

**SMART CHARLOTTESVILLE: ADVANCED TECHNOLOGIES ASSISTING THE
GROWTH OF SMART CITIES**

THE EFFECT OF THE INTERNET OF THINGS ON CITIZENS' PRIVACY RIGHTS

An Undergraduate Thesis Portfolio
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By

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SOCIOTECHNICAL SYNTHESIS

According to reports from the United Nations, around 68% of the population might live in urban areas by 2050 with the development of new technologies to facilitate living. The technical portion of this project focuses on developing a platform to bridge the communication between city officials and citizens of Charlottesville. After noticing huge problems in society, such as traffic congestion and income inequality, the need for advancement in technology to help bring solutions to these problems became more evident than ever before. The STS portion of this research focuses on the impact the Internet of Things has on the privacy rights of individuals in a community. This research was driven by technology, especially those from big technology companies, that collect users' personal data, violating their privacy, and users have no idea the possible harm it can bring to them. The technical portion and the STS portion of this project are tightly coupled because they focus on the Internet of Things being incorporated in technologies to help community advancement.

The technical portion of the project resulted in the construction of a web application that facilitates communication between citizens and city officials. This will allow Charlottesville to develop into a smart city by letting the citizens, the inhabitants of the community, share their opinions on the changes they want to see in their own community. This is also beneficial to city officials and legislators so when they construct new projects, they can gear money toward impactful changes that they know community members actually want, and resources and money will not go to waste. The capstone team built the website with a Django framework and hosted it on Amazon Web Services, giving the website a unique Uniform Resource Locator (URL).

The previous solution did not have tiered users, whereas the new solution contains an Administrator, Student, and Community Member level to organize the different submissions and

determines the permission level when it comes to posting projects. The website is also accessible by the wider Charlottesville community, and they can post community challenges and full projects that they think will be beneficial to them. This website will promote a connection between the resources at U.Va and the greater Charlottesville community. The built website is an important stepping stone for addressing a larger scale problem. Changes cannot be done in just one day. Large, fundamental changes are a process that requires small, progressive steps and in this way, the website will be great for the improvement of the Charlottesville community.

The STS portion of this thesis focuses on the impact new technology has on the privacy rights of individuals. The thesis details how to help the advancement of society without hindering users' privacy rights. To find evidence to prove the thesis statement, a variety of news articles, news journals, and blogs were processed. There were many factors to focus on when going through these resources: the impact of modern technology on the everyday life of users, how many and what type of companies retain data from their users, whether any companies had been penalized for their possession and use of confidential data, and the current legislation on data protection.

Through extensive research, it is clear that new technology is harming the consumer more than protecting. Big technology companies like Google and Facebook are hiring contract employees to transcribe conversations sent through Google Assistant and Facebook Messenger and most users were unaware until recently. Even fitness applications like Strava, which seem helpful, have collected personal location data that ended up getting leaked, jeopardizing United States soldiers in Iran. The most important thing that needs to be done to address these measures is for legislation to pass restricting these big technology companies. Currently, there is no federal law on data protection in the United States.

Though technology is very important in many aspects of modern life and users have become reliant on it, it still needs to be mandated. As Charlottesville begins to develop into a smart city and install new technologies in the process, it is also important to keep in mind that the tools main purpose should be to help citizens but not at the stake of harming them. This is why the STS and technical portions of the thesis are tightly coupled, both displaying the same goal that societies need technology but the technology cannot be controlling the consumer.

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