Forward Collision Warning (FCW) - alerts about potential collisions with vehicles or objects ahead.

1. Proximity to a Vehicle: FCW often activates when your vehicle is rapidly approaching a vehicle ahead and the system detects that a collision might occur if no action is taken.

2. Closing Speed: If the closing speed between your vehicle and the vehicle in front is considered unsafe, the FCW system might trigger an alert.

3. Sudden Braking: If the vehicle in front suddenly brakes or slows down, the FCW system can detect this rapid deceleration and issue a warning to the driver.

4. Cutting into Lane: FCW can activate if a vehicle suddenly changes lanes and cuts in front of your vehicle, creating a potential collision risk.

5. Obstruction in Path: If there's an object or obstacle in the road ahead, the FCW system might detect it and alert the driver to take corrective action.

6. Intersection Scenarios: Some FCW systems are designed to work in intersection scenarios, alerting the driver when there's a risk of crossing traffic.

7. Stopped Vehicles: If a vehicle ahead is stationary, and your vehicle is approaching at a speed that might lead to a collision, FCW can activate.(may at toll etc)

8. Pedestrian Detection: Some advanced FCW systems include pedestrian detection, activating when a pedestrian is detected in the path of the vehicle.

9. Bicycles and Motorcycles: Certain FCW systems can also detect bicycles and motorcycles in front of the vehicle and provide warnings accordingly.

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Pedestrian Collision Warning (PCW)

1. Crosswalk Incursion: A pedestrian steps into a crosswalk as the traffic light turns green for the vehicle. The PCW system detects the pedestrian's presence and the potential collision risk, alerting the driver to the pedestrian's presence in the crosswalk.

2. Jaywalking Pedestrian: A pedestrian suddenly crosses the road in an area without a designated crosswalk. The PCW system detects the pedestrian's movement into the vehicle's path and issues an alert to the driver.

3. Child Running into the Street: A child runs out from behind a parked car and into the road. The PCW system, equipped with rapid detection capabilities, alerts the driver about the sudden appearance of the child.

4. Pedestrian Stop Ahead: A pedestrian waiting to cross the road suddenly steps off the curb and into the road. The PCW system detects the pedestrian's change in movement and warns the driver.

6. Pedestrian Walking Alongside the Road: A pedestrian is walking alongside the road and is moving in the same direction as the vehicle. The PCW system identifies the potential risk of the pedestrian unexpectedly stepping into the vehicle's path and provides an alert.

8. Pedestrian Stumbles: A pedestrian on the sidewalk stumbles and falls onto the road. The PCW system recognizes the potential danger and alerts the driver to the fallen pedestrian.

9. Pedestrian Crosses Against Signal: A pedestrian crosses the road against a red traffic signal. The PCW system detects the pedestrian's movement and the likelihood of a collision, prompting the driver to take corrective action.

10. Pedestrian Emerges from Between Parked Cars: A pedestrian emerges from between two parked cars onto the road. The PCW system, using its advanced sensing capabilities, identifies the pedestrian's presence and activates the warning system.

11. crowdy area because of hospitals, company,schools, etc check for all posibilities by putting them in google earth, from the provided locations.

12. no footpaths in the region.(when checked the longitude and latitude in the region)

13. mainly housing areas

14.narrow roads may lead to this

15.when shops might be present at the side of the road.

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Headway Collision Warning (HCW) systems

1. Sudden Braking of the Vehicle Ahead: The vehicle in front of you brakes suddenly due to traffic congestion or an obstacle. The HCW system detects the rapid deceleration and calculates whether your following distance is safe. If not, it activates a warning.

2. Tailgating the Vehicle in Front: You're following the vehicle ahead too closely, and the system determines that your following distance is insufficient for safe braking. The HCW system alerts you to increase the gap.

3. Cutting in by Another Vehicle: Another vehicle changes lanes abruptly and cuts in front of you, reducing the distance between your vehicles. The HCW system senses the reduced following distance and triggers an alert.

4. Traffic Jam Situations: In heavy traffic, your vehicle's speed slows down, and the following vehicle behind you approaches too closely. The HCW system activates to warn the following driver about the unsafe following distance.

5. Highway Merging: You're on a highway, and a vehicle from an on-ramp merges into your lane. The HCW system detects the reduced gap between your vehicles and issues a warning.

6. Undue Lane Changes: You change lanes without maintaining a safe distance from the vehicle ahead in the new lane. The HCW system activates to alert you about the reduced following distance.

7. Driver Distraction: If you become distracted and fail to notice that the vehicle ahead has come to a stop or slowed down, the HCW system can provide an alert to help you react in time.

9. Sudden Lane Change by the Vehicle Ahead: The vehicle in front of you changes lanes abruptly without signaling. The HCW system detects the sudden lane change and prompts you to adjust your following distance.

10. Approaching a Stationary Object: Your vehicle is approaching a stationary object, such as a parked car or debris on the road. The HCW system detects the risk of collision and activates a warning.

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Lane Departure Warning (LDW) - prevent unintentional lane departures by alerting drivers when their vehicle drifts out of its lane.

1. Unintentional Lane Drift: LDW systems activate when the vehicle starts to drift out of its lane without the driver using the turn signal. This can happen due to driver distraction, fatigue, or other factors.

2. Crossing Lane Markings: When the vehicle crosses over lane markings, either on the left or right side, without any indication of a turn signal, the LDW system can trigger an alert.

3. Veering Off Course: If the vehicle's trajectory starts deviating from the intended lane, the LDW system can activate to warn the driver.

4. Drowsy Driving: If the system detects erratic movements or a pattern of drifting, indicating drowsiness or inattentiveness, it can issue a warning to alert the driver to refocus.

5. Lane Changes without Signaling: When the driver changes lanes without using the turn signal, the LDW system can detect this and provide an alert.

6. Curve Entry: The system might activate when the vehicle is approaching a curve or bend in the road, and the trajectory indicates a risk of drifting out of the lane.

9. Changing Lanes into Another Vehicle: LDW systems might also detect if you're changing lanes and approaching another vehicle in the adjacent lane, alerting you to potential collision risks.

10. Narrow Lane Detection: In construction zones or on narrow roads, LDW systems can activate if the vehicle gets too close to lane boundaries.

11.When outskirts road merge with the highway or NH alert might be show as there are signals for it to give instruction and that might force in lane changing

12.If bad road → leads to ldw alert

13.More traffic→more overtaking → ldw alert (greater the traffic more the alert, sudden lane changes at high speed)

14.Parked vechicle if already present may lead to lane change.

15.Stopping of vehicle midway and not using indicator to change the lanes.