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SMART PARKING MANAGMENT SYSTEM

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ABSTRACT

Parking the car is one of the difficult task that we are facing in our day to day life. The main issue is providing the sufficient parking system. Nowadays it is very hard to find the availability of parking slots. The various places (public) that is shopping mall, cinema hall etc. finds it difficult to search the available parking area. This calls for the situations of a Smart car parking system which is based on local networks, and commanded by Android application. In this project a small prototype of smart car parking system which is based on local own networks is implemented. The paper proposed a system that the user will automatically find the parking space through an android application via server. In addition to this we can say that it's a new way of communication between humans and the things with the help of new technology based on networking.

Keywords: *Smart-parking system, Performance matrices.*

I. INTRODUCTION

In order to propose and implement a smart-parking system based own networks of parking slots and commanded by Android application that helps automatically find free parking space based on the parameters of performance that makes the system cost and time efficient. The parking slots which are available can be updated on a database so that every user connected with the network can identify free parking slots in a specificlocation. Time and cost are two important factors of human life, whether for an individual or a business. As quality of life increases, more and more people are inhabiting cities. Urban life requires centralized public facilities. Shopping complexes are an important point of interest both for a city's inhabitants and for visitors. With the emergence of modern shopping complexes which provide a variety of services, more and more people are attracted to visit them. Hence, more shop owners prefer to locate their business in shopping complexes to target more customers and increase revenue. Recently, shopping complexes have begun providing services much more diverse than just pure selling and buying. Customers can use banking services, post offices, food courts, cinemas, children play areas, and so on. The growth of shopping malls has influenced shopping culture and behavior. Providing sufficient parking for visitors is one of the main issues in developing shopping complexes. Offering safe and secure parking lots with a sufficient number of spaces and paying attention to handicapped drivers are a few of the factors which can increase customer loyalty and attract customers to visit a shopping mall more frequently. Among the various types of parking lots are multilevel parking, roadside, roadside with ticket and barrier gate and roadside with parking meter; of these, the multilevel parking lot is the most preferred by patrons. Safety, weather conditions, proximity and car park fees respectively are the main factors by which patrons choose a specific parking lot. Hence, multilevel parking lots are preferred, and for this reason were selected as the parking lot type for this study. Smart Car Parking Application detects car park occupancy each parking space. Vacant occupied, handicapped or reserved spaces are indicated on the Android mobile app. This all things are done with the help of the latest technology called Internet of Things.

II. LITERATURE REVIEW

In this paper we design and implement a prototype of reservation based smart car parking system that allow drivers to effectively find and reserve the find vacant parking space. By periodically learning the parking states from the sensor networks, deploy in parking lots, the reservation service is affected by the change of physical parking status. The drivers are allowed to access this cyber physical system with their personal communication device. The

experiment results show that the proposed reservation based parking policy has the potential to simplify the operation of parking system. We implement parking reservation policy to balance the benefit of service provider and requirements from the user. We con- clude that the proposed the reservation based smart car parking system can alleviate traffic congestion caused parking searching and reduced the amount of traffic volume searching for parking. [1].

This paper proposes an android application, which is used to implement a prototype of smart car parking system based reservation that allows driver to effectively find and reserves the vacant parking spaces with the help of IOT with slot allocation method and performs automatic billing process. The proposed system guides drivers to find available parking space near them, less number of drivers searching to park, thus it reduces traffic congestion, it avoids air pollution and global warming, it is scalable robust and reliable, it reduces the drivers stress and improves urban area, it provides tools to optimize the parking space management, it is accurately found out the vehicle occupancy in real time. The main contribution of our proposed system is to find out status of parking area and provides secure parking[2].

The aim of this paper is to automate the car and the car parking as well. It discusses a project which present a miniature model of an automated car parking that can regulate and manage the number of cars that can be parked in a given space at any given time based on the availability of parking slot. Automated parking is a method of parking and existing cars using sensing devices. The entering to or leaving from the parking lots is commanded by an android based application.[3]

This paper proposes a smart parking system for heavy traffic environments using zigbee wireless transmission module. The proposed system is suitable for multifloor building and able to send and send a message to vehicles about the status of parking space. The parking monitoring system continuously collect the data from parking slot detector and then it intiements the vehicle section. We simulate the proposed system using Zigbee and to other popular wireless technologies: Bluetooth and WiFi, experimental results show that Zigbee provides transition time and power advantages over Bluetooth and Wi-Fi[4].

III. RELATED WORKS

IoT based smart parking system In recent times the concept of smart cities have gained grate popularity. Thanks to the evolution of Internet of things the idea of smart city now seems to be achievable. Consistent efforts are being made in the field of IoT in order to maximize the productivity and reliability of urban infrastructure. Problems such as, traffic congestion, limited car parking facilities and road safety are being addressed by IoT. In this paper, we present an IoT based cloud integrated smart parking system. The proposed Smart Parking system consists of an on-site deployment of an IoT module that is used to monitor and signalize the state of availability of each single parking space. A mobile application is also provided that allows an end user to check the availability of parking space and book a parking slot accordingly. The paper also describes a high-level view of the system architecture. Towards the end, the paper discusses the working of the system in form of a use case that proves the correctness of the proposed model. Intelligent car parking system Localization is a key issue of the navigation system to guide unmanned ground vehicle in an intelligent Space. Intelligent Space is an environmental system. This intelligent Space able to support informative and physical ways. The proposed system includes sensors information fusion, position estimation, path planning and tracking. Camera is used to get image information of the robot. Image processing and FPGA embed-ded together to identify position and orientation of UGV very correctly and accurately. The proposed architecture works on distributed image processing pixels which causes the amount of data to be transmitted through communication network will be minimum. This causes a reasonable, very efficient solution, simple, adaptable. The hardware/software localization setup described in this paper is cheap and easy to use and may provide support in several industrial and domestic scenarios.

2.2 Intelligent car parking system Localization is a key issue of the navigation system to guide unmanned ground vehicle in an intelligent Space. Intelligent Space is an environmental system. This intelligent Space able to support informative and physical ways. The proposed system includes sensors information fusion, position estimation, path

planning and tracking. Camera is used to get image information of the robot. Image processing and FPGA embedded together to identify position and orientation of UGV very correctly and accurately. The proposed architecture works on distributed image processing pixels which causes the amount of data to be transmitted through communication network will be minimum. This causes a reasonable, very efficient solution, simple, adaptable. The hardware/software localization setup described in this paper is cheap and easy to use and may provide support in several industrial and domestic scenarios.

2.4 A Cloud-Based Smart-Parking System Based on Internet-of-Things Technologies This paper introduces a novel algorithm that increases the efficiency of the current cloud-based smart-parking system and develops a network architecture based on the Internet-of- Things technology. This paper proposed a system that helps users automatically find a free parking space at the least cost based on new performance metrics to calculate the user parking cost by considering the distance and the total number of free places in each car park. This cost will be used to offer a solution of finding an available parking space upon a request by the user and a solution of suggesting a new car park if the current car park is full. The simulation results show that the algorithm helps improve the probability of successful parking and minimizes the user waiting time. We also successfully implemented the proposed system in the real world.

IV. PROPOSED SYSTEM

In the Proposed architecture we can book the parking space. The system provides a mechanism to prevent disputes in the car park and helps minimize wasted time in looking for a parking space. After logging into the system, the user can choose a suitable parking space. Information on the selected parking location will be confirmed to the user via notification. Then, the system updates the status of the parking space to pending during which time the system will not allow other users to reserve it. If after a certain period of pending time the system determines that no car is parked in that space, then it changes the status to available. If the parking location is booked than the status change to red. Therefore, the status of the overall parking system is always updated in real time. The system will help plot the parking time for each parking space in real time and can support the business with hourly parking charges.

V. MATHEMATICAL MODEL

System Description:
Input: Car for parking
Output: Efficient management of automation and modernization of car parking. Let S be the whole System,
S = {I, P, O}
I-input, P-procedure, O-Output I = {PP, ES, U, SI}
U = {UI, PH, CI}
U = user
UI = User id PH = Phone No CI = Car id PP
= Parking Places ES = Empty
P = {p0, p1, p2}
p0 = search parking place p1 = Check for empty slot p2 = book parking
O = (S)
S0 = Car Parked
S1 = Space Not available for parking

VI. CONCLUSION AND FUTURE WORK

This study has proposed a parking system that improves performance by reducing the number of users that fail to find a parking space and minimizes the costs of moving to the parking space. The simulation of our system achieved the optimal solution when most of the vehicles successfully found a free parking space. The average waiting time of each car park for service becomes minimal, and the total time of each vehicle in each car park is reduced. The allotment of the parking slot by an autonomous searching method makes the parking of vehicles at public places

more efficient. The searching and allotment of parking slot, based on the status of available slots, to the appropriate free slot, easier. The proposed system makes use of Android application to facilitate the parking and retrieval of the vehicle, for the user. We hereby aim to reduce the human efforts required for parking of vehicle at public places like shopping malls, public parking, 5- star hotels etc. Thus, the proposed design would provide an efficient car parking system by using an efficient searching method. A favorable network solution must make parking facility easy to upload field data to the network with no need to abandon established assets, all with minimum additional investment, reduced maintenance burden and cost using. Router network, field data can be retrieved, analyzed and stored to the database. This allows the parking system to be monitored in real time, providing considerable benefits to the management and efficiency of the parking systems.

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