

Autonomous Cars—Redefining Moving Around

In this age of innovations, one of the emerging technologies that will have a huge impact on society is the advent of the autonomous car. An autonomous car is a self-sufficient car that can navigate and manage an entire trip on its own without any input from humans.

Although phrases like 'self-driving', 'automated', and 'driverless' are used interchangeably, the distinction lies in their level of automation. The difference between automatic and autonomous lies in the degree of human intervention. According to SAE convention, level 5 automated cars can be called autonomous or driverless, whereas cars at level 4 or below are only self-driving. A fully autonomous car would decide on destination, routes, and even control and manage the lanes whereas a self-driving car would simply follow given instructions regarding the destination and route.



Google's self driving car Waymo

Many top auto-makers are taking major steps towards the development of self-driving cars. Google's self-driving car, Waymo, has attracted a lot of attention. It comes equipped with a laser range finder, LIDAR, which is a rotating rooftop camera, and for near vision, a front camera. It also has a radar mounted on the bumper and ultrasonic sensors on both rear wheels. Not lagging behind the competition, car giants Tesla and Ford are also launching their respective products on this front. Uber has launched self-driving cars and hybrid Ford Fusions around Steel City, Pittsburgh. It has sought co-operation from local officials and law enforcement concerning their testing in the city, keeping the safety of pedestrians, cyclists, and other drivers as its top priority. Major progress is taking place in the direction of fully autonomous cars.



Uber's self-driving cabs in the city of Pittsburgh

The impact of self-driving cars is spread across multiple spheres. Socially, it can have a very high impact on people's lives. For people with special needs, it can open up a whole new pool of opportunities in the direction of independence. For the elderly, it can mean accessibility to the outside

world for those who are otherwise cooped in their homes. It provides a new sense of security when the safety of women is concerned. For fuel economy, automation would mean a lowered carbon emission level and increased fuel savings. With no human intervention, driving would be more consistent. There will be smooth lane switching, parallel parking, speed will be controlled, and traffic management will become smoother.



Inside of a self-driving car

On the flip side, there are problems that can crop up with this technology, as well. With regard to implementation, the major issue is that the technologies used in these vehicles are extremely costly, at least as of now. Even though reports claim that Google's investment in Waymo has cut down the high-end LIDAR price to \$7500, it is still a hefty price tag for a single component. Unfortunately, there's no way that the middle class will be able to afford these anytime soon.

With the self-driving technology relying heavily on software, there is always a risk of malicious hackers breaking the security wall and gaining access to the car. In a world where the Internet is all-pervasive, nothing is absolutely safe, including this technology. The issue of unemployment certainly relates itself to the topic as it will cost jobs. Experts are concerned about an increase in cyber-attacks due to dissatisfied people who would lose their jobs.



Manufacturing of a self-driving car by GM

Self-driving cars also raise some very important ethical questions. One of the biggest is 'what if there comes a situation where casualties cannot be avoided?' For instance, a situation might arise when an autonomous car may have to make

a decision between hitting a person who is walking on the footpath and crashing into another car full of passengers. Will it choose the greater good, or will it endanger more lives in order to save one? Also, if the car is programmed to sacrifice the occupant during an inevitable crash, would anyone invest in it?

Another topic that needs to be addressed is accountability. Between the manufacturers and consumers, who will be held responsible for it? Insurance companies can take advantage of any loopholes, making the lives of common people difficult.

Amidst all these debates, arguments, and counter-arguments, this technology is growing slowly and steadily, battling new challenges every day. As artificial intelligence is slowly spreading its branches, this particular field has given it a new direction. While it certainly will take its time to gain a strong foothold, this might just revolutionise transportation in the years to come.