Thesis Portfolio

User Experience Design to Synchronize Government Acquisition Strategy and Schedule
(Technical Report)

Apple's Siri: Surveillance in the Modern Technological Age
(STS Research Paper)

An Undergraduate Thesis
Presented to

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In Partial Fulfillment
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Bachelor of Science in [Your Major]

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The digital age is characterized by a rapid shift from industrialization to an information-based economy which relies heavily on the storage and exchange of massive amounts of data through technology mediums. With increased digitalization, users are able to execute once bothersome tasks, now through the swift click of a button or verbal request. While users indubitably benefit from this increased convenience, there are important tradeoffs to consider. Intelligent Personal Assistants (IPAs) have proven to be extremely beneficial to consumers as they provide quick access to information and can complete user tasks by leveraging artificial intelligence, machine learning, and natural language processing. In order to better satisfy user needs, large tech companies and developers of IPAs such as Google, Apple, Facebook, and Amazon have the capabilities to track and profile our behavior over periods of time which poses a major threat to user privacy. Depending on how the company uses the data they collect, this surveillance has the potential to either harm or benefit its consumers. My Technical topic focuses on the digitalization of business through the development of an intelligent scheduling app while my STS topic analyzes some of the benefits and threats of the digital age and IPA usage.

My Technical Thesis project involved designing a mobile application to streamline the government acquisition process by assisting acquisition personnel with management of their tasks and deadlines. The government acquisition process requires a significant amount of research and planning due to its inherent complexities and interdependencies. Current project management software fails to appropriately support their workflow. Addressing this lack of support for acquisition personnel, my team and I designed an interface that provides the following: a novel representation mapping of the project and its status, an incentivization and promotion of achievement through goal setting, a personalized experience through the use of filter options and custom pages, and a modern interface that leverages aspects of gamification to

engage the user. Our process involved defining essential information and functional requirements, generating a series of initial wireframes, iterating through these designs until a final concept prototype is produced, performing usability testing with contract specialists to evaluate the effectiveness of selected design elements, and adding final design adjustments based on the evaluation results. The test results were qualitative in nature and revealed that overall, users had a positive experience with the app and enjoyed many of the unique features, but desired certain changes such as a new color scheme and page orientation. What truly distinguished our design from others on the market, is its mass data display element where users can visually track the progress and timeline of their projects. The success seen in usability testing validated use of this display and may ultimately transform how users manage the complexities and intricacies of the acquisition process.

My STS Thesis explores the broader implications of digitization by analyzing how Apple's Siri has evolved with user privacy concerns and what this suggests on a larger scale about IPAs and surveillance. Following scrutiny Apple received in 2019 for how they process Siri recordings, I found the company made appropriate changes to their privacy policy and data collection methods with the IPA. I also analyzed both the positive and negative impacts of surveillance on users. Two potential harms I discuss include the ability of law enforcement to access your IPA recordings and hackers obtaining control of your device. When assessing Apple's role in creating or combatting against these harms, I found that in the case of law enforcement, the intricate ethical dilemma that surrounds this topic makes it difficult for any IPA to combat this without protection under the law, but Apple proved to be more secure than its counterparts in the case of hacking as the company tags user data with random identifiers to maintain anonymity. Some of the underlying benefits I discuss are in smart homes and

healthcare. When assessing whether Apple has fully leveraged these opportunities, I found the company has just began to enter the smart home industry and does not currently play a role in the healthcare industry, but this may change looking forward. My research led me to conclude that Apple's policy revisions and updates to their data collection process reveal the company lacks motive to amass an enormous amount of data on each of its consumer, and thus, more easily protect users against some of the harmful impacts of surveillance.

Overall, I am very pleased with my findings and believe I sufficiently answered the question I initially posed. My goals for this paper changed with each iteration and while there was so much relevant research available, I tried to narrow my research as much as possible and focus on certain aspects of surveillance. While I was not disappointed with my results, I was surprised as I thought my extensive research would identify significant privacy concerns with Apple, but actually found limited information supporting these claims which led me to conclude just the opposite. For researchers who are interested in this topic, I think it would be extremely interesting to perform a similar analysis with Amazon's Alexa, Google's Cortana, or Facebook's intelligent software to see where these companies align and differ in their practices.