**PCAS1 Requirements List**

1. Monitor path in front of vehicle for pedestrians. This includes processing information regarding location, speed and direction of pedestrians.
   1. Calculate the distance between the front bumper and anything in front of the car every 100ms.
   2. Identify potential collisions with pedestrians.
   3. Notify user of a potential collision.
   4. Notify pedestrian of a potential collision.
   5. Identify when a hazard no longer exists.
2. Take avoidance action via braking through the Brake-by-Wire system.
   1. When hazard no longer exists, notify the vehicle to return to steady state velocity.
   2. If no hazard is detected, ensure vehicle maintains steady state velocity.
   3. Optimize the avoidance measures to avoid collisions with the least amount of lost time.
   4. Notify user when Brake-by-Wire system engaged.
   5. Notify user when Brake-by-Wire system disengaged.
3. The algorithm should avoid collision in all 10 scenarios it is presented with.
4. The algorithm must remain functional (i.e. avoid collisions and minimize lost time) in fail operational mode. This means increasing response time for requested deceleration from 200ms to 900ms.
5. Minimize system vulnerabilities to security breaches.
   1. Notify the user if the system is turned off for security reasons.