

Automated Vehicle Parking In India and Challenges

¹Nikhil G. Yerojwar, ²Dinesh V. Rojatkar

¹Electronics and Telecommunication dept. Government College of Engineering, Chandrapur, India

²Supervisor, Electronics and Telecommunication dept. Government College of Engineering, Chandrapur, India

Abstract: The management of vehicle parking is one of the biggest problem in today's era. The number of vehicles in metro cities like Bangalore, Mumbai, Delhi, Chennai and Hyderabad has been incrementing day by day. The vehicle owners are finding it difficult to park their vehicles. The automated vehicle parking system has become a latest trend in many cities in India for a while now. Automated parking means that the vehicle will be parked automatically into a parking slot. The automatic vehicle parking system enables the parking of vehicles storey after storey and thus reducing the total space used. Here any number of vehicles can be parked according to the requirement. This makes the system automated and reduces wastage of space. In areas where more number of cars need to be parked; this automated vehicle parking system can be used.

Keywords: Vehicle Parking; Indian Vehicles; Challenges in parking; Parking system.

1. INTRODUCTION

Now days in many public places such as malls, multiplex systems, hospitals, offices, market areas there is a problem of car parking. The car-parking area has many slots for car parking, so to park a car one has to look for all the slots. This involves a lot of manual labour and investment and hence there is a need to develop an automated parking system that indicates directly the availability of vacant parking slots in any slot at the entrance. This problem is overcome with the help of Automation of parking system. That is one of the reason we are looking forward to the automated vehicle parking system. Before moving forward we must contemplate on how efficient this system will be over the traditional parking System. In doing this we are dealing with all the aspects which will make the system more efficient than the traditional system. By efficiency we mean cost, complexity, comfort, human intervention, area etc. so we must look for each of the above mentioned aspects very carefully, then only we can go ahead for the implementation of the system.

2. TYPES OF AUTOMATED VEHICLE PARKING SYSTEM IN INDIA

A. Multi-Level Vehicle Parking:

A multi-level car parking system is implemented to increase vehicle parking capability by making use of vertical space. In this system there are a number of floors or storeys on which the vehicles to be parked. A lift is provided in the system. The vehicle owner drives the vehicle to the parking area and then driver comes out of the vehicle then with the help lift the vehicle is lifted to the desired Storey and vehicle is parked. The biggest advantage of employing this system is that the system is equipped in minimum area which means that the system consumes very less space compared to the conventional parking system. In India management of space is very critical in terms of parking and hence this system is most widely used in India.

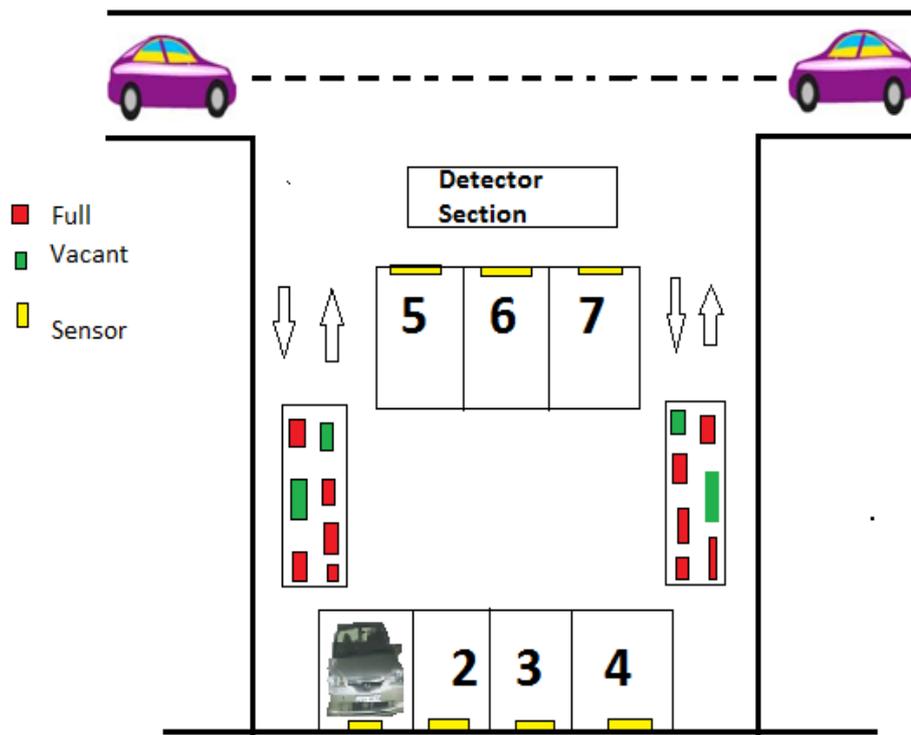


Figure1: Fully automated vehicle parking system

B. Surface Parking System:

This type of parking system usually deployed in shopping malls, cinema halls, multiplexes, airports etc. In surface parking system the vehicles are parked parallel. There can be fully automated or semi-automated surface parking system depending upon the manufacturers. In semi-automated parking system a system detects only the free parking slots and with the help of driver or car owner the vehicles are parked. The detection of free slots are done with the help of different sensors which are installed in the parking slots. On the other hand in fully automated parking system detection of free slots and parking the vehicle automatically in the free slot is achieved.

3. AUTOMATED VEHICLE PARKING INITIATIVES IN INDIA

A. New Delhi Municipal Council:

A well-equipped multi-level vehicle parking system was opened in cannaught place area to minimize the rush. This project has been implemented by DLF for New Delhi municipal council. The parking occupies around 1400 vehicles. It is a 8 storey building out of which 6 storey are used for parking and remaining 2 storey is equipped with a shopping mall. The system uses a lift to carry the vehicles to the desired storey.

B. Municipal Corporation of Delhi (MCD):

A fully automated multi-level car parking system has been schemed at Kamla Nagar. The Parking building is schemed to curb around 1000 cars and will be constructed by the Municipal Corporation of Delhi in coming days. The MCD has choosen 20 places that will be developed into parking area in various places of Delhi. The system will automatically park the vehicle with the help of lift and the same will happen while retrieving the vehicles.

C. Navi Mumbai Municipal Corporation:

Navi Mumbai Municipal Corporation has schemed to install a multilevel vehicle parking system. The car parking system will have two 10-storey building car parks for occupying 24 cars each and a two-storey puzzle park for 40 cars. At Vashi Civic Hospital, 11-storey towers occupying 22 cars and a 7-level puzzle car park for 110 cars.

D. Hyderabad Urban Development Authority (HUDA):

Hyderabad Urban Development Authority (HUDA) has been planning a multi-level car parking system which in private partnership, close to Garden on the Buddha Purnima Road. It is said have one of the biggest car system in Telangana state which will be a fully automated system.

4. CHALLENGES IN AUTOMATION OF VEHICLE PARKING SYSTEM IN INDIA

After researching over the implementation of automatic vehicle parking system in India we came across the challenges in implementation of the system. These challenges are mainly taken into consideration the efficiency of the system. These challenges are listed below:

- 1) To make the system fully automated: We have studied some of the existing automated vehicle parking system in fact there are numerous systems existing in India which are automated but these systems are not fully automated, these systems are semi-automated. Semi-automated in the sense that these systems detects the free slots available for the parking but eventually the vehicle has to be parked by the driver of the respective car. That means the system is intervened by the human but we are precisely focused on the system without human intervention. This is the important challenge we are facing and we are working on it to overcome this challenge.
- 2) To equip the system in minimum area: This is another challenge in the implementation of the automatic vehicle parking system. We have to make sure that the system is equipped in less area. For this we have to make a system which can park the vehicles in systematic order, this is in fact one of the major reason for the automation of parking system. We see that traditional system consumes huge amount of space in parking vehicles, this is because there is human intervention in parking the vehicles moreover we know, we Indians never bother about the discipline.
- 3) To make the system cost efficient: In implementation of any system one has to look how economical the system is. In this system too it is a challenge to ensure that the system is economically efficient. If the system is not economically efficient then it becomes impossible to implement the system. To overcome this challenge we have to look for the cost efficient equipment used in manufacturing of system.
- 4) System should not be complex: The system should be simple so that each and every vehicle owner can access the system without any inconvenience. If this thing is not taken care it might cause problems for the vehicle owner and in turn the system would not be a feasible system.
- 5) System should ensure the safety of vehicles: The most important aspect of the system it is to make sure the safety of vehicles. In traditional parking system the improper parking of the vehicles often leads to the accident which damages the vehicles. This system on the other hand ensures the safety of vehicle during parking as well as retrieval of the vehicle.

5. ADVANTAGES OF AUTOMATED VEHICLE PARKING SYSTEM

- 1) No human intervention is needed while parking and retrieval of vehicle.
- 2) As the whole procedure is based on controller efficiency is very high.
- 3) The high level of utilization of space is achieved.
- 4) More vehicles can be parked in lesser area.
- 5) Automated Parking is more safe and secure.

6. CONCLUSION

As we have studied the automatic vehicle parking system we came across the challenges it has to face for the implementation of the system. Also we have studied the advantages and disadvantages of the Automatic vehicle parking. There are challenges but we can overcome it with the help of advanced technology and make the system reliable and more efficient than the conventional system. The purpose of the report is to Illustrate the challenges occurs in the implementation of Automatic vehicle parking system.

REFERENCES

- [1] A Review: Automatic Car Parking Design And Validation, International Journal of Application or Innovation in Engineering & Management (IJAIEM), Volume 4, Issue 4, April 2015, ISSN2319 - 4847Design and Development of Automated Parking Slot, IJECT Vol. 5, Issue 1, Jan - March 2014
- [2] Optimal Automatic Car Parking System for Indian Environment, Indian Streams Research Journal, Vol.1, Issue.X/Nov; 11pp.1-4 IJERT-IJERT ISSN: 2278-0181
- [3] Multi-Level Automatic Car Parking With IR Card Security System, International Journal of Scientific & Engineering Research Volume 3, Issue 12, December-2012 1 ISSN 2229-5518
- [4] Multi-Level Automatic Car Parking With IR Card Security System, International Journal of Scientific & Engineering Research Volume 3, Issue 12, December-2012 1 ISSN 2229-5518
- [5] Vision-based automated parking system, Conference Paper June 2010