

## **Thesis Project Portfolio**

**Mobile App Development: Behind Every iPhone is a Non Disclosure Agreement for the  
Next Software Update**  
(Technical Report)

**Surveillance in the Smart Home**  
(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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Big Technology companies have come to dominate the development and trajectory of the technologies we, American technology users, operate in our daily lives. “Silicon Valley’s access to data makes the [technology] industry different in some important ways”, where the monopolies of Apple, Google, and Amazon have user data to curate consistently influential products within their field (Fung, 2020). I am incredibly interested in how these companies have maintained their influence without providing complete transparency into how they make and use these products behind the scenes. Non-disclosure agreements (NDAs), a document employers sign to pledge they will only discuss company information within their teams, create a barrier between the public and the company, and this opaqueness may be at the detriment of the public. For instance, many user lives were saved because tech workers at Theranos, the creators of Elizabeth Holmes’ fraudulent blood testing device, risked breaking their NDAs to expose the faultiness of the device (Ovide, 2022). There have also been many instances where users’ data was leaked from large companies, including Amazon falling short to tell a user that their audio recorded by Alexa had been sent to a user, complete with all the conversations they had with Alexa since its purchase (Murnane, 2018). If these significant technology companies are refraining from sharing these leaks of privacy, what else aren’t they telling their users and the public?

I had the opportunity to focus on two different topics within this curiosity of the influence of Big Tech companies. For my technical project, I was able to write about my software engineering internship at a large technology company, and focus on the impact of the Non Disclosure Agreement on my work and others’ within similar companies. During my summer internships with a Cupertino-based technology company, I came in with many ideas for possible new features and worked with my team members to craft and narrow down the project with the

most potential. Over the course of twelve weeks, I coded to build out the feature to a working prototype. While it was not tested on real users due to the confidentiality, there was much feedback that would be resolved with this feature, so I anticipate it would be well accepted by the public. The limitations of my collaboration within the company however, as well as the inability to discuss with others outside of the company lead me to explore the effects of the NDA on developers on companies.

My Science and Technology in Society (STS) project shifts focus from within the companies, to within the homes of the users. I analyze the differing opinions on surveillance within smart homes, between Big Tech companies that produce this technology and civil rights groups. Major technology companies and consumer advocacy groups see smart homes in different lights: in how they approach the scope of privacy, knowledge gaps, and existing regulation and solutions. Big Tech's idea of their scope of responsibility for the privacy of the public has allowed them to focus only on the user rather than those that may be around the user, such that they may market a safe home with their device, where only the privacy of the house is preserved. While a safe device is marketed, some big tech companies have also neglected certain regulations that would uphold those security standards they promised to the public, leading to more controversy of the impacts of the smart home. Finally, I consider how the civil rights groups advocate for more technical or safety knowledge to the users and non-users and also speak out to hold the companies accountable.

After completing these two analyses this year, I have come to a better understanding of some of the values in Big Technology companies. In my education here at the School of Engineering, a lesson my Computer Science classes have taught me is about the trade offs in programming. This includes trade offs like efficiency for storage, accuracy for time, or lower

level code for ease of human understanding. This has translated into the technology space as well, where often companies have traded collaboration for privacy of information or user security for ease of operation. Both of these projects have related to these trade offs in tech and have influenced my entrance into the professional world, where I may think more critically about the established norms within a company or team. I will be sure to listen to what the public has to say in regards to the device I'm developing, as well as about others' devices so that I have a better hold of what is changing in the field in which I'm working. Completing these research studies together has helped me to be more thoughtful of who I'm interacting with in the tech space, and who I am impacting with my work.

## Works Cited

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