Thesis Project Portfolio

LockMate

(Technical Report)

A Virtue Ethics Analysis of the Collapse of FTX

(STS Research Paper)

An Undergraduate Thesis

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Alexandros Pfoser

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Department of Electrical and Computer Engineering

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Sociotechnical Synthesis

My technical capstone project and STS research project are primarily linked by the concept of engineering virtue ethics. The virtue ethics analysis of the collapse of FTX conducted in my STS research informed the design and construction of LockMate, a low-cost remote-controlled retrofit device for existing door locks. By analyzing the character of the engineering leaders involved in FTX, my capstone project team and I gained insight into the mindset of unethical engineering leaders, which aided us in creating a design that aligned with engineering virtues, not against them. The integration of ethical considerations into our engineering practices not only enhanced the functionality of our product but also ensured its responsible use and long-term impact on society.

The Technical Report goes over the design choices behind LockMate, which is an open source, remote-controlled, retrofit device for existing deadbolt door locks. The goal of the project is to create a simple and cost effective alternative to high-end digital locks. Using LockMate, users are able to secure their homes for a fraction of the price without compromising on safety. LockMate comes with an easy-to-use companion app, and is designed with a focus on usability and flexibility. Users of all experience levels will find it accessible. Technological novices can navigate the mobile app effortlessly, while more experienced users are able to further enhance the current feature set, thanks to the project's open-source nature. LockMate presents a comprehensive solution that combines affordability, ease of use, and adaptability to cater to a wide range of users' needs and preferences.

The STS research presented analyzes the characters of the engineering leaders responsible for the collapse of FTX. Through the use of virtue ethics, the analysis contrasts the actions of Sam Bankman-Fried, Caroline Ellison, and Gary Wang with those of virtuous engineers. Court transcripts, testimony, and plea agreement documents are used to demonstrate

that leaders at FTX did not behave virtuously, failing to display any cardinal engineering virtues during their time as decision makers and engineers. Contrary to current discourse, the analysis asserts that it is this lack of virtues that ultimately contributed to one of the most significant financial scandals in recent times, rather than the unregulated nature of the cryptocurrency space.

Working on both of the above projects concurrently proved to be extremely beneficial. Being involved in engineering decisions as part of the team behind LockMate allowed me to develop a deeper understanding of the actions undertaken by the trio behind the FTX collapse. This led to a more nuanced analysis in the STS research paper, as both engineering and ethical considerations were taken into account. Conversely, analyzing the collapse of FTX allowed me to understand both the impact and importance of being a virtuous engineer. This improved understanding of my role influenced several design choices in LockMate, resulting in the creation of a product that embodies ethical engineering principles while simultaneously addressing real-world needs.