The Ethics of Uber's Autonomous Vehicle Technology

Introduction

Uber is a multibillion-dollar company that provides services such as transportation, food delivery, courier, etc. Uber signed an agreement with Volvo to purchase 24,000 autonomous cars. During the initial test drives of the vehicle, there was a safety driver in the car to prevent any crashes in case the vehicle misfunctioned. In one of these test drives, the autonomous car hit a pedestrian in Arizona in March 2018. In this incident, a pedestrian was jaywalking and the car could not recognize the pedestrian and hit the pedestrian. [1] The safety driver seemed distracted moments before the accident. There are many issues with this problem that needs to be addressed.

Ethical Background

For analyzing this case, we will use the ethical framework of rights-based ethics. According to the rights ethical theory, the rights set forth by society are protected and given the highest priority. [2] In this case, there were some laws broken that led to the occurrence of this incident. Firstly, the pedestrian was jaywalking and did not look toward the incoming vehicles before crossing the road. Secondly, the safety driver was distracted by their phone as they kept looking down away from the road. Lastly, the autonomous car was unable to figure out a pedestrian in front of the car and kept going which led to the accident. This could have been prevented by thorough testing of the car before it was released on the road.

Some of the ethical issues that are raised in this case include the death of a pedestrian, the safety driver being distracted on the road and the car not being able to recognize the pedestrian. This case might raise some questions for everyone. Is it safe to cross the roads with autonomous cars on the road? Is there a guarantee that any object on the road will be recognized by the car to prevent accidents even if it is not a pedestrian but a wheel? Is it safe for other drivers to drive beside autonomous vehicles? We will be looking at these questions and trying to find solutions to them in this case study.

Facts of the Case

The accident took place on March 19, 2018, around 9:58 PM. The safety driver present was Rafaela Vasquez and the pedestrian was Elaine Herzberg. [1] Ms. Herzberg was trying to cross the road with her bicycle when she was hit by the car. A few seconds before the accident, Ms. Vasquez was watching the TV show "The Voice". [3] The system failed in identifying Ms. Herzberg and was unable to alert Ms. Vasquez to take over the wheel. As an operator, Ms. Vasquez was only supposed to take over the wheel when alerted by the car. But, the car was only able to alert her 0.2 seconds before the accident took place. At that time, there was nothing that Ms. Vasquez could do to prevent the accident.

The car was able to identify some object 5.6 seconds before the accident. It initially assumed that the object was a car. [3] After which it kept changing its assessment between a car and “other”. [3] At 2.6 seconds from the object, it assumed that the object was a bicycle. It planned to steer the car around the object but decided it couldn’t. [3] When we see the video captured by the car, we can see that Ms. Herzberg did not see the incoming car and Ms. Herzberg was also surprised when the alert went off and saw Ms. Herzberg in front of the car. We can also see that the area the accident took place in was not well-lit during the time of the accident. Uber, as a company, has been indicted for criminally negligent homicide.

Considering all the facts, there were some things looked over that need to be considered. These are the codes of ethics that are the most relevant for this situation:
1.1 Contribute to society and human well-being, acknowledging that all people are stakeholders in computing. [4]
2.5 Give comprehensive and thorough evaluations of computer systems and their impacts, including analysis of possible risks. [4]
2.7 Foster public awareness and understanding of computing, related technologies, and their consequences. [4]
3.1 Ensure that the public good is the central concern during all professional computing work.[4]

Stakeholders

The stakeholders in this situation can be divided into two groups, decision-makers, and passive stakeholders. The decision-makers include Uber, Volvo, Court of Law, Driver, and Pedestrian. Uber has the responsibility of making sure that autonomous cars do not harm others on the road. Volvo has the responsibility to produce autonomous vehicles that are well-tested and updated regularly. The courts have the responsibility to make sure that justice is provided to everyone involved in this case. The driver, Ms. Vasquez, has the responsibility to make sure that the car functioned as intended and takes over the car when alerted. The pedestrian, Ms. Herzberg, had the responsibility to cross the road on a crosswalk and look for any incoming vehicles while crossing the road.

The passive stakeholders include everyone else driving on the road. The autonomous system is not perfect and will never be perfect as not a single piece of code in this world is perfect. This means that there is always a chance for something to go wrong in the car and there might be a situation where things might take a turn for the worse. Everyone on the road needs to be aware of their surroundings and make sure that they keep their eyes on the road while driving. If in this situation, instead of an autonomous vehicle, there was a normal car, there might have still been an accident if someone was not paying attention on the road.

Comparative analysis of values, rights, and duties

To analyze this situation, we need to consider the rights-based approach. According to the rights ethical theory, the rights set forth by society are protected and given the highest priority. In this situation, there were a few rights that were violated which might have led to the accident. Firstly,

the pedestrian is not allowed to jaywalk and is only supposed to cross the road using a crosswalk. Secondly, the driver is supposed to make sure that the car works normally and tries to avoid accidents whenever possible. In this situation, the accident could have been avoided if the driver was looking at the road and noticed the pedestrian a few seconds before the accident. Lastly, the car was allowed to be on the roads by the companies and government for test rides before completing complete testing of the system.

Principles and Virtues

To further analyze this situation, we can consider the following principles and virtues:

1. Beneficence: According to the principle of beneficence, we should try to do what is good.[5] In this situation, even though both the company and the pedestrian were at fault; since the family of Ms. Herzberg lost her, they should be compensated for their loss and make sure that the system completes more tests before it is back on the road.
2. Least Harm: According to the least harm principle, we should try to do the least amount of damage.[5] In this case, the damage could have been minimized by the car slowing down when it first identified the object, and it should have tried to steer away from the object to avoid/minimize the accident.
3. Justice: According to the principle of justice, fair actions should be taken against those involved.[5] In this situation, both Uber and the safety driver were partially responsible. The company should do more testing for non-standard situations to make sure that if an unidentifiable object is noticed by the car, it should slow down and ask for assistance. The driver could have prevented the accident by having eyes on the road and taking over the car when she noticed the pedestrian. Since the area was not lit well, more street lights should be added by the government.
4. Utilitarianism: According to the utilitarianism theory, we should try to make a decision that is beneficial to most people.[5] In this situation, the pedestrian should have crossed the road at the crosswalk, the driver should have kept her eyes on the road, more testing should be done for the car's autonomous system, and more street lights should be installed in less lit areas. We should also consider the success of AI-operated cars in the future. If these cars are mass-produced, then there might be a loss of many jobs in the future. Hence, according to the utilitarian lens, autonomous cars should not be allowed on the road.

Alternatives

To resolve this problem, the following steps can be taken:

1. We can stop autonomous vehicles from ever being on the road which prevents these kinds of accidents. But in doing so, we are preventing the technology in transportation from improving. Currently, most flights have an autopilot mode which allows the plane to fly on its own and lets the pilots rest in between. Without the autopilot mode, there would be many more crashes that could take place either due to the negligence of pilots or due to the pilots not resting for long flights.

2. We could change nothing and let the cars drive on the road for further testing. As the cars have already been through a lot of tests, they should be allowed to be driven on the road along with a safety driver as it allows for better training for the AI.
3. We could stop all the cars on the road and increase testing for them to situations that are not likely to happen on the road but have a chance of happening such as this situation. This would allow the software to be trained for worse-case situations and still be prepared for them. They can also change the software to make sure that if the system is unable to identify the object in front of them, the safety driver should be alerted immediately. After the training is completed, then they should reopen the test drives for these cars on the road.

With each alternative that is considered, we need to consider how each stakeholder might be affected by it. For the first alternative solution, both Uber and Volvo might be affected the most as they have invested heavily to develop autonomous vehicles. But this doesn't mean that the roads will be safe for pedestrians as there are far more accidents caused by humans than autonomous cars. Considering the second alternative, there are chances of accidents similar to this one which is a big risk to take. However, Uber and Volvo might be able to make some money if the car stays on the road as it will be able to get more miles to teach the system. Looking at the last solution, it is the best option for both Uber and drivers on the road. This is because more testing is taking place making the system more reliable and it can learn to adjust for situations that it has not encountered before.

Reflection and Conclusion

Some decisions were taken before the accident that could have been prevented to avoid this situation. Firstly, the pedestrian was jaywalking and did not pay attention to the incoming vehicles. Secondly, the roads in the area were dimly lit and the driver was distracted by her phone. Lastly, the testing for rare situations such as jaywalking was not done. These situations could have been avoided by following rules and trying to include more thinking during the development of the software.

To conclude the analysis, I suggest the court fine Uber but not indict it since both sides were partially at fault for the accident. The pedestrian did not cross the road on the crosswalk which caused the accident. The AI system was unable to recognize the object in front of it and wasn't able to alert the driver which also led to the accident. To prevent such situations from happening in the future, the court should stop all autonomous cars on the road and increase their testing to adjust them to situations that might not happen but have the chance of happening. This would increase the safety levels on the road and allow further development of the software.

References

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