

Developing an Integrated System Based on Artificial Intelligence in Self-Driving Cars to Enhance the Efficacy of the Autonomous Vehicle

Kanishka Kashyap

Vandana International Sr. Sec. School, New Delhi

ABSTRACT

This research paper examines the positive and negative effects of artificial intelligence on self-driving cars and the auto industry as a whole. The primary objective of this research is to identify and offer concrete solutions to the problems brought on by the excessive amount of technology in automobiles. The method used in this study begins with the identification of the flaws, then examines and comprehends the reasons for those flaws, and finally incorporates solutions to overcome those flaws from the conclusions of the analysis report. The findings of this study attempt to reconcile the uncertainty and certainty surrounding the number of driverless car accidents.

INTRODUCTION

Artificial intelligence is emerging and is the foundation for all upcoming inventions. Humans have only just begun to tap into the immense potential that the current era has provided with technology. Artificial Intelligence will undoubtedly be the focus of future designs. Systems and satellites that would no longer require human presence or intelligence to discover neighboring planets, as well as robots for domestic or commercial use, would all operate on the principles of artificial intelligence. Virtualization and augmented technology are used in educational and tourist attractions.

The field of data science, which combines aspects of artificial intelligence, machine learning, and deep learning, has made a name for itself as a driving force. The prospect of flying automobiles in the future seems plausible in light of the current scenario in which these technologies coexist with driving. Since there are 1.4 million accidents annually, they are considered to occur as long as drivers are allowed to operate motor vehicles. This can be significantly reduced by using AI technology in automobiles, which also has the benefit of using less fuel [2]. Artificial Intelligence in self-driving vehicles will be the dominant mode of transportation in the foreseeable future. Because the study of this emergence is still in its infancy, numerous advancements remain to be made [3]. How self-driving cars have interacted with everyday activities and routines would be quite evocative in a future vision. Not only will fully developed nations have self-driving automobiles on the road, but many developing nations have also begun setting up committees and conducting research on self-driving automobiles [4].

METHOD

The descriptive approach was utilized in the design of this paper in light of the context of the research paper. This suggests that the findings of the study were carefully crafted by reading and evaluating previous works written by a variety of authors with relevant experience and knowledge. In order to make the research findings definitive and concrete, interviews have been conducted with colleagues and guides from the department. These individuals are crucial to the precise outcome of the study.

FEATURES

A. Best-Route Searching If the driver drives, getting from the starting point to the destination is simple. The Integrated Navigation System, on the other hand, must be able to automatically plot the route to the destination in the driverless car mode. To determine the longitude and latitude of satellites, automotive navigation systems make use of Geographic Information Systems (GIS) and the Global Positioning System (GPS).

B. Device Position The generation of the vehicle's position using only the vehicle's initial location and destination information is the primary goal of technology for self-driving car positioning systems. This data will be generated by the GPS.

C. The Device's Physics The combination of a vehicle's speed and direction constitutes vehicle control. After that, the vehicle's proposed controller would carry out the necessary calculations and send them to the control system for the vehicle, thereby controlling, among other things, light, speed, and direction.

DISADVANTAGES AND RESOLUTIONS

Currently, it is a well-known and established fact that AI in driving has reshaped the automotive industry's future in such a way that it minimizes the effort for both the driver and the passenger. However, just as there are two sides to every coin, the technology that has made driving quick and independent also has disadvantages.

A. Lane Structure A self-driving vehicle is unlike any other vehicle capable of traveling on a concrete road. Any autonomous vehicle must have the ability to change lanes to function and drive quickly. Huge organizations like Audi, Google, BMW, and Nissan have said that autonomous cars will be available soon. However, it's possible that they'll need to be informed that the road infrastructure might not be suitable for these vehicles. In nations where even standard cement and stone roads are prone to puddles and poor quality, conventional automobiles reduce the likelihood of such an advancement [5]. Instead of installing poles to support lanes, re-constructing them with sensors and cameras embedded within them would be an ideal solution.

B. Privacy Autonomous vehicle technology uses adapters and sensors at various checkpoints to collect visual data for analysis and learning. The application of this training data to test data for future perception or prediction follows. The system administrator's attempts to steal this data and distribute it to terrorist-related organizations create issues. Privatization will always be compromised as long as the internet exists. As a result, the use of self-driving cars is subject to strict legal regulations and proper authorization [5].

C. The Replacement of Older Vehicles Assume that the previous automobiles remain on the same platform. As a result, autonomous vehicles may experience unpredictable outcomes and compromise security when interacting with other vehicles [5]. This is one of the greatest difficulties experts face; To make autonomous vehicles more effective, they would need to be replaced by older, conventional automobiles.

D. Valuation The technology that made self-driving cars possible is still new, and raw materials are limited, so autonomous cars cost much more than regular cars. However, a study by JD Power predicted that 37% of current conventional car owners would choose self-driving vehicles as their next investment [5]. For instance, Google has developed an AV model that is utilized in self-driving vehicles, emerging as one of the leading manufacturers of self-driving automobiles. Additionally, for a typical middle-class individual to purchase or start a business can cost up to \$80,000. Few reports say the prices will drop half as fast.

E. Drivers' Perspectives on Unemployment Driving with artificial Intelligence can eliminate human error. Self-driving vehicles powered by artificial Intelligence will never require a human operator for operation or maintenance. Engineers will soon take the driver's seat as this technology becomes more widely used in driving.

Millions of people worldwide work as drivers, one of their main sources of income. Every possible short- and long-distance mode of transportation necessitates a taxi. It could significantly impact businesses that employ people in this field. Inversely, there is an increase in the demand for technology-savvy engineers, which would impact the time constraints once more [5]. During manufacturing and design, the only requirement will be manual labour.

CONCLUSION

In the automotive and transportation industries, Artificial Intelligence technology is common. It is expected to meet human needs by automating all aspects of life support. The industry, the current need for facilities, and the existence of Artificial Intelligence technology—which is anticipated to meet human needs through automation technology in all areas of life support—all play a role in the transportation and automotive industries. Driverless cars powered by AI are extremely beneficial because they give customers more time to do other things while offering superior transportation services.

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