

Thesis Project Portfolio

Identyti: Digital Storage of Personal Identification Documents

(Technical Report)

Myth & Morality: Using Fiction to Inspire Moral Courage in Engineers

(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

Samantha Kostelni

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Department of Computer Science

Sociotechnical Synthesis

(Identity Crisis: When Capstone and Personal Values Misalign)

The relationship between my two topics, “Myth & Morality: Using Fiction to Inspire Moral Courage in Engineers” and “Identity: Digital Storage of Personal Identification Documents” is more of a journey than a direct connection. I originally planned to do my STS research on gaining customer trust because I saw this as a potential issue for my technical project due to recent data collection scandals. That little seed of doubt grew into a cactus that sat in my stomach every time I had to work on the technical project, making me feel uncomfortable with the social dimensions of my work.

In the technical portion of my thesis, with a team of 5 other students, I discuss a proof-of-concept built for a business venture. The idea for this business was: all personal identity documents can be stored safely online in a centralized location where they can be accessed by anyone who needs them. The DMV, doctor’s offices, and HR for large companies are all just a few examples of places where this service could save people time and money. The proof-of-concept produced was a web application built using the Django web framework that stored the documents in an encrypted Amazon Web Services S3 bucket.

In my STS research, I explore the psychology of fiction and how it may be used to prevent software engineering scandals in the future. Moral courage is the strength to stand up for what is right, even in the face of opposition. The results of my research show that reading fiction with exemplary protagonists can increase peoples’ moral courage. This is because reading is able to activate the default network of the brain, giving the brain a way to simulate life experiences. Simulating life experiences in which an individual stands up for things they believe to be morally correct increases the chances that person will act in that way in the future.

The question that my STS research eventually caused me to ask myself was, “should I really be doing this?” about my technical project. The answer I came to was: no, the reason being, mixing profits with personal documents is a conflict of interest. The information stored on the Identity servers, such as which health insurance provider users have, would be very valuable to drug advertisers. Unfortunately, I was not able to take my own advice on moral courage. I continued to put in work on my technical capstone project, only with slightly less enthusiasm now. Discussions about capstone projects are common among fourth year students. I saw the way some of my classmates’ eyes lit up when they were talking about their capstones. For example, one of my friends designed a factory for the manufacturing of a malaria vaccine for his capstone; public health is a cause he cares about. While I listened to my fellow students describe the projects they were so passionate about, I was not only indifferent about mine but actually felt guilty about working on it. My advice to future engineering students would be to choose a capstone project with a social cause you care about motivating it.

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