**Autonomous vehicles**

**What is an Autonomous vehicle?**

The word autonomous actually stems from the Greek word autonomos, auto (self) and nomos (law), actual experiments on self-driving cars have been happening since the 1920’s and in the 1950’s trials had begun. The Tsukuba Mechanical Engineering laboratory was the first to develop a semi-automated car in 1977 and the first truly autonomous cars started to appear in the 1980’s and where funded by the Defence Advanced Research Projects Agency (DARPA).

An autonomous vehicle, sometimes called a self-driving car, and has even been referred to as a robot car is a vehicle that exercises control over itself (it is self-governing or self-ruling ) and uses a multitude of sensors to analyse its surroundings such as radio detection and ranging (RADAR), Light detection and ranging (LIDAR), Sound navigation and ranging (SONAR), Global positioning system (GPS), Odometer, Inertia measurement and sensory information systems to help it stay on its navigation path. Autonomous vehicles do not generally need any driver or human input although this depends on its level of automation.

Currently there are a multiple of companies leading the way in the design and creation of autonomous vehicles, some of these car companies are well known like GM (General motors (Holden)), Ford, Volkswagen and Bayerische Motoren Werke (Bmw), and some of these car companies are not common names in Australia such as Waymo (Google (2009~2016) & Alphabet (2016~)), Aptiva, Daimler and Groupe PSA. There are also some companies that are working together such as Renault, Nissan and Mitsubishi, and there are many others.

Most of the car companies listed above have predicted that they will have self-driving vehicles ready for highway driving by 2020~2021, and will have urban ready self-driving cars by 2030. Renault and Nissan in their joint venture are hoping to accelerate this and have urban ready cars ready by 2020.

Currently there has been self-driving cars tests throughout many parts of the world such as United States, United Kingdom, Australia, Switzerland, Netherlands, France, China, Canada and Germany, and although there has been many successful test they have proven that they are not yet full proof and there has been multiple autonomous vehicle accidents so there is still a lot of work to go. Some of these vehicles involved in these accidents have included vehicles from Google, Uber and Tesla just to name a few, these some of these accidents have also been involved in fatalities which has not only been devastating for those families who have lost someone, they have also caused self-driving cars to hit a roadblock for multiple reasons and it has raised many questions like who is or will be liable in an accident situation, and a moral one of in an unavoidable event what is or who is chosen to possibly lose their lives and how do these dictions get made and by who? Who has the right to make them?

As advancements in technologies like machine learning, computer vision and computer processors improve and especially with something like quantum computing which will change the way the IT world works, the advancements in these technologies will have a great impact on the future of autonomous vehicles, their reliability and their ability to process information data a lot faster and a lot more efficiently too, and also as these technologies advances they will become more affordable making it cheaper for manufacturers to integrate them into our everyday cars.

In fact automotive vehicles have five different driving levels and these are set by the Society of Automotive Engineers (SAE International), these levels are Level zero – No Automation, Level one – Driver Assistance, Level two – Partial Automation, Level three – Conditional Automation, Level four – High Automation, Level five – Full Automation. Today’s current generation of cars would fall somewhere in the level one to level two category depending on the manufacturer and what options that they have provided.

There is also autonomous underwater vehicles (AUV) which have been designed over the past 50 years, they have been used to map the sea floor, used to study lakes and the ocean, and they also have include many different types of sensors such as compasses, depth sensors, magnetometers, sonars are many others. They are not as known as they are only sold by a few companies and are a more specialised area and not a common things for most people in everyday life and there is also drone technology too.

**What is the likely impact?**

The potential impact of autonomous vehicle technology could and will be quite large and the impact would no doubt be greater than what we could ever imagine today. When you look at autonomous vehicle technology, the way in which it will change our lives and the impact it will have on our local employment alone. Autonomous vehicle technologies will change a lot of industries (let alone how it would change industries worldwide). It will have a huge impact. Autonomous vehicles will change the way we go about life, the way that industries work, and it will change the way government’s think and government revenue both local and federal too. The Autonomous vehicle technology will have a great impact on industry and will have the potential to make truck drivers, delivery drivers, taxi drivers and possibly chauffeurs obsolete too, this has the potential to flow onto other areas and industries too. The autonomous vehicle technology has the potential to flow onto areas like shipping, where cargo ships or passenger ships will not need a captain and will calculate, control and guide themselves. The submarine and military industry will not need as many navy personnel, and this technology could flow into mining which will help minimise the risk to human life in underground or open cut mines and we could also see passenger and cargo trains automated too. This technology could take out the last interaction between pilots and plane as well. This technology will have a lot of great importance too, it will and can help create a safer environment on our roads and in there air, underwater and on the sea. It will also free up police resources which will allow them to focus on more important areas of crime, and will take soldiers of the front line which in any war situation will save many human lives.

**How will this affect me?**

I see autonomous vehicles will affect me in many ways, it will affect me in my industry as we will not have a need for delivery drivers or the need for truck drivers too. Autonomous vehicles will change the way my industry works, the way it is managed and the way I will have to go about my work, it could even change my job role. In my personal life I see autonomous vehicles having a very positive role, it would allow me to relax more and would make my journey to and from work safer too. It would also make my families life’s safer too as it will be a way to get bad drivers, drink drivers and people who drive tired off the roads, and that can only be a good thing.

Autonomous vehicles will affect my friends and family members in many ways, some of them have been truck drivers, tow truck drivers, train drivers and even couriers too. I know some of them won’t be able to just stop off on the side of the road for a coffee, a rest and will most likely have to increase their work load. Some of them will lose their jobs and will need to look at retraining themselves for a new job role that they might enjoy.

Autonomous vehicles for me will be great, I look forward to them, and I look forward to the day I don’t have to drive. See with a wife who does not drive, I have to drive every day and to be able to sit back and just chat without worrying about traffic or getting stressed or running late due to traffic jams, and to see the end of road range will be great. I look forward to where we can both jump in an autonomous vehicle and head off out, go to dinner and have a few drinks at the pub and not have to worry about driving home.