

# BACKGROUND

Nowadays, Self-driving cars play an essential part in people’s daily lives, and the technology is also growing fast because of the development of AI. Making travel secure and easy is the main goal of developing self-driving cars. However, as we know accidents happen every year. Therefore, it becomes urgent to have a comprehensive analysis on autonomous cars for possible technological issues.

# CAUSES

There are various technical factors that contribute to accidents and risks in autonomous vehicles. According to Wang et al. (2020), these errors can be divided into two main types: perception errors and planning errors. Perceptual errors occur when devices are unable to accurately collect the information from the surrounding. This is usually due to broken hardware or communication problems. For example, the damage of the camera device can lead to the loss of image data around the car body. And these perceived inaccuracies can greatly reduce the decision-making ability of self-driving cars. In addition, the bad weather conditions such as heavy rain, fog, or snow can interfere the sensor, leading to an increase in perception errors.

Compared with perceptual error, the program is more difficult to correct errors. Wang et al. (2020) contend that the intricacy arises from the absence of advanced security mechanisms capable of efficiently analyzing and responding to the data obtained from perception systems. For instance, although the vehicle may accurately detect an obstacle, planning inaccuracies could transpire if the vehicle fails to determine a secure and effective route to navigate around the obstacle, potentially resulting in a collision.

# EFFECTS

First comes public concern and misunderstanding: as more and more accidents are reported and unexpected technical failures are taking place, the public began questioning how safe it was to travel in a driverless car. As Othman (2022) quotes in his experiment, ‘Every accident or technical glitch may make people skeptical and distrustful of self-driving cars’.

The second impact is accidents and fatalities. In most driverless car errors, system perception and planning errors are to blame. When a vehicle fails to take up proper information from surroundings, which in reality are complex, then the car cannot perceive the road, leading to a class yaw or jaywalk. The inability of safety systems to process this information therefore often leads to various planning errors that increase the chances of an accident. These mistakes increase the general risk of accidents and fatalities associated with self-driving vehicles (Wang et al., 2020).

The last influence is technical limitations: whereas the end-to-end design approach aims at improving the different functions in self-driving vehicles, it also leads to a more complex system with a much higher likelihood of technical failures. These limitations may prevent the public from grasping how such a system works and create distrust in driverless systems (Coelho & Oliveira, 2022).

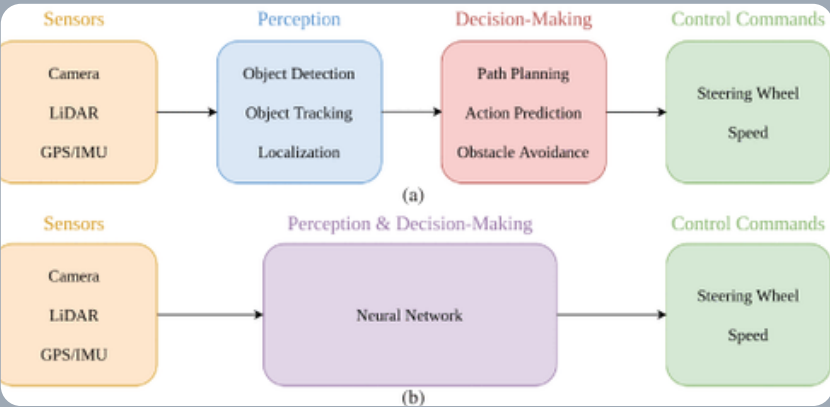


Figure 1 Wang et al. (2020)

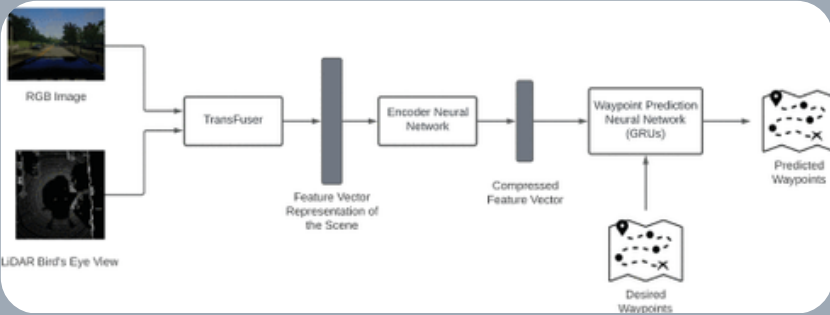


Figure 2