Active Parking Assist Group 1

1. Requirements
   a. Functional Requirements
      i. The customer must only activate the APA (Active Park Assist) through HMI (Human Machine Interface)
      iii. APA must determine, identify, and verify parking spots.
      iv. Vehicle’s position must be monitored with radar and camera even while APA is active.
      v. APA should be able to “shift the automatic transmission into the appropriate range and will accelerate, brake and steer the vehicle into the parking spot”.
      vi. Customer should be able to slow or stop the maneuver when brake is pressed.
      vii. Feature should deactivate after the APA is in park and allow customer to take control.
      viii. The system must be able to parallel and perpendicular park based on customer input.
      ix. The APA should allow drivers to exit the car and transfer control to the Ford Pass App on their smartphone.
      x. The APA must ensure that the parking command is from the driver.
      xi. System prevents the vehicle from encountering obstacles during the maneuver.
   b. Quality Requirements
      i. The system must complete the parking within a reasonable time.
      ii. The maneuver must be able to be controlled and completed remotely through the Ford Pass App.
      iii. Must have multiple subsystems to control each aspect of the APA
      iv. System should display a confirmation message after user input
   c. Security Constraints
      i. Must have a way of determining if sensors are broken or malfunctioning
      ii. System must confirm that the driver has initiated the request.
      iii. Once transmission is in park APA cannot be activated.
      iv. The Active Park Assist System must be used under drivers’ supervision.
      v. The system should be secure from malicious attacks.

2. Global Invariant Requirements
   a. If the customer has not chosen a type of parking it will not activate the APA
   b. If sensors are determined to be broken or malfunctioning do not allow APA
   c. If the customer presses on the break the maneuver must slow or stop depending on how hard it is pressed.
   d. Maximum speed for maneuver cannot be exceeded.
   e. The system shall be activated through the HMI
   f. The system shall be able to identify available spots when the driver turns on the APA feature.

Legend:
APA – Active Parking Assist
HMI – Human Machine Interface
g. The APA can only be used on a car equipped with all necessary sensory equipment
h. The APA should be able to both parallel and perpendicularly park.
i. The system should respond to any obstacles in path of vehicle.