Thesis Project Portfolio

Location-Sharing: Building a Better Mobile Application for Socialization and Safety

(Technical Report)

Ethical Analysis of Artificial Intelligence-Driven Social Media Propaganda Campaigns During the Russo-Ukrainian War

(STS Research Paper)

An Undergraduate Thesis

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Bachelor of Science, School of Engineering

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Sociotechnical Synthesis

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Sociotechnical Synthesis: Location Sharing and Application Abuse Mitigation

My technical project proposal and STS research are connected through the perspective of application development and designing against user abuse. In my technical project, I propose a design for a mobile application; to gain insight on how the systems in social applications may be exploited by bad actors, my STS research analyzes the use of propaganda bots on social media during the Russian Invasion of Ukraine which began in 2022. Together, these projects highlight the sociotechnical complexity of user interactions on digital landscapes.

My technical project proposes a design for a location-sharing event planning mobile application that focuses on facilitating social interactions and connections. Building upon existing location sharing applications and services, my design incorporates several features such as integration with existing map services to provide point of interest information. The app will also include integration with scheduling apps as well as a built-in schedule tool for planning. Lastly, to promote safety, the design will include various levels of permissions for designated chaperones in groups to handle modifying events and location visibility to protect trust and privacy within groups.

My STS research also investigates app development and the impact of apps on users. My STS research focuses on social media and the way bad actors abuse existing systems to amplify messages that serve their own agenda. Specifically, I investigated the usage of propaganda bots on social media during the Russian Invasion of Ukraine. These bots were used to amplify narratives through engagement boosting as well as projecting artificial voices into discourse to give the illusion of a false consensus. Using Kantian ethics, I argue that the deployment of bots for propaganda purposes fails to pass the categorical imperative and violates the equality principle, which emphasizes the respect for humanity as an ends, not merely as a means.

Working on both the technical and STS projects simultaneously provided me with a deeper understanding of the ethical nature in creating software systems for people. My technical work focuses on improving positive, authentic social interactions through application development whereas my STS research highlights how malicious actors are often able to abuse these systems for some form of personal gain. This influenced my approach to my design choices as I understand the need for proper safeguards to prevent abuse. In the design, I included moderation through chaperones, private groups, and optional location sharing to protect users from others. Additionally, I plan to incorporate user verification systems like two-factor authentication to prevent fake profiles from invading private groups. From this experience, I have learned about applying ethical analysis to software development and incorporating protections for users to keep spaces safe and authentic.