Intelligent Parking Aid System

SENSE
COACH
STEER
DRIVE
Park like an expert. fast & easy.

xpark!® is the first parking aid system which simulates expert driver behavior for outstanding results at low cost. Benefits for users: enhancement of driving comfort and safety, reduction of repair costs.

**xpark!® unique technologies**

Thanks to its innovative Soft Computing techniques, xpark!® emulates the parking strategy of a skilled driver.

Proprietary algorithms, based on the intelligent fusion of heterogeneous data, give xpark!® its robustness in unknown and dynamic environments. End-user centered design of xpark!® guarantees proper management of system-driver interactions, in order to deliver high value information and guidance.

**4 levels of assistance**

1. **xpark!® SENSE** - Detects parking slot. Evaluates degree of difficulty of parking maneuver (easy, medium, hard, very hard), and indicates whether it is large enough to park. Warns of potential front/rear hazards located on the vehicle path.

2. **xpark!® COACH** - Provides the driver with optimal guiding advice to easily park the vehicle through visual and acoustic user-friendly interface (turn left/right, stop, move forward/reverse).

3. **xpark!® STEER** - Takes control of the steering wheel during parking maneuver while giving instructions to move forward/reverse or to stop.

4. **xpark!® DRIVE** - Parks the vehicle automatically in the slot!

---

**XPARK!® FEATURES**

Simulates expert driver behavior without any trajectory planning

Handles tight parking slots with suitable number of cycles

Auto-adapts to changes in parking environment and to driver’s actions and intentions

Uses widespread ultrasonic sensing technology

---

Intuitive interface.
xpark!® analyses the parking situation step by step and computes set points in real time, simulating an experienced driver’s strategy. It auto-adapts to changes (obstacles moving during manoeuvre). xpark!® takes into account the driver’s actions and intentions, when he/she does not follow guiding instructions precisely.

**xpark!®: high-performance intelligent parking aid system**

- Robust slot evaluation with ± 30 cm error
- Tight slot situations with suitable number of cycles
- Good accuracy at speeds from 5 to 20 km/h
- Good accuracy at a lateral distance 0.50m - 1.40m/parked cars
- Collision avoidance with rear corner of front obstacle
- Collision avoidance with obstacles on opposite side
- Situations with curved car trajectory/not parallel to the slot
- Situations with posts/trees/poles
- Situations without curb/with undetected curb

**xpark!®: limited OEM investments**

- Existing vehicle sensors via CAN (ABS/gyro/steering angle)
- 10 automotive ultrasonic sensors
- Fewer memory than environment mapping technique
- Fewer processing power than trajectory planning
- Visual/acoustic/kinesthetic HMI, according to each VM
- Easier implementation of xpark!® STEER and DRIVE with emerging X-by-wire technologies

**xpark!®: marketed through licensing**

- Adaptation to any vehicle platform
- Worldwide protection by copyrights and patents (15 countries)
- Licensing of patents and software components to VM or to tier 1 automotive supplier