Human Driver Ethics for Automated Vehicle Technology

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Abstract

This experiment follows the accelerated improvement of artificial intelligence, specifically automated vehicles. There are concerns regarding the safety of the technology due to the complex nature of ethics and decision making, which varies even amongst humans. Thus, we tested New York City citizens with a self driving car simulation in order to understand what is considered socially acceptable. Developed through programming and publicized on an online platform, the experiment challenged participants by presenting conflicting moral predicaments that actual autonomous vehicles might face in their travel. Due to its accessibility, the simulation reached thousands of people from every borough: the Bronx, Brooklyn, Manhattan, Queens, and Staten Island. The data supported conclusions that ethical and moral principles differed slightly based on demographic and district, depending on the main cultural traits and beliefs of the community, and provided conducive information on admissible city wide principles and ethics, which can therefore be used when establishing machine principles that should be followed in order for automated vehicles to execute safe driving.

Introduction

For the past few decades, technology has been rapidly advancing, providing humans with computer machinery and robotics that have dramatically transformed society and the world. No sector has been left untouched: media, healthcare, business, science, and more. Specifically, artificial intelligence (AI), the ability of a computer to perform human tasks or conduct human behavior without assistance, has sparked great interest. AI embodies aspects of human intelligence, such as decision making, speech recognition, and visual perception, which is opening doors for the future of automotive technology.

According to a new survey conducted by Texas A&M's Transportation Institute, New York City has the worst traffic in the country, with a New York-Newark driver spending an average of 56 hours stuck in traffic (CBS News, 2021). NYPD records have also reported that traffic fatalities have surged by 35 percent in just the first quarter of the year (Skelding, 2022). These appalling statistics are indicators of the pandemic’s effect on New York City. Social distancing decreased pedestrian travel and public transportation use, which meant more cyclists and drivers emerging

on already dangerous, crowded, and accident-prone streets. Evidently, this is a huge problem and poses many risks for New York City residents and tourists. Autonomous vehicles, or self driving cars, which are mainly functional using artificial intelligence, provide a potential solution to the inevitable consequences of human error.

Computers programmed to follow street lights, stay under the speed limit, and abide by traffic laws sound incredible at first glance. However, car manufacturers, politicians, and consumers are all concerned about the morality and ethical principles that machines will follow in the midst of a difficult, life-threatening situation. Ideally, self driving cars will make the right decision in every encounter as long as they're programmed to do so, but this is extremely hard to achieve- mainly because not every situation is black and white. For example, imagine a self-driving car that has to choose between crashing into two elderly grandparents, or three homeless people. What decision should that car make, assuming that the crash is inevitable and regardless, lives will be lost or injured? What do New Yorkers consider socially acceptable morals? What morals should machines follow? If an accident does occur, who are we to blame: the self driving car, the passenger, the mechanic who created it, or the company? How can we prevent the most vehicle deaths as much as possible and make sure that automotive technology does not pose more danger than human drivers? These are all questions we wanted to help answer when we executed this experiment.

Our objective for this experiment was to learn more about the ethical principles that are most valued in this city, so that cars controlled by artificial intelligence can be programmed with socially acceptable morals. The results of the experiment were essential to the development of self driving cars, as well as the future of New York City's traffic security and safety. By conducting this experiment, we hoped to find research that will help decrease traffic casualties in New York City, and eventually, the rest of the world. According to a report on internet trends by Bond Capital, more than half of the global population has connection and access to the internet, a fairly new technology that continues to invade every aspect of our daily lives (Meeker, 2019). With this recent innovation comes fruitful opportunities for researchers to gain data on public opinion due to the comfortable anonymity and accessibility that the internet provides. Therefore,

for this experiment, we took advantage of that opportunity, and created a simulation in which the participant will take on the role of a self driving vehicle.

- Background research on artificial intelligence & self driving cars
- Objectives of the experiment
- Justification for why the experiment needs to be carried out
- Define important terms/theoretical concepts
- Briefly describe methods

Materials

- Simple list of all materials
- Human subjects, organisms, tools, sketches, diagrams, schematics, or photographs

Method

- Procedure
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Results

Discussion

Conclusion

References