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Keenly Intellective and Automated Parking Technology

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ABSTRACT

Very rapidly growing population of India is creating various problems especially for the cities. Every day people faces vehicle-parking problem. The Number of vehicles is also increasing regularly, but still there is a lack of sufficient parking spaces. In 2014, the count of vehicles is greater than 40 million. Focusing on the parking problems & the parking spaces generation process is the big need in some metro cities. To avoid these problems, recently many incipient technologies have been developed that avail in solving the parking quandaries to a great extent. In India, Multi-Level Car Parking is one of the technologies, which is implemented. It is utilized for optimum utilization of parking space by utilizing vertical space rather than horizontal space. Astute parking solutions can be habituated to locate available parking space with the avail of sensors. This preserves customer's time as well as minimizes wastage of fuel. Sundry technologies are being used to facilitate parking quandaries in public places. For example, utilizing RFID technology, the check in and checkout time for the vehicle can be reduced and additionally the payment system can be automated. Utilizing GSM, Concise message accommodation can also be habituated to provide drivers with pertinent parking information.

Keywords : Smart Car Parking, Parking Problems, Parking Technologies

I. INTRODUCTION

Perspicacious parking is a component of Internet of things wherein sensors will verbalize with remote contrivances over internet and apportion information utilizing predefined communication protocols. This paper deals with the parking issues faced by people. Smart parking is a niche field in which many companies are now investing heavily and the car parking industry has tremendous potential since the parking quandaries in developing and developed countries is incrementing.

II. METHODS AND MATERIAL

1. Parking Problems in India

In India, 40 per cent of the road space is utilized for parking rather than for traffic movement on a mundane working day. With affordable cars launching in the market, virtually every middle-class family owns a car which integrates to the vehicular population in our country. If this trend is followed, no amount of space will be enough to accommodate stationary conveyances, which will lead to narrower lanes for movement of public convey. Some of the reasons for parking quandaries are:

- Very low parking rates
- Weak implementation of parking manners
- Number of vehicles is elevating day by day

2. Solutions for Parking Already present in India

The growing population and the incrementation in vehicles have made the plots sumptuous and hence the conventional parking has become non-feasible. Car ramps or car hoists withal consume a plethora of space consequently mechanized car parking systems prove to be feasible. Multi-level car parking system (MLCPS) has a number of advantages over the conventional

parking system. Some of the advantages & disadvantages of MLCPS are verbalized below:

2.1. Advantages

- Best utilization of Space
- Benefit to architect
- Environment Cordial

2.2. Limitations

- The parking lot must be built in such a way that it efficaciously channel and amass runoff which would have otherwise become runoff.
- The vehicles of MLCPS on circumventing residential Blocks cause noise and air pollution.

3. Various Types of Available Parking Solutions

3.1. Conventional Multilevel Parking

The design of conventional MLCPS includes ingression and exit ramps and/or car hoists between the vehicles and car parking area.

3.2. Automated Multilevel Parking

Technologies utilized for automated parking systems are of the following types:

- Modular
- Tower
- Rotary

4. Growing market of Automated Parking System in India

Parking management involves two primary things. First is easy and hassle free ingress for the customer along with easy parking space availability. Till the last decade, parking facilities in India were impecunious. Parking lots were not secure. There used to be a long queue at the ingression and exit because of the manual systems.

5. Evolution of Smart Parking

The main goal of astute parking solution is to enable both drivers and parking managers in optimizing parking capacity. Sundry technologies like in car sensors, wireless communications data analytics are being utilized. As per Navigant research the installed base of parking spaces on streets will exceed 950,000 ecumenical by 2020.

5.1. Latest Parking Solution trending in Coimbatore

Coimbatore has got its keenly intellective parking solution through a Korean company Dongyang which is a specialist in plenarily automated parking solutions and has provided keenly intellective parking solutions in many countries. Dongyang has partnered with Parklayer India and Procraft Automation has installed the Parklayer-Dongyang systems at Aquasub Engineering in Coimbatore.

5.2. Astute Parking Systems would Reach Proximately $360 Million in Annual Revenue by 2020

A research estimates that the income from keenly intellective parking systems will reach $356.5 million yearly by 2020 ecumenical. Thus perspicacious parking has an abundance of potential and is going to experience tremendous magnification in the coming years. Engendering more parking spaces is not going to solve the quandary but we require a stable vision of parking that manages the sodality between supply and authoritatively mandate. Optimum utilization of the available space is what should be visually examined. For example, in the parking space of 2 vehicles we should be able to park 10 or more vehicles efficaciously.

5.3. Companies specializing in Lifts/ Elevators/ Traveletors will faucet machine-driven automotive Parking Market in Asian nation in associate degree organized Manner

Currently automated keenly intellective parking market in India is unorganised and faces lot of challenges like lack of regulatory body to control the quality of ACP systems, lack of adept labour to assemble and high initial investment to denominate a few.

Since hoists/ elevators/ traveletors have the intrinsical technology they can elongate it to design the automated car parking system which will gain them sizably voluminous profits since currently Indian companies

are procuring the systems from peregrine companies and then installing it here. Additionally these companies can compose a consortium and set standards and avail quicken the automated parking system in India.

6. Smart Parking Technologies Currently Available throughout the World

Opting for a parking space in cities during the peak hours is an arduous job for daily commuters. The situation arises from people who are incognizant of available spaces maybe at that time; even if kenned, many vehicles in the parking space cause solemn traffic congestion.

Hence a substantial amount of duration is disoriented for probing an available space and additionally found that 80% more fuel wastage is done than mundane to find a vacant parking space in parking area. To solve this quandary, special system in the parking area to find empty space and show the information to the people who search for the vacuous space are designed.

6.1. Perspicacious Parking System utilizing Wireless Sensor Networks

Besides displaying the availability status at sundry locations which has strategic paramountcy. The SMS feature is utilized because the number of mobile phone users is prodigiously and sizably voluminous and the utilization of SMS withal preserves cost incurred in printing parking bills and thus preserves paper additionally.

One method uses sensors which are cost efficacious and they detect if a car is present or absent in particular parking space i.e. authentic-time parking space availability. Adscititiously, the sensors withal give information like the car parking time and withal the health status.

6.2. Smart Parking Applications using RFID Engineering science

Albeit utility of RFID is kenned for a long time, it was not utilized to its full potential. Keenly intellective parking application which uses RFID technology requires no human intervention and is utilized for conveyance detection. It can additionally be acclimated to develop automatic parking fee amassment system. This technology avails the drivers to expeditiously check-in and checkout from the parking lot and additionally makes the parking secure. The RFID sensor at the ingression point avails in eschewing multi check-ins thus evading traffic congestion in the parking lot. The RFID technology enables automatic parking fee accumulation thus preserving time of the drivers.

6.3. Car Parking System utilizing GSM and RFID

The microcontroller is generally interfaced with GSM and RFID module. The GSM technology utilizes the SMS accommodation. The IR sensor which is at that parking slot, analyze if it is vacant, and if it finds that there is availability, then it sends corroboration. The SMS contains details like the Parking slot number, sanctioned Parking duration.

6.4. QR code predicated Conveyance Parking System

The paramount components are the parking zones, the users and the database required for the astute parking system. The management decides the parking tariffs and broadcasts live parking information to conveyance drivers. On receiving parking details, the utilizer culls a desired parking space and additionally books a space.

Upon substantiation of the parking space, SPSR engenders a unique QR code (Kieseberg et al., 2010) and sends it to the utilizer. As a result, users' parking decisions transmutes the state of parking resources. The reservation ascendancy distinguishes each utilizer by the unique QR code which the management system has sent to the utilizer at the time of reservation. After the reservation is done, the management updates the data. Predicated on the state of parking lot, the system

- Analyses the congestion level and vacancy status.
- Culls the parking prices
- Preserve the QR code, prices and parking information for future analysis.

6.5. Multi-level Car Parking System utilizing Image Processing

This technology which uses Image processing (M.O., M.F., A.A., & M.A.R., 2012) exercises automated car parking which conveys cars to various parking stages. So, this car parking system requires minimum ground

space area thus preserving on the cost of building. In most cases, a circular parking system is found where the cars are being hoisted from the base level. The base rotates circularly while a rack-pinion mechanism is utilized to hoist the cars to the parking chamber at different calibers. To hoist and place the cars in a vacuous space is a tedious task and hence robotic arms or prehending mechanism is found in the parking systems.

III. CONCLUSION

We can conclude from the survey that Keenly intellective Parking is at a very tender stage in India and people remotely ken about the technology. They cannot distinguish between perspicacious parking and automated parking which is already very prevalent in India. However people are inclined to accept it as it will solve many quandaries like space availability, wastage of time, fuel and will additionally provide security to the conveyance. Hence Keenly Intellective Parking has got a sizably voluminous potential as many Keenly intellective City projects are coming up in India and an astronomically immense investment has already been lined up.

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