SNS COLLEGE OF TECHNOLOGY

COIMBATORE-35

DEPARTMENT OF MECHATRONICS ENGINEERING

19MCT402-APPLIED MECHATRONICS ENGG.
UNIT-1 INFOTRONICS

Collision warning systems:

Forward Collision Warning?

Forward collision warning is a driver safety system that uses radar, lasers, or cameras to detect other vehicles in the front area of the driver's car. Some safety systems can also detect other objects, like people, cyclists, and animals in the path of a moving vehicle.

How Forward Collision Warning Works

If your vehicle is equipped with this safety feature, the system alerts the driver through visual, aural, or tactile methods. Sometimes it issues a warning in just one of these ways, and sometimes with a combination of warnings. It depends on the system's design and, if the option to customize the notification exists, how the vehicle's owner has calibrated it.

Not all of them work the same way.

If the system employs automatic emergency braking, the technology can slow or stop the vehicle before impact if the driver takes no action. If the system is not paired with automatic emergency braking, it will only warn the driver, who must take action.

Some forward collision warning systems operate only at slower city speeds. Others work at higher speeds. Some systems can detect pedestrians, bicyclists, and large animals, while others cannot. Some cars include rear collision warnings, and others don't.

If this seems confusing to you, check your owner's manual. It will explain your vehicle's capabilities.

If you buy a vehicle equipped with a warning system, it is crucial that you understand how it works. You need to know what it can and cannot do to help you avoid a collision.

Blind-spot Warning (BSW):

This feature will warn you if a car – or sometimes other objects – is in your left or right blind spot. Warnings will appear in your sideview mirrors or in the windshield frame. Some advanced versions of this feature may give you an audible warning (or other type of warning) if you use your turn signal and there is a vehicle in your blind spot.

THE TECHNOLOGY BEHIND IT

This feature uses sensors that are always monitoring the road to your sides. They are optimized to work at highway speeds. Advanced features will work with your turn signal to provide you additional warnings if you attempt to change into a lane where another car is right next to yours.

WHAT YOU NEED TO DO

Use the blind spot warning to help you be more aware of other traffic as you travel down highways. You can also use the warnings provided by the blind spot warning when you want to make a lane change – but you should still always look over your shoulders before doing so.

TIPS FOR USING

Make sure that your blind spot warning's sensors are not blocked by moisture, snow, dirt or other material.Read your owner's manual for more information on what the blind spot warning's various warnings mean.

Blind spot warnings are optimized for highway driving and highway speeds; they may not work as well with slow-moving or extremely fast vehicles.

Some blind spot warnings are not optimized to detect motorcycles, bicycles or pedestrians. This is why you should always look over your shoulders to check your blind spots before making a lane change.

Lane departure warning system:

Lane departure warning is designed to help you avoid crashes due to drifting or departing your lane. The system detects lane markers and alerts you when a tire touches a lane marker. The warning is usually a flashing indicator and/or it beeps from the corresponding side. In some systems, the steering wheel or driver's seat vibrates gently. Generally, lane departure warning systems will not alert you when your turn signal is on.

Working of LDS:

The lane departure system uses a camera located near the rearview mirror to recognize lane markers. To function properly, there needs to be clearly visible paint stripes on both sides of the vehicle. It will NOT recognize curbs. If the system detects that your car is too close to the

left or right side lane markings, and your turn signal is not on, a warning light, a vibration, and/or sound will be activated.

In addition to the camera, lane keeping assist has a steering input assist. Lane keeping assist will gently turn the steering wheel to keep your vehicle between the left and right lane lines, gently steering your vehicle in the opposite direction of the lane boundary. In some systems, the tugging on your steering wheel will become stronger the closer your vehicle gets to the lane markers.

Using LDW:

Some lane departure warning/lane keeping assist systems are activated by pressing a button, while others are automatically activated when you turn on your car. This button will have an indicator light to show when the system is active.

The lane departure warning system searches for lane markings when your car is on a straight or slightly curved road and your turn signals are off. When you use your turn signals or turn your steering wheel quickly, the system will not alert you.

Most lane departure warning/lane keeping assist systems function best on highways, and some systems only operate at speeds over 35 mph.

Pedestrian Detection:

Uses advanced sensors to detect human movements; some versions may urgently apply the brakes if the driver fails to respond. Alerts the driver or automatically brakes if there is a pedestrian in the path between a certain speed range—generally around 25 mph.

Stereoscopic cameras mounted behind the rearview mirror and radar have become effective at detecting the more subtle movements of people.These systems are more effective at slower speeds. Pedestrian Detection may not always be able to help avoid a collision, but this feature can help reduce the speed enough to make the impact more survivable. As research progresses, infrared technology is being added to improve performance, especially at night.

Always scan the road and horizon ahead looking for pedestrians. Read the owner’s manual so you understand:

- Exactly how you will be warned if the system detects a pedestrian.
- how your car may respond (e.g. automatic braking).

TIPS FOR USING

- Systems like Pedestrian Detection are not a replacement for an attentive driver.
- Always scan the road and area ahead, not just the cars in front of you.
- Remember, you as a driver can’t always predict what a person, especially a child, standing on a curb might do. A computer can’t predict this either.
- Twilight and dusk are among the most dangerous times for pedestrians and drivers. We think we can still see as though it’s daytime, but vision is greatly reduced during these hours.