Automated Pedestrian Collision Avoidance System

Similarities Among All Systems:
- System utilizes visual sensors to locate possible obstructions
- System uses brakes to reduce velocity in order to attempt collision avoidance
- System must distinguish obstructions from normal environment elements
- Avoidance of pedestrian collision is highest priority

Differences from Researched Systems to Proposed System:
- Volvo’s system deploys airbags under the hood of vehicle if collision is imminent, lowering the damage to the pedestrian
- Many researched systems implement some sort of warning to the driver if the system is engaged
- Some researched systems performed other safety measures if a collision is predicted, such as steer assist, or closing windows and tightening seatbelts
- Most researched systems do not include an “efficiency” requirement
- Other systems do not restrict avoidance to only pedestrians, but attempt to avoid collisions of any kind

Questions Regarding Proposed System:
- Can the system be deactivated by the driver?
- Will a pedestrian moving at an angle that is not 90 degrees to the car’s path change the system’s behavior?
- Are there any limits to how quickly the vehicle can decelerate?
- How far can the sensors be effective? Thus, how fast can the vehicle move before the sensors are no longer useful?
- If a collision occurs, will the vehicle still return to steady state velocity if the “hazard no longer exists”?
- How will the system react to multiple pedestrians?
- If the system predicts that the vehicle will narrowly miss the pedestrian, will the vehicle’s velocity still be reduced?

Safety Requirements for Proposed System:
- If it is possible for the camera to detect pedestrians over 35 feet away, should the vehicle start to coast before braking?
- Should changes to the algorithm be made in inclement weather conditions?
- Avoid pedestrian collisions at all costs