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AUTONOMOUS VEHICLES: RISKS AND BENEFITS

Annually technology advances, becoming more robotic and independent. They are being constantly accelerated in development by programmers, and functionality is being peaked in automation. It applies to completely different types of vehicles, including air, sea, road, and rail. Like all machines, they have a mix of benefits and drawbacks. But before that, we need to understand how an autonomous control system works in general.

Self-driving vehicles can make safe decisions without human intervention. For this purpose, cars use Smart Eyes called sensors. They provide all the necessary information about the size, shape and position of the obstacles, no matter how difficult the conditions or bad weather, whether it's foggy or rainy. To accomplish this complex task, the car uses a special laser tool called LIDAR and a smart communication technology called Integrated Photonics. LIDAR sends out laser beams that bounce off the objects and return to the car sensors, creating a 3D map of the area. It’s like a blueprint that tells where everything is, even the smallest details, from the clothing items on pedestrians to the nearest eateries and road signs. Now the system uses a constantly updating 3D map, called Journey, to navigate safely through the ever-changing environment. It can make split-second decisions avoid obstacles and keep out of danger. Besides these two tools, cars also use a multitude of cameras to have extra distance calculation factors for optimal decision-making. That’s how autonomous vehicles can see and sense the environment around them. So, what about their additional pros and cons?

On the one hand, fully autonomous vehicles have the chance to significantly improve our world by reducing pollution, cutting down on emissions in the air, increasing traffic efficiency, and potentially eliminating up to the most of all traffic accidents. Machines always make a calculated choice in a given situation; they are not able to show any emotions, rely on reason or be distracted by the type of task at hand because they are programmed mechanisms.

However, not all accidents can be avoided, and some of them will require self-driving vehicles to make difficult ethical decisions in cases involving

unavoidable harm. Many drivers encounter it in instinctual panicked reaction without a deliberate decision. But if a programmer were to instruct the car to make the same move in the same situation, that looks more like intentional homicide because every move of the machine was planned.

Self-driving cars have the potential to completely change our commutes since there's no actual driving required because we could use this time to work on the go but if our commute is particularly long, there is a possibility to do what we want, for example, to watch TV, check social media, scroll feeds or even sleep.

Despite that, as with many other technologies, they are going to eliminate some jobs. It's predicted that millions of professional driving jobs will be wiped out. It's also possible that related fields like car insurance and auto repair could be affected, even though new jobs will emerge during this transition, it could prove to be a difficult time for many.

Parking will be less of an inconvenience whether we are in a busy parking lot or looking for a spot downtown. The car can drop us off and then go find a parking spot on its own.

Nevertheless, self-driving cars are going to be pretty expensive. Hardware like cameras and sensors, and the software required to process the incoming data could make things fairly pricey. It means that car ownership will decrease in the future.

To summarize, autonomous vehicles offer considerable benefits to society, but at the same time, they face obstacles, including ethical issues in unavoidable harm scenarios, the elimination of driving-related employment and the significant costs associated with their complex hardware and software. In essence, autonomous vehicles are revolutionary, but they still struggle to balance significant benefits with significant drawbacks and challenges.

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