

Self-driving Transportation System for Eco-campus

ABSTRACT

In large campuses such as UMS and NTU, students need to move at long distances. The transportation of choice has been public transportation. The most common is in the form of buses. Buses need bus stops at strategic locations and only travel at intervals. Although buses are the most eco-friendly among all the transportation systems within a campus, alternative technologies had been studied to improve it further. Self-driving technologies are the most promising. Combined with sharing technologies such as Uber share, self-driving cars offer the most promising solution. Self-driving technologies are already under active development. Campus application should be the first choice for deployment. Campus environment is a private environment so is well controlled. The maps and network infrastructures are well established so will allow reliable self-driving technologies to be used within the campus only. It is therefore surprising that there are few trials involving self-driving transportation systems in a campus environment. There are various possibilities, but all these should be overcome in order to have a truly eco-friendly environment within the campus. Electrical shared self-driving cars allow eco-friendly mass transportation of people because electricity is a clean energy. Sharing allows full utilization of the vehicles unlike other modes of transportation. Mobile apps and GPS allow pickup of passengers at any safe place instead of just at designated places. Because self-driving cars have no drivers, small vehicles may be used economically without the added costs of an extra non-paying passenger and salary of the driver for each vehicle. The lack of any driver also makes it safer for the students especially female students. Although there are still issues of safety among current self-driving technologies as had been shown by the accidents suffered by Tesla cars running on even semi-autonomous modes, safety within the campus should be much better and there is no need for full certification from the transportation authorities. Operating within the campus environment allow operators to operate without the strict licensing requirements of the public transportation environment. Safety can still be ensured by restricting the operation of the self-driving vehicles within clearly marked roads in the campus, enforcing safe speed limits such as the 50 km/hr imposed by Google and restricting operations in clear weather and daytime only. With remote operators and emergency buttons, even the semi-autonomous modes that are within the capabilities of current hardware, self-driving ride-sharing cars should be possible.