

This essay is part of the final project in “English Written Communication”. In this final project, students have to express their opinions or comments about a recent news event in the world.

Spring of the Driverless

Group 6

Looking down on the bridges, highways, and streets, you can see countless vehicles lining up on the road, crawling like ants raid. And the problems of traffic jams, car accidents, and environmental pollution naturally come by. Scientists, engineers, and numerous great companies are eager to find solutions to these problems. Fortunately, we may have found the answer. Autonomous car is a promising product in the future which can significantly benefit life of human beings in prospects of safety, traffic, urban space and environment.

Have you ever thought of being served by a robot? As those sci-fi movies we have watched, robots are going to improve human beings' life in near future, especially in transportation. Thanks to the advanced technology, people have invented autonomous car which is going to change our daily life dramatically. Autonomous car is a self-driving car which can steer itself automatically and unmistakably. The first autonomous car in human history dates back to 1980 when Carnegie Mellon University's lab created the first self-sufficient and truly autonomous car. However, not until the last decade did the car manufacturer have make substantial improvement in autonomous cars. Volkswagen invented a brand-new model in 2008 which allow autonomous cars to identify the traffic lights and stop signs, so autonomous car brakes precisely and drive safely in human world. Just like vending machine selling beverages with no staffs, autonomous cars require no driver to drive it. Taking autonomous cars means cars' owner no longer have to focus on traffics when

commuting. For example, as business people, they could take a rest comfortably after an exhausted day. The convenience brought by autonomous cars is beyond imagination. With the benefits of automation and accuracy, autonomous cars would greatly enhance the qualities of life.

In 2015, more than 2,000 people lost their lives on the road in Taiwan, which was mainly caused by alcohol, drugs, distractions, carelessness and fatigue. Now, thanks to the autonomous cars, the concerns of personal safety will be reduced. Drivers are easily being distracted by external factors such as chatting with friends in the cars, looking at the advertisement board on the road, or using smartphone browsing Facebook, all of which may lead to potential accidents. Fortunately, because of the invention of high-tech sensor, autonomous cars can steer a drifting car back into its lane, calculate the precise safe distance, and detect the surrounding environment, identifying signage, pedestrians, and cyclists near the car. Furthermore, the self-driving cars can automatically accelerate, brake, make turns and even alter different speed according to the road condition by using sensing capabilities and software. This advantage prevents drivers from being threatened by the dangerous situation. Autonomous cars can reduce the numbers of accidents and deaths since robots could exclude human factors. In the near future, emerging autonomous cars will minimize the risk of danger exposed to human beings.

The problem of the traffic jam is another major concern for drivers nowadays. With the development of autonomous cars, traffic would be improved for several reasons. First, since the high-tech sensors equipped in autonomous cars can precisely detect distances between vehicles, autonomous cars are able to maintain certain distance at high speed. Therefore, the distance between cars can be significantly shortened, which

thus eases traffic at peak times. Second, autonomous cars have shorter reaction time compared to human beings. As a result, speed limits will be elevated, which alleviates traffic congestion accordingly. Third, driver-less vehicles will lower procrastinations at signalized intersections. Because autonomous cars can communicate with each other, they will merely decelerate a little and "slot" their way through intersections at steady speeds without resulting in crashes. This will decrease traffic lights, and we don't need to wait for the lights to turn green. Therefore, roads will be able to accommodate more cars. Finally, autonomous cars together with Vehicle-to-Vehicle (V2V) can work together to aim for System Optimal routes. This can reduce the whole travel time and bring more convenience to drivers on roads.

At the level of urban design, autonomous cars can bring huge benefits. As urban population increased, problems of parking space shortage have become much more serious. According to statistics from Ministry of Transportation in Taiwan, more than 790,000 cars registered, but the total amount of public and private parking space are only approximately 650,000. Thus, parking space design has been a headache when projecting urban design. However, studies have found that about 30 to 60 percent of cars driving around are just wandering for an open space to park. If autonomous cars become the main stream in cities, parking space shortage would no longer exist. When the drivers arrived at destination, autonomous cars can automatically drive out to remote parking lots or even suburb. As a result, the demand of parking space will decline, and people can make better use of urban space.

Autonomous cars may be the best answer to the knotty environmental problem of air pollution. According to statistics of Taiwan Environmental Protection Administration, roughly four million tons of vehicle exhaust is emitted in Taiwan every year.

Moreover, it is mainly composed of hydrocarbons, carbon monoxide (CO), and nitrogen oxide (NO_x), all of which are harmful to human bodies and like invisible killers gradually shortening our life span. Fortunately, thanks to studies of engineers, environmentalists and meteorologists, driving autonomous cars has turned out to be the better choice for reducing emissions. Driven by computers, autonomous cars use energy more efficiently for computers' complicated counting. In accordance with BAAQMD, driving with a constant velocity could decrease pollutant emissions from cars; meanwhile, researches have proved that vehicle exhaust is emitted much more when cars decelerate or accelerate. Therefore, autonomous cars can reduce pollutant emissions, for they can use complex algorithms to maintain a constant driving velocity. On the basis of past research results, driving at constant speed can decrease 15% CO, 15% hydrocarbons and 20% nitrogen oxide, compared with driving at irregular speed. Remaining at certain speed is hard for human, but not for computer. Hence, the increase in autonomous cars usages could also solve the problem of air pollutant.

The driverless revolution is racing forward, and a brand new era is followed by. Human beings have made a substantial improvement in self-driving industry in the last decade, and it is further expected to expand rapidly. Autonomous vehicles could radically enhance our living by reducing traffic deaths, curing congestion, improving space usage, and decreasing pollutant emission. If you are fond of sci-Fi movies, hoping someday to live with intellectual machines, autonomous cars could be your first robot.

This essay is written, revised and edited by the students in Group 6 in the course “English Written Communication” at the Center for Language Studies in National Chung Cheng University.