

An Ethical Analysis of Uber's Autonomous Vehicles

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By

Nathan Bouzar

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

ADVISOR

Benjamin J. Laugelli, Lecturer, Department of Engineering and Society

Introduction

Nowadays, technology is at the forefront of everyday life; to the point where it may pose a threat. Recently, Uber, which is a company that provides driving services has been attempting to synchronize a motor company's goals, Tesla, into reality. Tesla has long been striving to achieve self-driving automobiles, however, in their pursuit of this goal, the public was indirectly placed in danger. In March 2018, in Tempe, Arizona, Uber had an incident where a pedestrian was killed in the process of testing an autonomous vehicle.

The case of the Arizona car accident is a prime example of letting technology be too close for comfort. It can be questioned whether the testing was premature and still in the prototype phase before conducting a real-life scenario which leads to concerns of public endangerment for a company's selfish goals. This paper aims to provide a comprehensive review of the stakeholders involved in a given scenario from an ethical standpoint, specifically within the framework of utilitarianism. The tragic incident resulted from a combination of social and technical failures, including a safety driver who was distracted, untested variables, and a lack of proper regulations.

Background

Autopilot is a cutting-edge system for aiding drivers that enhances both safety and convenience while driving. Proper use of Autopilot can significantly reduce the driver's workload. Every new Tesla vehicle is fitted with eight external cameras and powerful vision processing technology, adding an extra layer of safety. All new Tesla vehicles come with Autopilot as a standard feature. However, it's important to note that Autopilot, Enhanced Autopilot, and Full Self-Driving Capability are designed to be used only with a fully attentive driver who has their hands on the wheel and is ready to take control at any moment. Even though

these features are intended to become more advanced over time, they do not make the vehicle autonomous.

Literature Review

Utilitarianism is a philosophical theory that evaluates actions based on their ability to promote overall happiness for the greatest number of people. In the context of autonomous vehicles, utilitarianism can be used to assess the ethical implications of decisions made in their development and deployment. Utilitarianism considers the impact of these decisions on society as a whole, rather than focusing on individual events and or actors.

Numerous research papers have examined the potential impact of autonomous vehicles on society, including their impact on the freedom principle and other ethical concepts. Two such papers are discussed in this section, each offering a different perspective on fatalities caused by autonomous vehicles. In the paper "The Wild, Wild West: A Case Study of Self-Driving Vehicle Testing in Arizona," Alexandra DeArman examines the Uber autonomous vehicle car accident and notes that the software did not react immediately when it detected the pedestrian. DeArman suggests that the problem was what the broader system chose to do with that information. The decision to design and program the autonomous vehicle with a higher false-positive allowance, to deliver a smooth and safe ride to customers, may have contributed to the accident. However, the paper overlooks the power dynamics and relationships between the different entities involved in the development and deployment of autonomous vehicles.

On the other hand, in the paper "Responsibility for Crashes of Autonomous Vehicles: An Ethical Analysis," Alexander Hevelke and Julian Nida-Rumelin discuss the responsibilities of car manufacturers and users for autonomous vehicle crashes. They note that car manufacturers are ultimately responsible for the final product, even though they are not in charge of developing

self-driving software. Additionally, they suggest that drivers in autonomous vehicles should be responsible since they accept the risk of using the vehicle, knowing it might cause accidents. However, this paper also overlooks the power dynamics and relationships between different entities involved in the development and deployment of autonomous vehicles.

To provide a more complete analysis of the ethical implications of autonomous vehicles, a utilitarian framework can be used. This approach considers the broader impact of decisions made in the development and deployment of autonomous vehicles, taking into account the power dynamics and relationships between different entities. By utilizing this framework, it is possible to develop a more rigorous process for analyzing the morality of the future regarding autonomous vehicles.

Conceptual Framework

A scholarly journal article written by Van De Poel and Lamber Royakkers titled “Ethics, Technology, and Engineering: An Introduction” published in 2011 explores the different aspects of ethics. The article claims utilitarianism is where “. . . actions are judged by the amount of pleasure and pain they bring about. The action that brings the greatest happiness for the greatest number should be chosen.” (Van De Poel & Royakkers, 2011) The company’s motives for developing an autonomous vehicle with no need for a conscious being in control to be held responsible raised a number of ethical concerns. To create a more niche ethical framework for this situation, the following principles could be considered since they all relate to Utilitarianism in one form or another:

1. Privacy: The privacy of passengers and pedestrians should be protected at all times. This includes protecting personal data and preventing unauthorized access to any information collected by the self-driving car.

2. **Accountability:** In the event of an accident, the company responsible for the self-driving car should be held accountable for any harm caused to the public. This includes taking responsibility for any compensation owed to the victim and their family.
3. **Responsibility:** Companies that develop and operate self-driving cars have a responsibility to ensure their vehicles are safe and operate within the bounds of the law.
4. **Transparency:** Companies should be transparent about how their self-driving cars operate and the risks associated with their use. This includes providing clear information about the limitations of the technology and any potential risks to the public.
5. **Safety:** The safety of the public should be the top priority in any decision-making process. This includes the safety of passengers in the self-driving car, pedestrians, and other drivers on the road.
6. **Fairness:** The benefits and risks associated with self-driving cars should be distributed fairly among different groups in society. This includes ensuring that self-driving cars are accessible to everyone and that the risks associated with their use are not disproportionately borne by any particular group.
7. **Continuous improvement:** Companies should continuously improve the safety and reliability of their self-driving cars through ongoing research and development. This includes working with regulators and other stakeholders to establish best practices and standards for the development and operation of self-driving cars.

The scholarly journal article also explains the utility principle, which is “The principle that one should choose those actions that result in the greatest happiness for the greatest number.” (Van De Poel & Royakkers, 2011) The scholarly journal article also explains the “freedom” (or “no harm”) principle which is a moral principle that holds that individuals should

be free to act as they choose as long as their actions do not harm others (Van De Poel & Royakkers, 2011). It is also known as the harm principle or the non-aggression principle. From these ethical principles, this paper will argue why despite the incident resulting in the death of a civilian, it still holds a greater benefit to society as a whole to shift from conscious beings retaining control of vehicles towards automated drivers which will be the metric used for whether or not this principle is for or against autonomous vehicles.

Analysis

The self-driving Uber car incident in Arizona raised concerns about privacy, accountability, and safety, which are all concepts that can be analyzed through the lens of utilitarianism. Utilitarianism is a consequentialist ethical theory that seeks to promote the greatest happiness for the greatest number of people. In the context of self-driving cars, this means that the deployment of autonomous vehicles should aim to maximize benefits while minimizing harm for all stakeholders involved.

The self-driving Uber car incident in Arizona raised concerns about privacy. Autonomous vehicles are equipped with various sensors and cameras that collect vast amounts of data about passengers and their surroundings. This data can include location information, driving behavior, and even facial recognition data, which can be used for targeted advertising or surveillance. To maximize the benefits of self-driving cars while minimizing privacy harms, companies need to have clear privacy policies in place that govern how data is collected, stored, and used. Obtaining consent from passengers and pedestrians for the collection of their data and guidelines for how this data can be used and shared can also help ensure that privacy is respected. In this way, companies can maximize the benefits of self-driving cars while minimizing the harm to privacy

that can result from the collection and use of personal data. (Holder, 2019). In the case of the Arizona incident, there were questions about what data was collected by the self-driving car and how that data was used by Uber. To manage these regards, it is important for companies to have clear privacy policies in place that govern how data is collected, stored, and used. An article explaining the possible concerns of privacy from autonomous vehicles indicated that “In 2014 a senior Ford executive, Jim Farley, made comments at an electronics convention revealing that the company knew whether owners of its cars had broken speeding laws, though he added that Ford didn’t supply that data to anyone. He later withdrew the statement, saying he was speaking hypothetically: the company didn’t track its customers without their approval or consent.” (Metha, 2018) Given the gravity of such a claim, it’s still unclear whether Farley did track Ford’s customers but the question remains what will companies do with user data and if it can be taken and used against a client’s will? Taking steps to ensure that this data is encrypted and protected against unauthorized access will fall into a company’s hands and not the government’s, this includes obtaining consent from passengers and pedestrians for the collection of their data, as well as guidelines for how this data can be used and shared. However, as this may seem dangerous since it’s uncommon for sources outside the government to wield private information, evidence suggests that the public’s data is in safe hands. An article published by CNBC discussed Apple denying the government access to a phone that belonged to a suspect in the shooting in Pensacola, Florida. “Apple continues to refuse Attorney General William Barr’s request that it help find a way for law enforcement to access encrypted devices with a court order, like the one Apple resisted in 2016 in the case of a shooter’s iPhone in San Bernardino, California.” (Feiner, 2020) It’s safe to say if a company isn’t willing to grant access to a device from a suspect involved in a shooting, the majority of users can rest assured their data is safe.

Ultimately, it is essential for companies to be transparent about how they collect and use data from self-driving cars while also protecting it from outside parties. By taking these steps, companies can help to ensure that the development and deployment of self-driving cars are done in a way that respects the privacy and security of passengers and the public.

There are also questions about the legal and ethical implications of autonomous vehicles. For example, in the event of an accident, who is liable for any damages or injuries? Should the responsibility fall on the manufacturer of the autonomous vehicle, the software developer, or the owner of the vehicle (Cassidy, 2017)? When an accident occurs involving a self-driving car, it can be difficult to determine who is responsible for the accident and who should be held accountable for any harm caused. In the event of an accident, it can be difficult to determine who is responsible for any damages or injuries. The responsibility for the accident could fall on the manufacturer of the autonomous vehicle, the software developer, or the owner of the vehicle. Clear and transparent legal frameworks are needed to address the unique challenges associated with autonomous vehicles. Companies must ensure that they are accountable for the safety of their self-driving cars while also promoting the benefits of this technology. These questions highlight the need for clear and transparent legal frameworks to address the unique challenges associated with autonomous vehicles. An estate law firm in Clarksville, Tennessee asserted, “The parties that are typically liable for self-driving car accidents include: the driver of the “self-driving” vehicle, the vehicle’s manufacturer, the manufacturer of a defective vehicle component, any other company in the vehicle’s “chain of distribution”, and or a third party such as a vehicle repair shop or road construction contractor.” Here, the closest relation towards the responsible party held in question was established to be numerous individuals or companies meaning all such possible incidents will be on a case-by-case basis.

Nonetheless, there is also a wide range of risks and challenges associated with the deployment of autonomous vehicles. While autonomous vehicles could potentially reduce the need for drivers, there are also opportunities for new jobs in areas such as software development, maintenance, and logistics. The CNBC article also claimed, “Yet the autonomous vehicle industry is creating jobs, as well, especially as multiple companies race to put the first self-driving car into action. Autonomous driving job listings increased 27 percent year over year in January 2018, according to ZipRecruiter, an online employment marketplace, ‘. . . . Autonomous cars are going to largely eliminate jobs seekers weren’t interested in and create opportunities in work that people will find more rewarding,’ said Ian Siegel, co-founder and CEO of ZipRecruiter. . . . ‘As self-driving cars become more prevalent, the kinds of jobs available will expand’, said Siegel of ZipRecruiter.” (Reinicke, 2018) As revealed, autonomous vehicles have the potential, capacity, and ability to create more opportunities than it ceases; rather preferable ones. In any case, the worry about unemployment doesn’t seem to be as significant as it may sound, in fact, it’s more likely that society will benefit to a higher extent after the fact.

The self-driving Uber car incident in Arizona also raised safety concerns. In the case of the Arizona incident, there were questions about whether Uber had taken adequate safety measures and whether the safety driver in the self-driving car was properly trained and supervised. There were also questions about whether Uber had been transparent about the risks associated with the use of self-driving cars and whether they had taken appropriate steps to address these risks. A different article published by CNBC exploring the future job market due to autonomous vehicles indicated, “‘The benefits outweigh the cost by a large margin,’ said Amitai Bin-Nun (vice president of autonomous vehicles and mobility innovation at Securing America’s

Future Energy). Safety is one. Nearly 38,000 people died in car crashes in 2016, according to the National Highway Traffic Safety Administration, and most serious crashes are due to human error. ‘Autonomous vehicles will never be drunk, distracted or drowsy,’ said Bert Kaufman (head of corporate and regulatory affairs at Zoox).” (Reinicke, 2018) In the case of the Arizona accident, Uber itself claimed the safety driver was distracted which also played a part in the outcome. This coupled with the data proves the majority of crashes are from human error as Kaufman asserted. To mitigate potential automated accidents in the future, it is paramount for companies to take responsibility for any harm caused by their self-driving cars. This includes providing compensation to victims and their families, as well as proceeding to improve the safety of their self-driving cars to prevent similar accidents from occurring in the future. In addition, regulators should establish clear guidelines and standards for the operation of self-driving cars. This incorporates requirements for the training and supervision of safety drivers, as well as guidelines for the testing and deployment of self-driving cars on public roads. Finally, it is important for companies to be transparent about any accidents involving their self-driving cars. This pertains to providing clear information about what happened, what steps are being taken to address the issue, and how the company will prevent similar incidents from occurring in the future. By taking these precautions, companies can help to ensure that the development and deployment of self-driving cars are done in a way that prioritizes public safety and accountability.

Another concern to the public is about the fairness provided across different spans of ethical, racial, and socioeconomic groups. In particular, there were inquiries about how the benefits and risks of self-driving cars are distributed across society (Hern, 2019). There is a risk that the benefits of self-driving cars, such as increased safety and convenience, may not be

equally accessible to all members of society. For example, low-income individuals may not be able to afford self-driving cars or may not have access to the necessary infrastructure to support them. This could result in a widening of existing social and economic inequalities. There are numerous issues regarding the impact of self-driving cars on employment. This could have a particularly negative impact on low-income and working-class individuals who rely on these jobs for their livelihoods. An argument made by SAFE (Securing America's Future Energy) protested the opposite and affirmed, "The most conservative cost-per-mile estimate for an autonomous, shared and electric car in 2030 is 50 cents. In contrast, the cost per mile for buses today is \$1.31. AV (Autonomous Vehicle) transportation could reduce household costs by as much as \$5,600 per household, or \$3,800 per American. SAFE found that reducing average transportation costs by \$5,000 per year in urbanized neighborhoods brings more than 25 million households within the 45 percent threshold." (Adams, 2020) After reviewing the data, access to AV should be available to all regardless of income level while also assisting in the distribution of current household income.

Conclusion

All things considered, the development and deployment of autonomous vehicles is a complex and multifaceted matter that requires careful consideration of a range of technical, social, legal, and ethical trials. While autonomous vehicles offer the potential to transform transportation and improve safety, they also present some risks and challenges that must be addressed with clear safety protocols and standards. Eventually, there will be a need to recognize the development and deployment of autonomous vehicles is not a one-time event, but rather an ongoing process that will require engagement in ongoing dialogue and collaboration across a range of stakeholders, including researchers, developers, regulators, policymakers, and the

general public. Finally, it will be pertinent to address the social and ethical implications of this technology. This consists of developing clear legal frameworks to guide and ensure the responsible deployment and use of autonomous vehicles be done in a transparent, accountable, and fair way.

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