

Reflections on Case Study: ACM Ethics Committee Site, Case: Automated Active Response Weaponry

The fictitious corporation in the case study is Q Industries, a defense contractor and provider of autonomous vehicles and related devices intended to enable safe distance, remote bomb detection and site surveillance (ACM Ethics site, year unknown). While initial capabilities were “passive” only, attacks by protestors and enemy combatants caused damage and/or destruction to Q’s products and left clients with failed or underperformed mission status.

In response to the attacks, Q began including capability for automated reactive response. These included facial recognition for threat list inclusion, and non-lethal countermeasures like pepper spray and acoustic weapons. Several of the development engineers expressed concern that the automated response features didn’t include a means to protect against tampering or modifications that would allow for lethal weaponization. For example, one might do so quite trivially by replacing a tear gas canister with one containing a poison. The employee concerns were kept internal at this point. However, when several clients approached the firm in secret meetings to proactively equip the products with full lethal capability, these same engineers were discovered to be planning a public statement of objection. Q filed suit proactively to prevent the engineers from public release of the info under the confidentiality clause of their employment agreements.

The ACM case study provides an analysis of the positions of both the engineers and Q Industries. Below are their summary points based on the ACM Code of Ethics (ACM Code, 2018), accompanied by my critical analysis of the code’s application in this case.

Case Study Review Points

- Case study’s analysis of code section 1.2 which states “that systems designed with the intention of causing harm must be ethically justified and must minimize unintended harm.” The case study concluded that Q violated this principle because the adapted use capabilities could be used to suppress free speech and freedom of association, which are both protected by code principle 1.1 as basic human rights.
- The case study also argues that violation of the above principles is a de facto failure to adhere to principle 2.5 which requires “extraordinary care” in assessing risk in machine learning systems.
- Finally, the reviewers determine that the engineers’ actions were ethically sound per the ACM code of ethics, and they are justified in breaking their confidentiality agreements. However, they also held that Q’s lawsuit is justified, and the engineers must be willing to accept responsibility for their actions

Critical Analysis

As to the engineers’ claim of Q’s failure to provide “extraordinary care”

- *I find no presentation in the case study as to Q’s client base. Therefore, it is impossible to determine if they have a history of supplying products to nation-states or state-sponsored clients with a history of human rights issues. Or, if conversely, they had an established policy of restricting sales to nations with a positive rating on human rights issues.*
- *Q is introduced as a “defense contractor”. While good firms can and do fail, it must be considered that to maintain defense contracts, a firm must submit to regular audits, document recurring ethics training and subject personnel to background checks for classified work. This vetting implies a current defense contractor is in good standing and not under suspicion of violating ethical norms*
- *As such, one might consider that in the absent evidence of malintent, sales of products designed with a dangerous use case, to established clients of regard, represent no break from the standard of “extraordinary care”*

As to the Reviewer’s conclusion that the engineers must be willing to accept responsibility for the actions in breaking the confidentiality agreements:

- *Nearly all first world nations have adopted some sort of whistleblower protections through legislative action. The understanding and intent are that adhering to professional codes of ethics should not result in harm to*

the brave soul who brings the issue to light. Most have some requirement that the whistleblower follow established reporting policies and only go outside of the process if no action or counter action is taken. But all have some basic recognition that a human should not be forced to choose between doing what's right and their freedom or financial wellbeing.

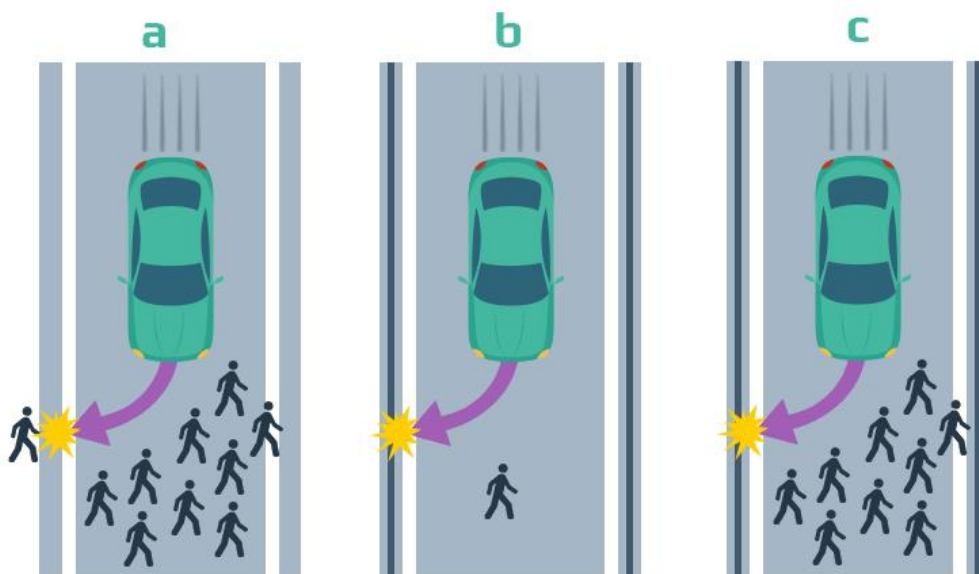
- *(The Public Interest Disclosure Act, 1998) states "A worker has the right not to be subjected to any detriment by any act, or any deliberate failure to act, by his employer done on the ground that the worker has made a protected disclosure."*
- *Principle 1.4 of the IEEE-CS/ACM Software Engineering Code of Ethics states: Disclose to appropriate persons or authorities any actual or potential danger to the user, the public, or the environment, that they reasonably believe to be associated with software or related documents.*

Introduction of related, ongoing research with similar ethical challenges.

I was the principal investigator for a USDOT funded research project that deployed roadside infrastructure and 1000 privately owned vehicles after-market, onboard connected vehicle technology devices and applications for life safety, mobility and environmental improvement. The program required an institutional review board to pre-approve and monitor the ethical treatment of the human participants. In concert with, and continuing study in this area involves autonomous vehicles. Below is a brief summary of one significant ethical challenge in deploying autonomous vehicles on public roadways.

- *Human drivers are often faced with a split-second decision that will result in harmful results regardless of the option followed. For example: In your car with you are your wife and newborn. On your left is a large school bus full of children. To your right is a sharp drop-off with limited shoulder. Suddenly an elderly woman on a bicycle appears in front of you and there is not ample stopping distance to prevent hitting him. What do you choose?*
 - *Swerve into the bus and hope for only property damage?*
 - *Swerve toward the drop-off and risk your family?*
 - *Hit the elder person who has lived a long life?*
 - *Freeze up and do nothing?*

(Haydin, 2020), Suggests "It's Time to Give Autonomous Cars an Ethics Lesson" and presents a few "Different scenarios of a self-driving car's behavior on the road" in the accompanying graphic below.



a. A car chooses to save many pedestrians over one.

b. A car potentially kills its passengers but saves a pedestrian.

c. A car saves a lot of pedestrians by hitting the wall and potentially killing its passengers.

In my research and development work involving Connected and Autonomous vehicles, I have heard heated arguments around how to address these moral and ethical dilemmas. There are basically 3 main viewpoints:

1. The ethics must be resolved, and hard rules established before level 4 autonomy (no steering/braking mechanisms available in-vehicle for human driver override) can be allowed on public roadways.
2. The ethics should have common baselines but be programmable to some level by the owner/operator so that owner can change the configuration based on whether a child is onboard or other issues that may vary the moral view of the owner based on “situational ethics”.
3. Leave the decision to the carmakers for now (market driven) and let the court system fine tune them via evolving case law.

My reflection on these issues has raised more questions than answers. But one thing I know from many years of working in technology. If the advancement is of value to society, we will work it out over time. I do hope that it gets the attention it deserves sooner than later. Because I, along with a multitude of researchers, policy makers and interested citizens believe connected and autonomous vehicle technology offer our greatest hope to date for reaching “Vision Zero”, the goal of reducing 100% of accidents caused by distracted driving.

As demonstrated by the original case study under review, and those presented by AVs, ethical issues in the field of computing and especially AI are complex and need more than a cursory examination.

References:

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