The Pros and Cons of Self-Driving Cars: A Comprehensive Analysis

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Abstract: *The development and integration of self-driving cars have gained significant attention in recent years. While proponents argue that autonomous vehicles have the potential to revolutionize transportation, enhance road safety, and improve overall efficiency, critics raise concerns regarding their reliability, ethical implications, and potential job displacement. This research paper aims to explore both sides of the argument surrounding self-driving cars, considering their advantages and disadvantages, to provide an objective assessment of whether they are a good or bad idea*

Keywords: Self-Driving, Iot, Automotive Engineering, Road safety.

I. INTRODUCTION

A self-driving car (sometimes called an autonomous car or driverless car) is a vehicle that uses a combination of sensors, cameras, radar and artificial intelligence (AI) to travel between destinations without a human operator. To qualify as fully autonomous, a vehicle must be able to navigate without human intervention to a predetermined destination over roads that have not been adapted for its use. Nowadays, autonomous cars have been a prominent focus of automotive engineering research. Designing dynamic route tracking as a crucial component of the control system is one of the most difficult technological difficulties facing autonomous vehicles. A road accident is the worst incident that could ever happen while driving as they happen quite a lot and the majority of them are caused by human error. Self-driving cars are being developed from day to another. It is a creative invention where the car is operated by a computer It is hard to convince people that having a self-driving car is safe as they cannot trust a machine to keep them safe. The system consists of a raspberry pi as the main component that runs the algorithms, cameras attached with the raspberry pi, and a variety of sensors. Also, there is an important component in the system which is the Arduino as it is responsible for the car motors and their motions.

II. ADVANTAGES OF SELF-DRIVING CARS

Computers based on sophisticated systems and algorithms will essentially eliminate costly human error. Major causes of accidents, including drunk or distracted driving, will not be factors with self-driving cars. It's estimated self-driving cars can reduce accidents by up to 90%. One Of the major factors when weighing the pros and cons of automated cars is the cost to society. Reports have shown that autonomous vehicles can help save society approximately each INR 80,000 Crore each year. The reduction in car crash-related costs, reduced strain on the healthcare system, more efficient transportation, better fuel savings, and more can all contribute to the overall societal cost-savings.

2.1 Road Safety

Using on-board sensors and evaluation equipment, they will have a 360-degree view of their surroundings at all times. Removing the driver from the equation will also reduce the element of human error in driving. In 2022, Automakers reported approximately 400 crashes of vehicles with partially automated driver-assist systems to the NHTSA. 273 of

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these accidents involved Tesla's (the most common vehicle with self-driving capability), 70% of which used the Autopilot beta at the time.

2.2 Increased Efficiency

Benefits of self-driving cars is their ability to communication with each other. With this ability to communicate in real-time, cars would be able to travel efficiency at optimize distance from each other. They also determine the best route for you take, as to eliminate bumper-to-bumper traffic jams. It also modifies the cruise control accordingly, slowing down or speeding up to go with the flow of traffic. If most vehicles utilized this technology, it would help keep traffic flowing at an even speed and reduce some of the traffic backup that occurs when cars hit the brakes.

III. DISADVANTAGES OF SELF-DRIVING CARS

The biggest con of driverless cars is that they would cause many people to lose their jobs. Not only cab companies and rideshares disappear over time, but trucking companies would no longer need to hire drivers to transport goods. Improved driving would mean police departments would need fewer officers to handle things like traffics and speeding tickets. Finally, since its expected that most driverless cars will rely solely on electricity for power, the fossil fuel industry will eventually fizzle out. Security issues: One of the potential cons about self-driving cars is the possibility of hacking. Job losses: Those who depend on driving to make a living may find their career obsolete with the introduction of self-driving cars.

3.1 Job Displacement:

Those who depends on driving to make a living may find their career obsolete with the introduction of self-driving cars. Those in trucking industry, bus driver, taxi driver, will all need to find new employment. Fast food delivery and Uber drivers would also find themselves replaced by automated cars. More than four million jobs will likely be lost with a rapid transition to autonomous vehicles. Driving occupations, including delivery and heavy truck drivers, bus drivers, and taxi and chauffeur drivers, would be heaviest hit.

3.2 Privacy and Data Security:

One of the potential cons about self-driving cars is the possibility of hacking. To have automated cars talk and coordinate with each other, they would need to share the same network protocol. If a large number of cars share the same network, however, they would be susceptible to a hack. Even a small hack could wreak significant damage on busy roads by causing collision and gridlock traffic.

IV. CONCLUSION

There are many different opinions on self-driving cars, but the most important thing is to make an informed decision. We had make research and get information on this.Traffic accidents are the leading cause of death for young people, and 90% of them are caused by human error. Self-driving cars have the potential to drastically reduce the number of accidents and save lives. In addition, self-driving cars could also ease traffic congestion and reduce pollution.

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