

Sciotechnical Synthesis: Big Tech Data Tracking and its Ethical Considerations

A Portfolio submitted to the Department of Engineering and Society

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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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Sociotechnical Synthesis

Data tracking has become an increasingly important problem in the modern era with personal devices becoming more integrated with people's lives. Once news of technology companies tracking potentially sensitive information became apparent with Facebook's class action lawsuit, users have become more aware of data tracking. However, data tracking still has many concerns with new technologies such as machine learning and artificial intelligence becoming the status quo. These technologies use storage of potential sensitive information to tailor personal experiences which requires some level of data tracking. The following technical and STS theses discuss the ethical considerations that need to be taken within social media applications by engineers.

The technical thesis suggests a method for understanding user interactions within a social media application. Research was focused around finding a framework which properly represents the modern day social media application given there are now a variety of features. The goal of the research was to find a way to represent users in relation to an application to show the discrepancy between software engineers' understanding of users and user expectations of an application. The paper concludes by highlighting the faults which could arise in user and developer interaction from incorporating machine learning and artificial intelligence.

The STS thesis explores the ethical limitations of machine learning and data tracking in technology. The paper surrounds itself around three significant past court cases: Facebook's ten year class action, Facebook v Smith, and Google's incognito tracking. These court cases revealed and set the precedent for data tracking by major tech companies. Through utilizing Harvard's business ethics as a framework, the paper attempts to bridge the gap between users and

application developers to help understand basic ethical principles which should be a baseline for development.

The goal of this project was to not only create a new social media application but also gain a different perspective on data tracking as I start my career as a software engineer. I set out to develop a social media application, research the interactions between users and software engineers, and understand the ethical implications around new technologies such as machine learning and artificial intelligence. I was able to complete almost everything I set out to achieve. I was able to fully develop a working prototype of the music based application I created, I researched and found a framework which applies to many modern day social media applications, and I was able to understand the ethical dilemmas which are constantly surrounding major tech companies. I did fail to incorporate my learnings back into application development. However, as I start to work as a software developer and continue to develop my application, these are ideas that I can build upon throughout my career.