Set of requirements for a vehicle system that will avoid pedestrian collisions:

1. **Overall System Requirements**

   These requirements are for the overall system itself.

   a. The system should only be active when the vehicle is turned on.
   b. If the system is unable to safely detect whether there is an object, possibly caused by damaged sensors, weather, or other unexpected conditions, the system should inform the driver as such.
      i. This is to prevent a collision in the instance that a driver has become reliant on this system, or incorrect information is processed by the system.
   c. When the system is initially activated, if an object is detected, the driver should be warned.
   d. The system should not alert the driver, or automatically apply brakes, if it has been manually disengaged, but should notify the driver that the system is off.

2. **Radar, Sonar, and/or Lidar Scanner**

   For collecting information about the environment and alerting the driver if need be.

   a. The sensors, whether sonar, radar, or both, must be active when the system is on.
   b. The sensors should alert the driver by providing a visual and audible alert if an object is detected.
   c. The sensors should not alert the driver if the vehicle is not in motion and the driver has already been alerted to the presence of an obstacle.
   d. The system should only report obstacles detected within 15 meters of the vehicle.

3. **360 Degree Coverage Cameras**

   For both sensing obstacles and giving the driver a visual on their display.

   a. The cameras must always be on, and on the drivers display, when the system is active.
   b. The cameras will alert the driver by providing a visual and audible alert if an object is detected.
   c. The camera should not alert the driver if the vehicle is not in motion and the driver has already been alerted to the presence of an obstacle.
   d. The system should only report obstacles detected within 15 meters of the vehicle.

4. **Autonomous Emergency Braking and Anti-lock Braking Systems**

   Also called AEB and ABS, respectively. For use by the system to brake automatically if need be.

   a. If you are within 1 meter from a detected object, apply brakes automatically.
   b. The automatic braking system should only work if the speed of the vehicle is below 10 mph.

5. **Speaker System**

   Internal and external system, for auditory alerts.

   a. When prompted by the sensors or cameras, emit a non-intrusive warning sound to the driver.

b. If a pedestrian is near the external area of the vehicle, emit an external warning sound.
    i. Emit at 80db to avoid any harm to pedestrian hearing but be loud enough to alert.
    ii. Activates if within 2 meters of the car.

6. **Digital Display**

   For providing the driver with information about the environment behind them, as well as visual alerts.

   a. If the vehicle is not in motion, and the driver has already been given a visual warning, the driver should not be warned again.
   b. When parking (under 10mph), provide the driver with a 360 view of surroundings using the cameras, and external lights to provide lighting if the surrounding area is dark.