Who Killed the Herzberg AI or Us?

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November 10, 2018

2475 Words

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### INTRODUCTION

Ms Elain Herzberg, 49, a homeless but a big heart lady, widely known among her community [1] found dead after colliding with a self-driving Uber Car in the late evening of March 18 2018, and turned into internet sensation by the title of “The first Pedestrian killed by an autonomous car”. As per Arizona police, Ms Herzberg was crossing a four-lane road of Tempe, Arizona by pushing a bicycle laden with shopping when she hit by an Uber self-driving vehicle running for testing with a backup human safety driver behind the wheel [1]. Later on, Ms Herzberg was taken to hospital where she declared died due to her injuries.

Aftermath, Uber terminated testing of their self-driving cars on the roads of Tempe, San Francisco, Pittsburgh and Toronto which was running on the road from March 2016. Later, Arizona government also suspended testing of Uber’s autonomous vehicles in the state considering the safety of the public [4].

Also, some companies like Nvidia provisionally halted the testing of their autonomous vehicle as for learning from the incident. Yavapai County Attorney had yet to give dates for the decision of the case [5]. This type of cases can be a big fatal in the future of technological advancement. Now, Let's try to find out what exactly caused the accident the car or behind bodies.

### REVIEW ON THE SUBJECT

On September of 2015, Governor Douglas A. Ducey passed an executive order(2018-04) welcoming the “Self-Driving Vehicle Testing and Piloting in the state of Arizona” stating that self-driving vehicle can produce social benefits such as safety of the pedestrian and passengers. Also, the elimination of the traffic and congestion [6]. Like Uber, Waymo and some of the startups landed their vehicles on the road as per the norms included in the order.

Though Arizona has not always welcomed Uber as in 2014 then-governor Jan Brewer refused the insurance of the taxi-hailing companies over traditional taxis causing a big financial impact on Uber while this got sorted after the change in governance which shows the cosy relation of Ducey and Uber after certain retrieved emails among them. An interesting fact was that the Uber did not make its way to the oversight board for the police self-driving programs. Later on, Uber got approval following personal relations with the governor, but it was kept the secret with the public [7].

Uber stated that this new technology will eliminate the death caused by the drunken or torpid drivers. As per the Arizona Transportation department, from 2013 – 2015 there was 2,302 fatal crash reported causing 2,520 deaths and among them, 886 was the case of drunk driving [8].

The advantages of the self-driving cars are that they increase the safety and reduce the traffic and emission produced by cars [9]. While the disadvantages can be the technology fail and training of the cars on the several conditions like traffic signals, disturbed roads, high bumps etc. [9].

In Elaine’s case, there are three different prospects leading to the accident. First, the speed and the system failure of the car, as the car was running in the 45mph in the zone of 35mph and had not attempted the emergency brake as the Volvo XC90 containing Uber’s modified a roof mounted LiDAR and ten RADAR for 360 degrees coverage around the vehicle potentially failed to identify the victim as a human [2]. Also, the ceasing of Volvo initial sensor paid the cause as later one autonomous vehicle software firm *Cortica* disclosed that Herzberg may have been saved if Volvo sensor had not been intentionally shut down by Uber [11]. Secondly, the safety driver, distracted by the mobile streaming video “The Voice” on Hulu. Thirdly, own MS Elain as she was not pushing her bicycle on the crosswalk which was 360 feet far from the accident area and had not looked in the direction of the vehicle. Also, the crossing section was not under direct illumination of the roadway lighting. Moreover, her toxicology results for the methamphetamine and marijuana was positive as per the NTSB report [10].

Later on, the driver, Rafaela Vasquez found to have a conviction record for attempting the armed robbery and had spent nearly four years of jail in the early 2000s [3].

These types of incidents built a high impact on society and they contemplate technology as a curse. As the friends of the Elaine Herzberg demanded the shutting down of the Uber. Also, stating that the government is also equally accountable for this fatal [13].

### MAIN PARTICIPANTS AND THEIR ACTIONS

There are six Primary participants diluted in the case. First, The Safety Driver (Rafaela Vasquez) who was neither looking in the direction of the road while sitting behind the steering nor monitoring the self-driving system as part of the job. Also, not applied any safety measure before the accident like safety brake, diverting the vehicle. Due to distraction from the video streaming. Moreover, not told the truth to the cops during the investigation. Second, the Victim (Elaine Herzberg) who found pushing cycle on the non-crosswalk area which was a less illuminated area without looking in the direction of the vehicle after the intake of toxins (methamphetamine and marijuana). Third, Volvo, the original manufacturer of the autonomous car. Fourth, Velodyne, the suppliers of Uber’s LiDAR. Fifth, Yavapai County Attorney which has not disclosed the date for the decision. Last, Nvidia and other some small companies who closed testing temporarily affected by Uber’s fatal.

The Secondary Participants are the Governor Douglous A. Ducey who allowed the Uber’s immature cars to operate autonomously without public concern and started the program secretly while maintaining the personal relations with Uber. The Tempe Police Chief Sylvia Moir and Arizona Police who presented the initial report saying Herzberg fault based on driver’s statement saying pedestrian stepped in front of the vehicle and presented wrong fact about the car speed saying 38 mph while it was proved 43mph later. The National Transportation Safety Board (NTSB) which presented the event report. Next, Hulu, where “The Voice” was streaming which is said to be the driver, was watching. Lastly, the Uber Testing staff which had not tested the vehicle properly car was speeding based on the software and the LiDAR and Radar sensor of the vehicle defected.

The Implied Participants covers the Uber Development staff not designed the car to indicate the typical situation and detecting the human behind the bicycle. The Uber recruiting staff who does not consider the criminal record of the drivers and their commitment. The Uber business analytics staff who had not provided different scenarios to work on to development. The Uber management who is responsible for managing teams and taking the decision. At last, Customers of the self-driving Uber cabs who had not reported the driver actions to Uber and not raised concern about the undisclosed test of vehicles.

### SIMPLIFICATION ASSUMPTIONS AND REDUCED LIST

The participation Volvo and Velodyne are avoidable as car and sensors had been reconfigured by Uber. The Yavapai County Attorney is considered to legitimate as they can only give the decision after proper investigation. Moreover, Nvidia and other small companies have to do nothing though all have their own technology and it’s fatal of Uber ATG. Furthermore, the Tempe chief, Arizona police and NTSB were doing their work based on the data and information they collect can be eliminated also Hulu was providing its services which is common for all unbeknown of the state of the viewer. Lastly, only Uber management team can be considered because all other team works under their guidance and avoiding customers is necessary because it’s a matter of awareness no single person can be sued.

As a result of these assumptions, some of the participants can be eliminated the only victim, driver, Governor and Uber management are liable. Also, victim’s daughter and husband along with law firm must be considered for the proper justice of the matter and only above who are mentioned have to impact on the case.

### LEGAL CONSIDERATIONS

As per Arizona Statutes for transportation (Title 28 Chapter 3), Victim(Elaine Herzberg) should have given right to way (Article 10; 28-793) and Driver(Rafaela Vasquez) can be sued for speeding (Article 6) and accident causing death (Article 4).

Uber contravened *SAEJ3016* i.e. rules for the autonomous vehicles and lastly, Governor for keeping the Uber test drill on Tempe road hidden from the public should be pondered as per legislature of Arizona.

### POSSIBLE OPTIONS FOR PARTICIPANTS

The Victim could have used crosswalk or walked in the proper illuminated area while looking in the side of the vehicle probably she resisted herself. The Driver could have pay attention on the road and taken control of the car and applied brakes while avoiding the distraction while on duty. The Governor could have taken care of the technologies Uber is using and must have Informed the locals about the test. Also, may have refused to set up an immature technology on road. While Uber Management could have checked the car functionality and monitored the driver's activity in the self-driving cars.

### POSSIBLE JUSTIFICATIONS FOR ACTIONS

The Driver could probably state that there was no visibility on road and simply following right to way while monitoring from the laptop screen in the car if happened cause car had not alerted about the external control. The Governor could state that it was the initiation to deploy latest technologies on road for human welfare and had worked for the public safety and was unaware of the technical perspective of Uber systems. The Uber management can state that It was the driver's responsibility to take care of the situation and talking about recruitment every felon should be provided with the second chance to work and halting Volvo initial sensors was necessary due to the technical perspective.

### KEY STATEMENTS

• “…..the radar and LiDAR of a Volvo XC90 SUV failed to detect the victim before the accident.”

• “…..Rafaela Vasquez, the backup driver who was spotted not paying attention to the front view while the car was in self-driving mode also said to be watching a video at work.”

• “…..Herzberg may have been saved if Volvo sensor had not been intentionally ceased by Uber.”

### QUESTIONS RAISED

There are different questions arise looking into the different perspective of the case as LiDar and Radar failed does the car was tested properly before use? Does the problem is with a single car or the complete technology?

Moreover, Does the driver solely responsible for the case? And Does hiring a felon really caused the accident?

Furthermore, looking deeper softness of the governor and mail retrieved after, forced to ask does the Governor have any personal relation with Uber and it is ethically correct?

Lastly, on technology, Can an autonomous car can be sued for the failure? Are this roaming robots turning into the devastation for the human life? Is Technology heading opposite to the human welfare?

### ANALOGIES

We can relate this accident with the case of Robert Williams who got killed by a robot-hand working together in the Ford Motor Company Flat Rock Casting Plant on January 25, 1979. Here, the family sued the manufacturers of the Robot and $15 million was awarded to the estates by the court in January 1984. One more similar happened in latest causing the death of Joshua Brown who also got killed in a car accident when he put his Model S Tesla on autopilot mode and the car hit with the white truck caused his death. Later NTSB cleared that it was driver fault that he didn’t followed the car warnings [12].

### COMPARISON TO CODES OF ETHICS

The case as contributing to the many codes of Ethics like “1.1 Contribute to society and to human well-being, acknowledging that all people are stakeholders in computing.” The Governor tried to help out the Tempe public with embedding and offering new technology available to all. “1.5 Respect the work required to produce new ideas, inventions, creative works, and computing artefacts.” As giving a chance to Uber to grow their business and ideas on roads of Tempe. While some of the codes of were remained unutilised like “1.2 Avoid harm.” Which happened with the Herzberg causing accident. “1.3 Be honest and trustworthy.” The testing of the Uber vehicle was kept hidden later. “2.2 Maintain high standards of professional competence, conduct, and ethical practice.” The driver had not followed ethics and caused the accident which was supposed to be avoided. “2.5 Give comprehensive and thorough evaluations of computer systems and their impacts, including analysis of possible risks.” Uber had not checked the vehicle performance proactively.

### PROPOSALS

The artificial intelligence in the field of the automobile can be considered as a boon that it can reduce the statistics of the death on roads can be eliminated and traffic can be reduced. It will lead humans to a better world and standard of life can be improved and resources can be retained. On the other hand, this type of fallacy in the technology can depress the public and they will start losing their faith in the technology. Usage of the false practice can lead to failure of this technological advancement. Though artificial intelligence is an emerging field and supposed to learn from the implementation, hence they must be provided with the opportunity to work in the society which can lead us to a better world but we have made ourselves prepare for this enhancement.

### ETHICAL THEORY

Though there are many investigations going on in the case some biased, some unbiased, most influence thing is the expansion of the technology. Ethically, maintenance of the standard of the professional competence and conduct is highly required while the introduction of such technology in which driver, Uber and the governor are jointly responsible for the accident. As the driver didn’t follow the ethics on her duty. Uber had not avoided risk factors and the governor who represents public had avoided code of ethics while introducing new technology on public roads.

### CONCLUSIONS

To wrap up, It can be said as the car who killed Elaine Herzberg was autonomous but it was under testing hence it was the duty of the driver to take action in the certain situation and follow the ethics. It was fatal of the Uber to introduce immature on roads and the government should take the lesson that the public should be aware of the new technologies roaming around them are safe or not. This Uber fatal had set an example for the other companies working in the same field. Also for the public to follow the basic rules on the roads to avoid such collision. As the mistakes of the victim, the driver and false practice of Uber and governor lead to a big accident which has a big impact on the industry. Hence it can be stated as Technology had emerged to provide a better lifestyle to human but oppositely such cases makes an excuse for the use of better technology just because of the false behaviour of the implementation, it can be assured that if proper code of ethics is been deployed such cased can be eliminated and Artificial intelligence can make a safe environment and a better lifestyle.

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