LEONARDO

PATENT BROCHURE

METHOD AND SYSTEM TO ASSESS THE OCCUPATION STATE OF A PARKING SPACE

Main technological area ⟶ Surveillance Systems

Keywords ⟶ Parking Areas | Traffic control systems | Vehicles | Proximity Sensor | Frequency Modulated Continuous Wave (FMCW)

Method for determining the occupancy status of the car park. It is based upon proximity sensors placed on the ground, and a sensor on board the vehicle, and a TX/RX transponder on board the vehicle.
Through the use of proximity sensors, the system is able both to determine whether the parking space is occupied, and whether it is by the authorized vehicle. An operations center manages the entire operation of the system and oversees the application of the correct policies.
The proximity sensor is based upon a Frequency Modulated Continuous Wave Radar (FMCW) , using a 24 GHZ carrier frequency.

TECHNICAL FEATURES

The system includes

- A ground sensor
- A unit on board the vehicle
- A radio transmission module on board the vehicle
- An Access Point
- An operations center

The ground sensor includes a memory containing a parking space identification code, so that the system can detect the state of occupancy of the parking space. Both on-board units are linked to the vehicle. The devices are placed in such a way as to communicate wirelessly with the Access Point. The Access Point is connected with a cable to the Operations Centre. A vehicle identification code is associated with the equipment on board the vehicle. When the ground sensor determines that the lot is occupied by the vehicle, it interrogates the equipment on board the vehicle and stimulates them to transmit their own identifier and that of the parking space. Subsequently, the ground sensor transmits the following information to the operations center through the Access Point.
This makes it possible to check not only whether the seat is occupied, but also whether the vehicle occupies the seat assigned.

INNOVATION/ADVANTAGES

- Enabling the implementation of stall occupation policies.
- Ability to check that certain lots are occupied only by authorized vehicles (e.g. ambulances, police, cars for the disabled).
- Correct operation regardless of the vehicle (motorcycle, car, van, bus, etc..) that occupies the stall.

AREAS OF USE

Smart City	Management of several types of vehicle parking. Management of parking lots at airports, stations, industrial plants, military bases, stadiums.

PATENT INFORMATION

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