

Self-Driving Car “Proof of concept: Project Requirements & RTOS DESIGN

- | | |
|-----------------------|---------------------------|
| • Distance Module | #1 Ultrasonic + Lidar |
| • Analog sensors | Water + temp |
| • Digital sensors | #2 IR + #1 Motion PIR |
| • Output(event-based) | Servo motor + buzzer + AC |
| • Movement | Wheels Motor- Driver |

Features:

1. Lane Keeping system.
2. blind Spot
3. Collision Avoidance
4. Emergency break
5. Adaptive Cruise Control
6. Lane Change Assistant
7. Sleep Mode
8. IoT Dashboard Application
9. Rain detection and AC

1. This feature connect bet Digital sensor and Movement and if IR_each sensor was Low car is moving straight and if one of the two IR was high, car will turn the opposite direction, adjust its movement, and check again to manage both IR to go in their direction.

----- All other Features based on the first one -----

2. This feature monitoring the distance from ultrasonic and lidar and give the driver real-time data if was a closing object or not, as induction but not Action

3. This feature take the blind spot indication (Back-Left-Right) and with the communication bet distance Module and avoid in advance any collision in fixed range, avoid not stop ex. if someone near to the car the car should slow and avoid it by lane changing.

4. This feature uses the data from the blind spot and Collision Avoidance all the time and whenever and wherever the person in the closet range the car will stop.

5. This feature use the distance module of front angle and wherever the moving car is moving, the car should maintain in relative with it or set a constant speed on the road in relation with cars on the road.

6. These features use the Digital and Distance Modules to change its lane if there any static object on the road by lane changing and

before it changes the car must check by Distance Module to see if there any object and the car will go the left lane and adjust his position by turning the opposite, a little bit until it was on the clear Lane.

7. This Feature use the Digital Module (Motion sensor), once the car has been in the sleep mode the motion sensor will be on external interrupt and whenever there are a motion around the car, car will wake up and buzz and sending an email by the Wi-Fi module to the car owner and will.

back to sleep again, if their multiple interrupt the car will buzz for more second and emergency email will be sending.

8. This Feature use collect the data from all modules and transmit it by uart by Wi-Fi module and The Mobile Application will receive a

real-time data to enable the driver and its family to check for any bad thing happened in the road.

9. This feature check the rain and temperature of the environment and if their ranges were in the scope of pre-defined, AC and windows wipes will be on

/**** implement your design here by tasks ***/