TASK 2: "DESIGN OF AN AUTOMATIC PARKING SYSTEM FOR A SMART CAR"

State of the art

Problematic:

Car parking has always been a hard and time-consuming task for every driver but also can put the safety of the driver of the vehicle and its entourage at stake, so how can we make this task easier, faster and safer for everybody?

Existing solutions:

- **Volkswagen:**
  - **source:** https://www.volkswagen-newsroom.com/en/parking-assistant-park-assist-3669
  - Park Assist allows semi-automatic maneuvering into any parking space parallel or at right angles to the road. In addition, the system facilitates maneuvers out of parallel parking spaces. In the case of parking spaces at right angles, the first models only support reverse parking but also semi-automatic forward maneuvers. Volkswagens with Park Assist steer fully automatically when parking. The driver only needs to operate the accelerator and brakes. Within the technical limits of the system, an emergency braking system also prevents parking damage.
- **Sparks:**
  - **source:** https://www.parkassist.com/
  - A camera-based parking guidance system from Park Assist serves to reduce frustration for your parkers while providing a high tech experience.
  - Park Assist is a price-sensitive manufacturer and provider of parking guidance system technology that competes with ultrasonic and other camera-based solutions with superior advanced technology. Park Assist systems drive greater performance, increased revenue, better efficiency, increased security, safety, an elevated parker experience, and ROI. Our systems help to provide vehicle information to the operator in both parking garages and outdoor car parks. The markets we help include shopping and retail centers, mixed-use facilities, airports, hospitals, casino and gaming facilities, colleges and universities, corporate campuses, citywide guidance, architects, consultants, engineers, and parking system integrators.
- **Ford:**

- **source:** https://www.ford.com/technology/driver-assist-technology/enhanced-active-park-assist/
- Available Active Park Assist helps take the anxiety out of parallel parking. Once the system locates a suitable parking space, you shift, accelerate and brake while the system does the steering. It's that simple. And if your vehicle is equipped with Enhanced Active Park Assist, you also get help getting out of a tight parallel parking spot, as well as assistance in reverse perpendicular parking. And now, on select 2020 Ford models, you can take the ease of this system a major step further. Just about every operation is now done for you. Depressing the Active Park Assist 2.0 button scans for a suitable parking spot. After stopping, you shift into Neutral, release the brake pedal and hold down the park assist button. The system does the rest — steering, shifting, braking and accelerating.10 Could it get much easier than this?

Proposed solution:

A parking assistance system will be implemented. This system is used in the driver's station of the car. We will use a camera whose images will be displayed on an IHM interactive interface screen. Trajectories that have been routed to a specific destination will be shown. This displays the trajectory following the trajectory of the steering wheel. This image makes it easy to choose which direction to take to get to the desired position and also allows you to spot obstacles that the distance sensors will not be detected during automated parking. The parking assistance will also use distance sensors and an alarm to signal the obstacle near the car. This alarm tells the driver to drive with caution. Obstacle distances are also displayed on the interface.

Webography:

https://www.youtube.com/watch?v=NtyXKaRq-D0
https://www.youtube.com/watch?v=1qXipBy2G6g
https://www.youtube.com/watch?v=l4LcfZeS4qw