oToBrite

Auto Parking Assist / Automated Valet Parking System

Make Parking Cars Easier and Safer

2023

Product Description

• oToBrite utilizes vision-AI technology with four surround view cameras and an ECU to enable automatic parking assist (APA). It can recognize over a hundred parking scenarios, perform ultra-low obstacle detection, detect parking spaces, identify parking numbers, and detect vulnerable road users. Traditional automatic parking systems use four side ultrasonic sensors to scan for available parking spaces between parked vehicles. However, their detection success rate is not very high when two vehicles are not present simultaneously. Vision-AI parking assistance technology can see the grid lines of parking spaces and detect obstacles that are typically not detectable by ultrasonic sensors alone. By Vision-AI technology, it can significantly enhance the parking experience.

• Besides that, combined with VSLAM (visual simultaneous localization and mapping) technology and one front camera for navigation, APA can be upgraded to Automated Valet Parking (AVP). oToBrite has developed and mass-produced AVP system supporting up to one kilometer memorized parking route. The self-developed VSLAM technology can generate parking lot maps without HD map, allowing the vehicle to perceive parking spaces and position itself in the parking lot. The system also have the capabilities of autonomous circling and obstacle avoidance in the memorized parking lot until parking to an available space. Furthermore, it offers a mobile summon feature, allowing the vehicle to autonomously depart from the parking space and drive to a user-specified location when retrieving the vehicle.

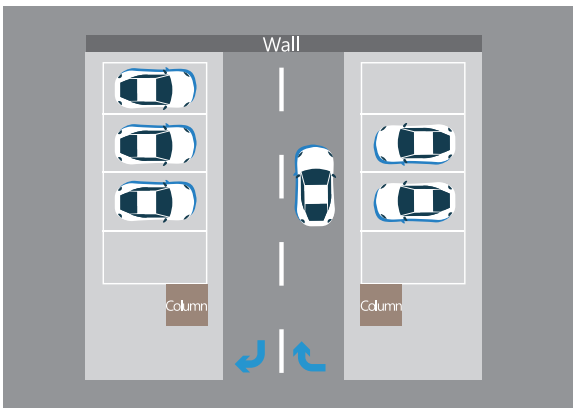
Product Features

Automated Parking Assist (APA)

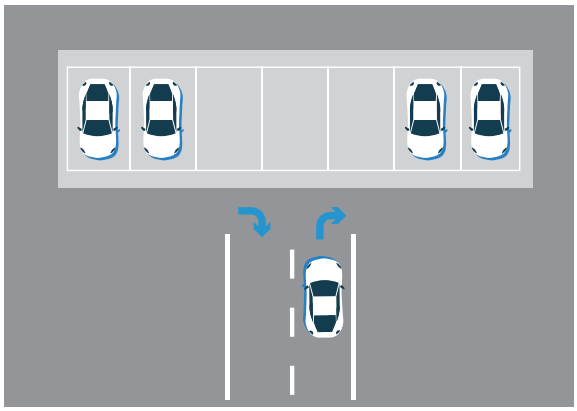
• Support over 100+ types of parking lots
• Full coverage in parking lots with dead end parking space detection
• Object classification with 10+ types especially low-height obstacles
• Enhanced protection for vulnerable road users
• Parking spot number recognition for easier pick-up

-Full Coverage with Dead End Parking Space Detection

Parking space near walls or ccolumns



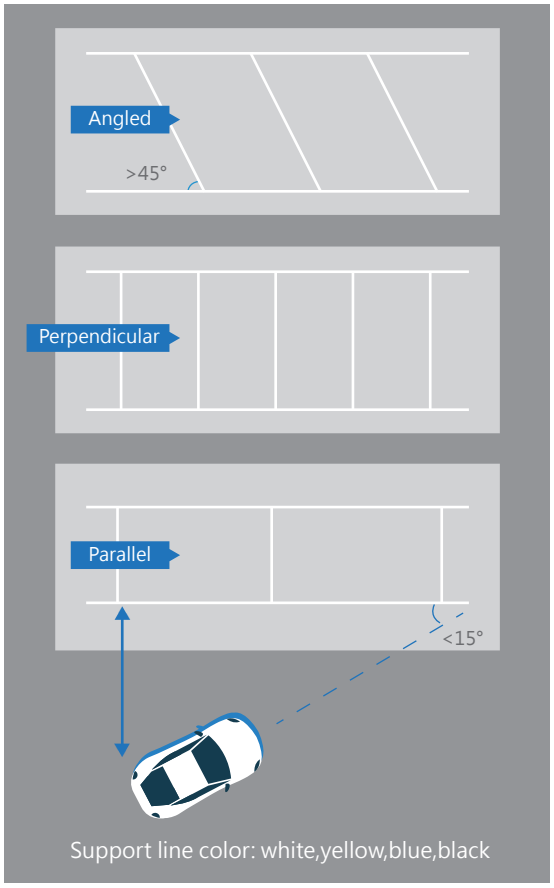
Parking space near enty/exit area



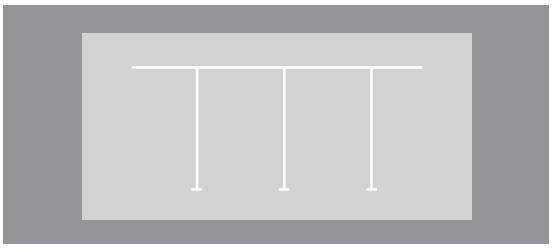
-Vision-AI can detect various indoor/outdoor 100 + types of parking scenarios

(including but not limited to the supported types below)

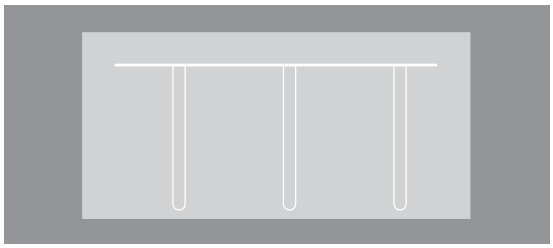
Support different orientation



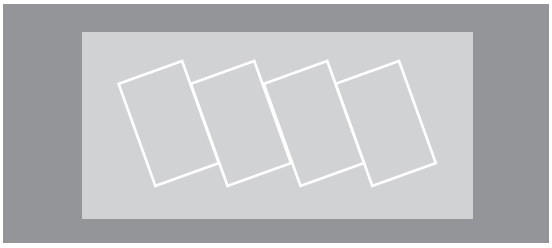
General parking space with lines



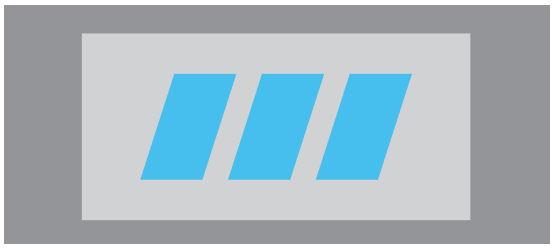
Parking space with special lines



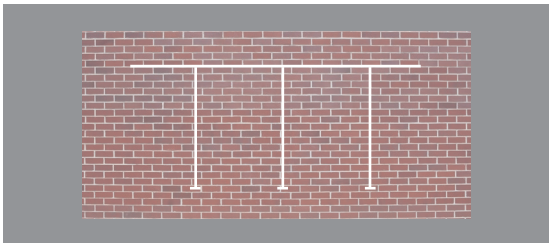
Freeway service area parking space



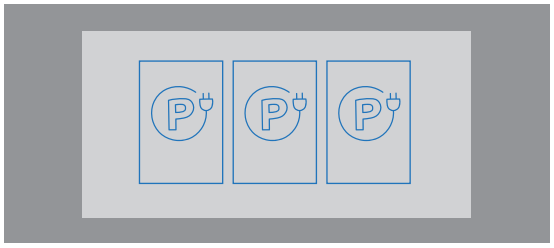
Color-coded parking space



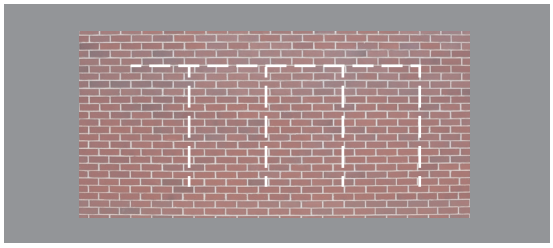
Special paver parking space with lines



Parking space for special purpose



Parking space with different colored paver

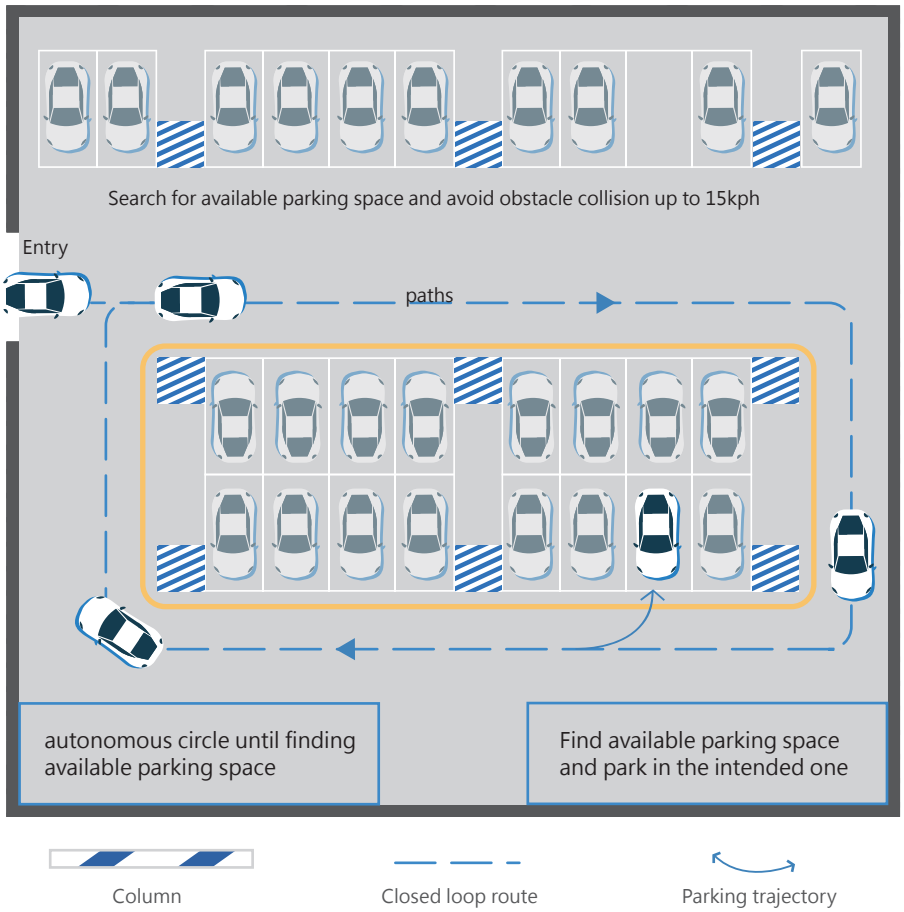


Automated Valet Parking (AVP)

- Memorize up to 1km routes without reconstruction of parking lots
- Fusion with non-semantic and semantic VSLAM technology to support indoor and outdoor parking lots, including various types of parking lots.
- Capable of autonomous circling within parking lots until parking into an available space
- Support valet parking and summon with one-time mapping

-AVP Mode

After the map and parking route of the parking lot is memorized by the system, users can leave the vehicle at the start point of the route and the vehicle will autonomously drive and automatically search for available parking spaces while avoiding obstacles. Once an available parking space is found, the vehicle will park itself. If there is no available parking space, the vehicle will autonomously circle in the parking lot until it finds a parking space.

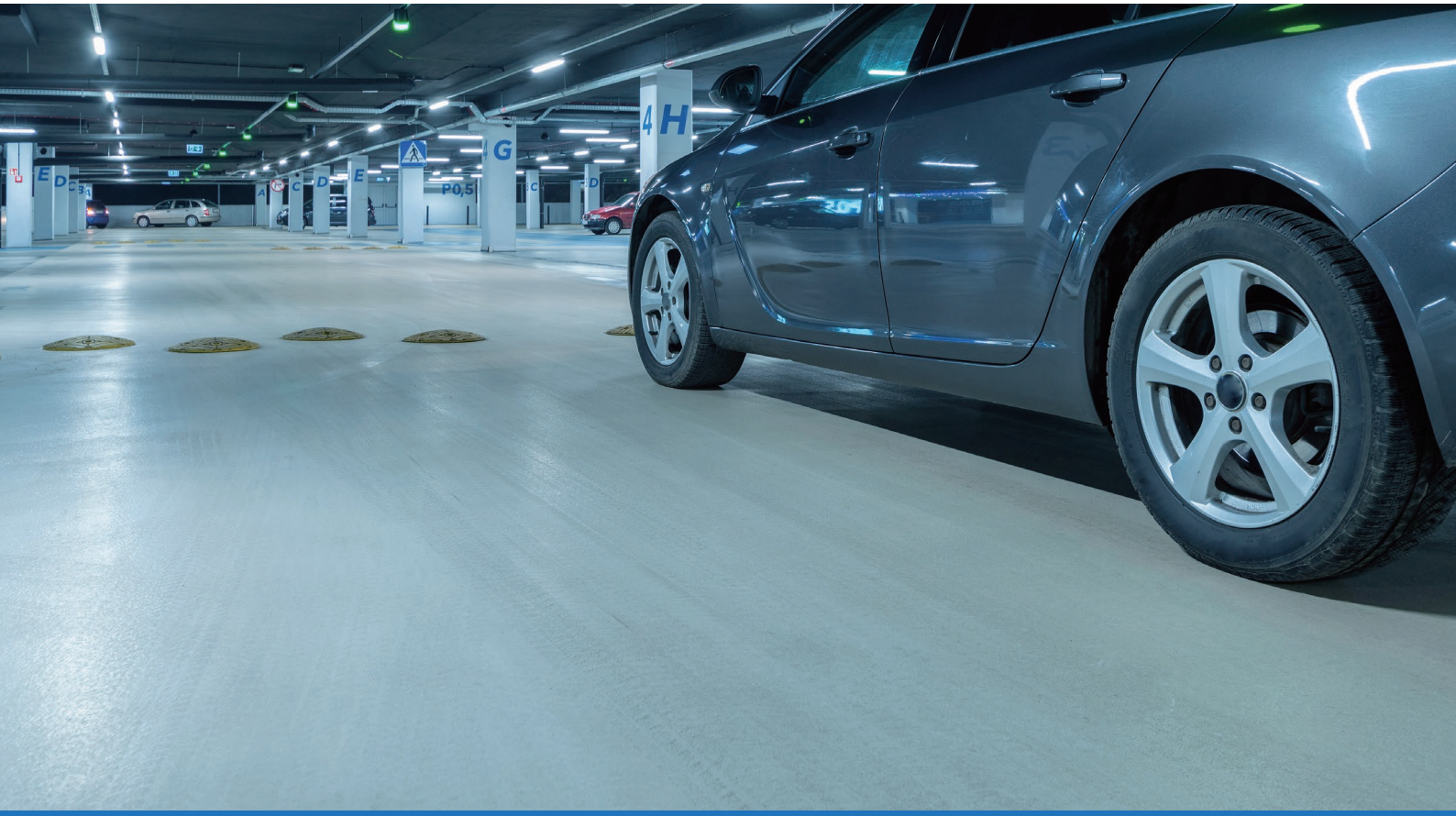


Function Spec.

Auto Parking Assist (APA)	
Environmental Illumination	≧ 5 Lux
Vehicle speed	Searching phase: ≦ 20 km/hr Reversing phase: ≦ 5 km/hr
Ground Pattern	Asphalt, bricks paver, concrete, epoxy, grass paver, PU (Polyurethane)
VRU* Sensing Range	6 meters (wide) X 5 meters (long) in the front and rear side of the vehicle, and 5 meters (wide) X 6 meters (long) in each side of the vehicle.
Classified obstacles	Curb, locked/unlocked parking lock, people, pillar, speed bump, traffic cone, two-wheelers rider, vehicle, wall, wheel stopper

*VRU: Pedestrians, children, and two-wheelers rider

Automated Valet Parking (AVP)	
Memorizable parking route distance	Max: 1000 m
Number of memorized map	Max: 10
Environmental Illumination	≧ 15 Lux
Vehicle speed	≦ 15 km/hr
Localization error	≦20cm



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