

## **Thesis Project Portfolio**

### **Voice Privacy: Analyzing Trends and Patterns in Amazon Alexa Voice History**

(Technical Report)

### **Exploring and Eliminating Modern Illegal Sign-Stealing Sociotechnical Systems in Major League Baseball Using Assemblage Theory**

(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

This technical thesis generally revolves around the privacy of voice assistant devices (VADs), and more specifically about user awareness of the potential concerns that exist with them. VADs offer many benefits, and they are certainly not going anywhere moving forward into the future. But there are undeniable individual privacy concerns, the most notable of which is the fact that it will often “hear” speech that the user did not intend. This is a result of the larger privacy issue – it is *always* listening. Despite this, many people are not fully aware of just how serious this matter is, or if they are, they do not realize to how great an extent it reaches. It is crucial to raise user awareness of this privacy concern by *demonstrating* to them just how much VADs “hear” through the use of a Chrome Extension. This demonstration increases the likelihood of catching their attention. So, in a way, one goal of the project was to develop a sort of educational tool for users. However, this solution also was intended as a way for users to more easily gain control of their privacy by having our software automatically detect, and present any unintended audio to the user, which they can choose to delete from the VADs’ servers. Unfortunately, as time ran out, these researchers did not yet have a releasable Chrome Extension which accomplished these stated goals, but the groundwork has been laid for future researchers to conclude this work. It is hoped that this work will eventually impact public perception of VADs – that being that while they are useful and the way of the future, they also present risks of which to be aware.

For the STS thesis, this author initially considered writing about VAD privacy issues through the lens of an STS framework such as Actor-Network Theory, and the ethics of the whole situation. However, there exists a copious amount of work regarding the same issues. However, inspiration struck at the prospect of another focus, one unrelated to the technical thesis

– modern sign-stealing scandals in baseball. Specifically, the idea was to write about sign-stealing sociotechnical systems in Major League Baseball – a current hot-topic issue in the game with the recent breaking of the 2017 Houston Astros and Red Sox teams being guilty of this. It tips the balance of the game by giving batters of one team a huge advantage over the pitcher. Moreover, even the mere *threat* of a team stealing signs can have negative psychological impacts on the pitcher. For these reasons, it is imperative that Major League Baseball, and other similar leagues, disallow teams from *illegally* stealing signs. However, this researcher found no academic solution to the problem, particularly none from an STS perspective and framework. Therefore, a novel resolution was developed and presented through the lens of a similarly novel take on assemblage theory, where the concept of essential and non-essential components was introduced. The intention is that this solution will at least help build the body of knowledge surrounding the issue, or better yet, helps spark conversation on how to fix the problem. Hopefully one day, similar cheating scandals will be minimized so much so that they are no longer an issue.

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