Autonomous Vehicles

An autonomous vehicle is any vehicle (most commonly cars) that has the ability to complete certain tasks and actions without the input from a human. Currently autonomous vehicles have a special classification to describe the autonomy of the car, ranging from level 0 to level 5. Starting from level 0 (No Automation), this involves no autonomy, where the driver has full control of the car. Level 1(Driver Assistance) is where the car can now control certain functions the car such as either steering, acceleration or breaking. Level 2 (Partial Automation) allows the car to be able to steer, accelerate, decelerate and brake, all while the driver does not have his hands on the wheel. Level 3 (Conditional Automation) now allows the car to completely drive in the correct conditions, where driver input is only needed in conditions where the car cannot navigate. Currently, most if not all car manufactures are at level 3 of automation. Level 4 (High automation) These vehicles have the ability to perform close to all road driving tasks without user input, but do not cover every driving situation. Level 5 (Full automation), at this level the car will be no different to that of a human driver, and will require no human input what so ever.

Autonomous car are equipped with a multitude of sensors and radars called “LIDAR”. This allows for the vehicle to have a complete perspective of its surroundings, as well as have the ability to be able to perceive aspects of the road such as lane markings, street lights and signs and evidently other cars. Ultimately this allows for car to be able to safely drive its self on the road, with little to no input from the actual driver. At the current moment the most common autonomous vehicle technology available for consumer purchase is being developed by car manufacturers such as Telsa, Mercedes and Audi. Currently these cars have the ability to be able to be able to detect up to 5 metres around the car in any direction while traveling at any speed, this allows the car to be able to make safe and cautious decisions when deciding if it is appropriate to complete actions such as changing lanes. With the technology equipped the car can do upwards of controlling the breaks and speed of the car while traveling in a lane, steer the car, change lanes and self-park, both perpendicularly and parallel. In addition, the driver is not required to even be in the car to be begin operating it, as manufactures such as both Telsa and Audi have developed technology that allows these cars to automatically start and drive towards the users, as well as park themselves again. In the next 3 years vehicles are expected to be able to reach level 4 automation. Currently the only vehicle close to this is the Google “FireFly” pod car, which can operate without a steering wheel or pedal, but can only travel at a top speed of 25 mph, enabling performance in real world scenarios.

Development of these level 4 vehicles is being made possible through the advancements of LIDAR sensors which are not only close to 50% cheaper in comparison to previous years, but also have been improved in their operation, allowing for increased research and development into autonomous vehicle technology.

Impacts

Overall, autonomous vehicles will have a positive impact in the world. Primarily, the development of these vehicles would result in a substantial drop in the amount of car accidents that occur across the world due to the partial elimination of human error in these incidents. Furthermore these vehicles would have the ability to autonomously do things such as collect data for mobile service and technology supplier’s which would overall result in an increase in both research and development in technology and the global economy. Additionally, development of these autonomous vehicles would also soon result in the development of electric vehicles which are superior to petrol vehicles in terms of protecting the environment resulting in overall lower global energy consumption.

Conversely, autonomous vehicles could have a negative impact because of the amount of jobs that could be made redundant due to their use. This would primarily include jobs such as truck and taxi driving, the most common jobs in countries such as the USA. This would also affect people such as mechanics and auto body repair shops due to the significant decrease in car problems and accidents that will occur. Even government jobs such as public transport positions train, bus, V-line and tram drivers will be effects as a driver is no longer needed for their operation.

In our daily lives, autonomous vehicles will affect in us in various ways. Personally, autonomous vehicles would overall improve public transport, a major aspect of daily life, as autonomous vehicles would improve transport planning as data could be collected on road and traffic matters. Additionally, costs of transport would overall decrease due to less money being spent of paying employees who would usually drive public transport services. Furthermore, this could affect certain family member and friends, most notably those who are elder or disabled. Allowing them to be more mobile than they otherwise could have been.