One, where I developed an acceptance testing framework that brought benefit to other developers through the simplification of the testing process.

For my STS research, I investigated the Facebook-Cambridge Analytica scandal of 2018 through the lens of duty ethics and ethics of care to identify why failures in the duty of care that technology platforms and developers owe to their users can result in violations of user privacy. I analyzed journal articles, interviews, and statements made by players in the scandal to methodically inspect the roles that Facebook, developer Aleksandr Kogan, and Cambridge Analytica CEO Alexander Nix played in the scandal. Through my analysis, I concluded that a lack of care for users from all three parties was the central reason for the scandal and violations of user privacy.

For my technical report, I reviewed my work as an intern as a software engineer at Capital One. My project for the summer was to improve the acceptance testing process for the team responsible for enrollments. In my ten weeks with the company, I developed a highly scalable Cucumber-based acceptance testing suite and a preconfigured Spring profile to accomplish the goals of the project. My solution condensed a four-step configuration process that could take days to complete into an independent two-step process that took half an hour, making the configuration process simpler and more efficient for all developers on the team.

Overall, my STS research and my technical report reveal how the differing outcomes of technological advancements can impact society in drastically different ways. My STS research demonstrates the need for engineers and engineering companies to be mindful of their users when developing and releasing technology, while my technical report is an example of how technology that is developed with a focus on user needs can bring benefit to its intended audience. My analysis in my STS research was more helpful in addressing the problem of harmful technologies, as I identified failures that led to a technology causing harm to its users. While I accomplished my goals in my technical report, this was just an example of technology that brings good and does not contribute much to finding a solution to the overall problem. Future researchers should investigate differences between "harmful" technology and "helpful" technology through more extensive case studies in order to identify what constitutes "helpful" and "harmful" technology and to determine how we can avoid "harmful" technology.

I would like to thank my STS professors Alice Fox and Caitlin Wylie for their assistance in the writing process for my STS research, as well as my computer science capstone professor Rosanne Vrugtman for her assistance in the writing process for my technical report.