Thesis Project Portfolio

Cloud Computing: Centralizing an Enterprise DevOps Tool in Amazon Web Services

(Technical Report)

The Effects of Misinformation on Society and its Future Implications

(STS Research Paper)

An Undergraduate Thesis

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Calvin Min

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Table of Contents

Executive Summary

Misinformation is false or inaccurate information that is deliberately created to deceive a party. For my capstone project, I reflected upon my internship experience at Capital One as a technology intern. At Capital One, I worked with cloud computing technology to solve a company-wide security issue. With the knowledge that I gained from my internship; I plan to outline a scalable solution within Amazon Web Services (AWS) to combat misinformation that propagates on social media. For my STS research paper, I analyzed the 2016 presidential election and COVID-19 to determine how misinformation affected society and present solutions to mitigate the wicked problem. My STS research paper investigates the social hierarchy formed between actors during the two case studies using Actor-Network theory and Wicked Problem framing. Furthermore, the paper highlights what needs to happen to prevent the misinformation from having a drastic effect in the future.

Capital One, a leading bank in America, focuses on pioneering the industry by utilizing information and technology, specifically the cloud. However, when well-known banks try to incorporate technology into their business model, they become increasingly susceptible to security breaches. As a Technology Intern, I delivered an internal, enterprise-wide product that streamlined updates on company-owned virtual environments within Amazon Web Services. My team, that consisted of three interns, created a full-stack solution using Flask and AWS services to develop a user interface that incorporated a pre-existing DevOps tool called Automated Vulnerability Remediation (AVR). With the help of our full-stack application, Capital One employees can save around 400,000 hours by automating their updates within the cloud**.** In the future, the full-stack application needs to incorporate Capital One's human resources data to ensure that only authorized users can start updating jobs. Furthermore, given my experience at

Capital One, I plan to utilize the advantages of cloud computing and artificial intelligence to combat misinformation. The tool will operate in a serverless architecture that will attach to users' browsers to scan social media feeds to determine if a post potentially contains fake information.

My STS research paper analyzes relationships created by misinformation. My research answers how misinformation has affected society through social media and presents ways to incorporate policymaking to mitigate misinformation's spread in the future. My paper answers this question by deep-diving into two historical case studies, the 2016 presidential election and COVID-19. Additionally, with the help of actor-network theory, the paper reveals relationships between actors such as social media, policymakers, society, and big tech corporations. Wicked problem framing also emphasizes the intricacies of the issue of misinformation and the reasons why society has not found ways to remove its existence. Through this research paper, I expect to understand the rise of misinformation in social media and acknowledge the perspective of policymakers and big tech corporations. I anticipate that through the research, I will learn of solutions that will help combat the global issue. My research paper is significant to the field of STS as it answers a research question that affects all three areas of the subject – science, technology, and society. The principles of computer science create social media platforms, misinformation propagates through technology, and society reaps the effects of the spread.

After interning at Capital One, I learned to work with an industry-level software development team. Given that I had no prior experience working with cloud computing technology, there was a learning curve to the experience as an intern. I had to adapt to the team and technology promptly, which made the experience even more rewarding in the end of it. Furthermore, the knowledge gained from using AWS and other technological stacks from the summer will allow me to create a working solution that could help mitigate misinformation on

social media platforms. After researching misinformation during the 2016 presidential election and COVID-19, I learned why society was so polarized during those times. Throughout the two case studies, I found myself at those times seeing a lot of exaggerated posts regarding political views, presidential candidates, and opinionated articles regarding vaccines. As a result, I centered my STS research paper around actor-network theory to analyze the relationships between the actors, which allowed me to determine how misinformation effect society. Although the research paper looked at only two specific case studies, I learned a considerable amount of knowledge surrounding misinformation to combine my skills as a software developer to create a tool that can help society in the future.