

## SELF-AUTOMATED PARKING LOTS

<b>Institution/Company name</b>	<b>Universidade do Porto - Inovação</b>
Contact details	Praça Gomes Teixeira s/n Edifício Gomes Teixeira 4099-002 Porto, Portugal <a href="mailto:upin@reit.up.pt">upin@reit.up.pt</a> Tel: + 351 22 0408136 Fax: + 351 22 0408184
Website	<a href="http://upin.up.pt">http://upin.up.pt</a>

### □ Key words

Advanced engineering (including robotics / control systems) - Communications - Data management - Sensors / instruments/ electronics - Software engineering / development

### □ Description

Self-Automated Parking Lots for Autonomous Vehicles based on Vehicular Ad Hoc Networking discloses a **new approach to park unmanned vehicles whereas vehicular communication (V2V, V2I), (semi-) autonomous vehicles and remote control technologies are used**. The automated parking lots maximize space and minimize the time passengers require for parking.

### Background

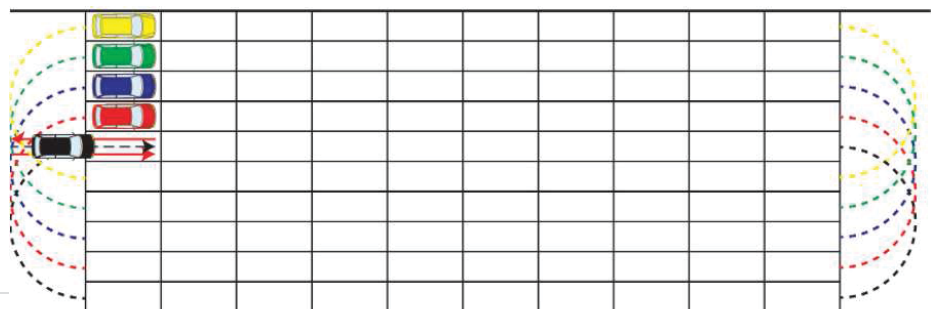
Urbanization along with an increased number of vehicles leads to major implications on the urban landscape. While traffic congestions are one major impact, it is the phenomenon of "cruising for parking" that causes a surprisingly high amount of traffic. Besides, space within the urban area is getting scarce and thus more expensive.

In order to counteract this trend several solutions to effectively use parking space have been proposed.

Automated parking systems have been developed to cut space requirements by as much as 50%. However, those systems, which mechanically move the vehicles, are very expensive as well as complex in their operation and maintenance.

### Benefits

Henceforth, a new concept will be presented to park (semi-) autonomous vehicles, safe space



10...

and time and thus reduce the costs of car park owners.

The novelty of this invention is the use of vehicular communication (e.g. wireless, VANET, etc.), (semi-) autonomous vehicles and remote controller technologies to offer an optimized parking lot solution, which is related to an efficient parking and retrieval configuration. This invention can be considered a better alternative when compared to the automated parking lots with electric elevators, rolling and rotating platforms due to the self-mobility of the (semi) autonomous vehicles which eliminates the use of mechanical devices.

The results of computer based simulations indicate that by applying the new concept, space and time can be reduced. Besides, a vehicles total distance travelled compared to conventional parking lots can be reduced by as much as 30%.

#### □ **Applicability of Technology to Maritime SMES**

The present invention may be incorporated in electrical vehicles with ad hoc networking. Intended users and beneficiaries of this invention are parking lot owners/operators, (semi-) autonomous vehicles' owners/drivers as well as car park owners and car manufacturers.