

Melody Cabanellas

CSCI 315

19 September 2024

Ethics Paper

When it comes to creating software or machines like the Therac-25, it brings up the question of how much testing there should be. There are several points of consideration, such as, how the software/hardware will be used, how errors can be prevented with testing, consequences of the errors, and how the consequences will be rectified. When it comes to software/hardware that is to be used in healthcare, it is essential that testing be done so that the product works as intended and will not harm patients should errors occur. For example, the Therac-25, is well known as, “Between June 1985 and January 1987, six known accidents involved massive overdoses by the Therac-25 -with resultant deaths and serious injuries” (Leveson & Turner 18). As in Deuteronomy 22:8, the programmer did keep in mind safety by testing the system as a whole since that is how it will be used when giving treatment, however, the software was not tested by itself. In that case, if there were more people to perform testing then it had a higher chance of catching those errors, as with more people doing testing it allows for a more diverse way of thinking.

The possible solution to preventing more cases like the Therac-25, would be by having extensive testing done by at least more than one person. This would apply when the product will be used in healthcare or other industries that handle the safety of people. Even if the software/hardware is extensively tested, one will always have to take into account the possibility of human error, which would be difficult for only one person to handle. Though with extensive testing that does mean it will be more expensive, and it could make software/hardware that could save lives less available. However, if one was to learn that the testing of an important product

was done by a singular person it could be perceived as a lack of consideration and effort. It would be unfair for those that use the software/hardware to receive the product when there was a lack of effort in testing, as “Do to others as you would have them do to you” (Luke 6:31).

If the availability of the product is deemed more important than testing in order to save lives there is another solution. An alternative would be to make sure that the patient will be notified of the risks and is knowledgeable of the testing done. Since they will be the ones affected if the software/hardware fails, it is only fair that they be the ones to make the choice. Similar to the doctor that informs the patient of the dangers and risks when it comes to the procedures and treatments. When it comes to whether I myself would use the machine, I would if I determine my chances to be favorable. However, I will be honest if I learned that extensive testing was not done it would not be reassuring.

Certifications are a good way to effectively determine that the knowledge and skills of a computer professional are of quality. Regardless if one is a software engineer or not, if they are creating a product that will concern the safety or health of others, certification should be required. The Therac-25, while unfortunate that the error in the software caused harm, is a good way to have computer professionals consider more deeply their moral obligations. It is because of such incidents, that there are more rules, policies, laws, and codes of ethics created. Such as the ACM code of ethics, in which the first points are, to contribute to society and human well-being, and to avoid harm (acm.org).

Works Cited

“ACM Code of Ethics and Professional Conduct.” *ACM*. Association for Computing Machinery, www.acm.org/code-of-ethics. Accessed 19 Sep. 2024.

N. G. Leveson and C. S. Turner, "An investigation of the Therac-25 accidents," in *Computer*, vol. 26, no. 7, pp. 18-41, July 1993, doi: 10.1109/MC.1993.274940. Accessed 16 Sep. 2024.

The NIV Bible. The Bible Gateway, 2024, <https://www.biblegateway.com/>. Accessed 18 Sep. 2024.