Thesis Project Portfolio

Designing Trust: Creating Voting Systems that Inspire Confidence in the Electoral Process

Restoring Trust in Elections

An Undergraduate Thesis

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Executive Summary

Elections are essential to maintaining democracy, yet voters increasingly lack trust in elections. I first want to analyze how we can design systems that promote trust in elections. This proposal should explore both increasing security as well as promoting trust in voters. I also want to analyze why so many voters lack trust in elections. This will allow future engineers to account for this problem when designing voting systems.

For the first section, I wanted to answer the question of how we can design voting systems in a way that promotes trust. In contrast to the following section, which analyzes why people lack trust, I want to determine what we can actually build to further trust. By proposing an innovative new technology, localities could have a system they can implement that will accomplish this.

After performing a literature review of current voting technology, I found that many current systems are sufficiently secure, but implementation is disorganized and many people lack understanding of the systems used to vote. I proposed an LLM tool that could assist election officials in operating elections while simultaneously enable voters to learn about elections more effectively. This allows for a new voting technology that promotes actual security in elections while also working to restore trust in voters.

I analyzed the US election system using the theory of Value Sensitive Design. For this section, I wanted to answer the question of why so many people lack trust in voting systems even though many systems are very secure. By analyzing the disconnect in how people view election systems and how secure they actually are, we can begin to build a strategy for designing systems that promote trust.

After analyzing the different stakeholders involved in elections, the values they generally hold, and how different engineers have let values influence their design of voting systems, I was able to get a general idea for where this disconnect originates. Many engineers do not consider value based design at all, or take values that are important, such as verifiability, but fail to consider values that other stakeholders may hold. By holding stronger communication between different stakeholders, we can ensure that systems are designed with the values of voters and election officials in mind, and promote a voting landscape with trust at its center.