

Collision Technology

Avoidance

October 8, 2020

In News

A collision avoidance system, also known as a **driver assistance system**, is a safety system designed to **prevent a collision or decrease its severity in the few seconds before it occurs**. Certain systems use AI machine vision technology, while others also use dash cams for images and GPS for location information to detect an imminent collision. Once a collision is detected, these systems can alert a driver via sound or light to help prevent the collision from occurring.

Types of Collision Avoidance System

- **Forward collision warning system (FCW):** An FCW system is an advanced safety technology that monitors a vehicle's speed, the speed of the vehicle in front of it, and the distance between the vehicles. If vehicles get too close due to the speed of the rear vehicle, the FCW system will warn the driver of an impending crash.
- **Lane departure warning system:** This type of collision avoidance system is designed to alert drivers if their vehicle begins to drift out of their lane, and can be particularly useful for aiding with blind spot detection in real time.
- **Pedestrian detection system:** Pedestrians and cyclists can be some of the most vulnerable targets for vehicles. A pedestrian detection system uses sensors to identify human movement on the road, like cyclists or jaywalkers, in an attempt to help drivers see a moving object before it's too late.
- **Automatic braking system:** An AEB is a technology that automatically activates the vehicle's braking system

when it senses an oncoming object. Certain automatic emergency braking (AEB) systems will only apply a portion of the braking power to allow the driver more time to step in, while other systems will pump the brakes until the vehicle comes to a full stop.

In addition to warnings and alerts, some collision avoidance systems assist drivers in **mitigating imminent risks**. These systems will **override the driver, changing the throttle of the vehicle or applying the brakes**. The tools to inform these systems are similar to alerts, including **radar, lasers, and cameras**, however the **response of the vehicle is more proactive**. Collision avoidance features that actively assist drivers include:

- **Adaptive Cruise Control:** More preventative than reactive, these systems use radar or lasers to adjust the cruise control speed via throttle to maintain an appropriate distance from the vehicle in front.
- **Rear Automatic Emergency Braking:** Brakes are automatically applied to prevent the vehicle from backing into an object using a cross-traffic monitoring system or sensors like radar or lasers.
- **Electronic Stability Control (ESC):** An extension of antilock brake technology, ESC automatically applies your brakes to help steer the car appropriately during a loss of traction. An onboard computer monitors various sensors to determine which wheels to brake and which to accelerate.
- **Parking Assist:** Feedback from cameras and sensors combine to allow vehicles to steer themselves into a parking space while the driver controls the speed.