

Thesis Portfolio

Measuring Airport Similarity to Create a Towering Decision Aid
(Technical Report)

Big Data and its Implications for Privacy
(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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Sociotechnical Synthesis

The topic I chose to write about for my STS Research paper is on Big Data and the threats it poses to basic human privacy rights. In particular, the paper describes the nature of Big Data, the technologies and innovations associated with it, the issues that have resulted from corporate collection and manipulation of data, and various government responses to these issues. The ethical nature of this technology is also analyzed with regard to how large companies and other entities go about collecting data on their customers and how they use it to learn more about their customer base and optimize business operations. In particular, I will discuss how music giant Spotify implements various data analysis and machine learning techniques to cater to its users, and how these techniques do or do not obey violate basic privacy rights. To this end, data collection and sharing methods used by these companies, as well as their privacy policy changes, will be analyzed to illustrate the ethicality of them and how it may benefit or harm the user. I chose this topic because I am extremely passionate for music and have a fond interest in the growing phenomenon known as Big Data and its technological and societal implications.

The technical report consists of an entirely different subject. This report is centered around the idea of quantifying the benefit of installing an Air Traffic Control Tower (ATCT) at a non-towered airport. The benefits have been broken down into three different metric categories: safety, economic, and efficiency. Data cleaning, clustering analysis, and other techniques were practiced in order to obtain the final results. The ultimate deliverable is a data visualization interface that allows the user to see which airports are similar to the airport in question by providing various statistics related to the three metrics named above.

The STS topic and the technical report are two totally unrelated and mutually exclusive topics.