Thesis Portfolio

Elimination of Shame, Embarrassment, and Fear Associated with COVID-19 Contact Tracing
(Technical Report)

How Does the Information Individuals Digest on Social Media Amidst a Pandemic Correlate to Interactions with COVID-19 and Society?
(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

Alexa-Joanne Gomez

Spring, 2021

Department of Computer Science

Table of Contents

Sociotechnical Synthesis

COVID-19, declared the world's first "infodemic", emerged in an age of paramount social media usage. The emergence of COVID-19 came along with the spread of information, and negatively the dissemination of misinformation. This rapid spread of constantly changing information without proper communication and scientific and medical literacy led to an uncertain society, which led to creating certainty from scattered pieces of information. Individuals digest information on their personalized social media feeds, however, those feeds only show ideas the user already agrees with, therefore, does not challenge the user's predefined beliefs and does not show contradicting ideas, which causes biased information digestion. Amidst the pandemic, the biased digestion of information produces varying emotions and interactions with COVID-19, which creates shame, distrust, and fear. However, these negative emotions could be reduced if society had a trustworthy and concise set of resources to digest in times of emergency.

The STS research seeks to discover how the information individuals digest on social media amidst a pandemic correlate to interaction with COVID-19 and society in hopes of preventing the same mistakes in the next pandemic. Specifically, it analyzes social media amidst a pandemic, effects of digestion and trust on emotions and behaviors, negative emotions within society, and how society and authoritative figures should disseminate information in future times of emergency.

These negative emotions analyzed in the STS research resulted in the solution implemented in the technical report. The technical report focuses on the elimination of shame, embarrassment, and fear associated with COVID-19 contact tracing. A major issue increasing the spreading the COVID-19 was the lack of contact tracing due to shame, embarrassment, and fear. Individuals were shameful and embarrassed of others finding out they were positive for COVID-19 and were fearful of government officials and employers accessing and sharing their private COVID-19 information. Additionally, this lack of contact tracing was true for public establishments. Many public establishments did not have a system for notifying their customers and employees of COVID-19 outbreaks. If an anonymous contact tracing system was built, the negation emotions associated with contact tracing could be reduced.

The technical report, as stated previously, describes the implementation of an anonymous contact tracing system to eliminate the shame, embarrassment, and fear associated with COVID-19 contact tracing. The anonymous contact tracing system, COVID Notify, was built using Angular, Angular Google Maps (AGM) API, Amazon Web Services (AWS), Bootstrap, JavaScript, HTML, and CSS and deployed on Google Cloud Platform (GCP). COVID Notify has two main features, a COVID-19 exposure map and anonymous contact tracing. The first feature allows users to add markers with the date of exposure to public establishments on a global map and the second feature allows users to anonymously notify their close contacts through email or text.

The overall goal of the STS research and technical report to analyze and provide solutions to prevent the negative emotions produced by COVID-19 and inevitable future pandemics was achieved. Future steps could include research on how to begin introducing these solutions and further refinement of COVID Notify.