

## Ethics in Computer Engineering - CPRE 394

Jidong Sun

Recently, in my Computer Engineering Program Exploration course, we had some discussions on the prevalence of ethics in Computer Engineering. The module started with the “IEEE Code of Ethics”, “Virtue Ethics”, and the article “5 P’s of Ethics”. These articles dove into why it is essential to be ethical as computer engineers and how ethical issues arise. We also overviewed a few examples where companies had to make difficult decisions based on ethical considerations. In this essay, the importance of ethics and my observations of the class discussions on ethics are examined.

Ethics issues frequently arise in the field of engineering. According to “5 P’s of Ethics,” there are five primary causes of these ethical issues: pressure, pleasure, power, pride, and priorities. The author argued that these five precursors of ethical issues are very common in an engineer’s daily life. As a result, many professional fields have a specific code of ethics. In Computer Engineering, the IEEE has published the “IEEE Code of Ethics” to provide a guideline for its members. With a guideline like this, IEEE’s members have a definitive source that is agreed upon by the community to consult whenever they face ethical issues in their professional careers. In the “IEEE Code of Ethics,” one obligation is “to seek, accept, and offer honest criticism of technical work, to acknowledge and correct errors, to be honest and realistic in stating claims or estimates based on available data, and to credit properly the contributions of others.” This obligation is a fundamental one for students and researchers in Computer Engineering. There are many scenarios where we work with other people on projects, either with our classmates, colleagues, or strangers on an open-source project. Therefore, it is crucial that we

seek and accept criticisms and correct any errors found. Furthermore, since much of our work builds on top of other existing projects, we need to credit those contributors.

One ethical issue I experienced also falls under this IEEE ethic guideline. I was working in a small team for a course I took earlier. We were all assigned to write a small code component, and all the components were designed to integrate together at the end of the week. I had finished my code and tested that it functioned as expected. However, right before we put everything together, one of my teammates found out that my component would cause performance problems after being fitted with everything else. However, fixing this issue would require me to redo most of the work. According to the IEEE ethics guideline number seven, the right thing to do is to accept the feedback and make the necessary corrections as soon as possible. Though I did not know about the code of ethics then, I decided to spend the time and fix all the performance issues. I reached that decision after realizing that my professor will notice this issue, and as a result, the grade of everyone on my team would be impacted. I thought it would be the right thing to fix my mistakes, even if that would take a lot of time.

We also examined and discussed the ethical issues described in the article “An Amazon Echo may be a key to solving a murder case”. The article described the aftermath of a suspected murder case. The investigators believed an Amazon Echo at the crime scene might have recorded the audio from the night of the murder. Wanting to extract more information, the investigators requested Amazon to provide the recorded data. However, Amazon refused. The ethical issue here is whether Amazon should hand the data over. If they do, they will likely break the privacy agreement with their users. Further, allowing backdoor access to Amazon’s clients’ data would potentially compromise the security of their user’s private data. On the other hand, if the

company refuses to give out user's data, it could face backlash from the media for not helping in a murder case.

This case is similar to the ethical issue I had for the project. In both cases, there are two different choices, and we needed to pick the more ethically sound one. Both issues are caused by pressure in the "5 P's". In my case, it was the pressure that my bad code will hurt me and my team's grade. In Amazon's case, it was the pressure of law enforcement threatening lawsuits instead. At the same time, these are also two very different situations. For one, the consequences for Amazon are much more significant than just a low assignment grade. Amazon's issue is best covered by IEEE's Ethics Code number one, where the public's safety is considered. As discussed earlier, my case is covered by IEEE's Ethics Code number seven. During the online discussion, we all agreed that Amazon made the right decision by refusing to hand out their customer's data. We thought that it is more important to place the interest of the general public before one particular case, where the data may or may not be helpful to the investigation.

From the "Virtue Ethics 1-6", I chose Integrity, Honesty, and Responsibility to be the most critical three virtues out of the six. I believe these three are the fundamental virtues, and the other three would naturally follow once integrity, honesty, and responsibility are achieved. Besides, I think Fidelity, Charity, and Self-Discipline does not apply to all situations, but the other three are essential to every aspect of an engineer's professional career. In the Amazon case, the three virtues I chose are also relevant. Amazon needs to be honest and takes responsibility to protect its customers' data. They decided to be accountable and therefore made their brand more trustworthy and dependable. They also exemplified integrity by standing up to external pressures, from law enforcement and the media, to be morally upright and defend their choices.

One additional virtue I would add to the list of virtues is Ownership. I added this because ownership complements the three virtues. While integrity, honesty, and responsibility mostly cover the engineering process's production phases, ownership has a more holistic view of the entire process. Someone with ownership will take care of a project from the beginning to finish. And to own up on any potential risks and mistakes, I think this is an essential aspect all other virtues are missing.

References:

IEEE. "IEEE Code of Ethics." *IEEE*, [www.ieee.org/about/corporate/governance/p7-8.html](http://www.ieee.org/about/corporate/governance/p7-8.html).