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A Cloud-Based Smart Vehicle Parking System for Smart Cities

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ABSTRACT: In most of the developed cities people usually suffers with parking problems which directly effects the traffic manage-ment system and peoples life.In this paper we introduce new intelligent parking system which enables drivers to check all available as well as non available slots and to reserve the slot. The primary commitment of our proposed framework is to discover status of the parking region and give the secured parking.The framework has pulled in expanding considerations from both academics and industrial communities. It can be sent in different sorts of situations to monitor and gather data.It is android based smart vehicles parking system in which all the available and non available slots are being viewed into a vehicle park field. User login to the system using biometric.System generates RFID tag for identification of user.The android application allows run time payment of money.If time is exceeded then accordingly rates are being increased.The framework assessment exhibits the effectiveness of framework design and implementation of vehicles parking system.

KEYWORDS: Smart parking, Traffic conges-tion,Reservation,Mobile application,Cancellation, RFID tag.

I. INTRODUCTION

Traffic congestion is a major issue especially in urban areas. Sometimes traffic within the city grids to a halt, which is more often the case when it rains and police officers go for shelter leaving the traffic uncontrolled. In numerous events when this happens, it requires time before smooth activity stream is re-set up. In a normal day, the congestion may be caused by several factors including the absence of information on available parking spaces. As a result drivers spend time driving along the streets in search of parking space. This means that a significant number of vehicles are on the street shopping to locate a parking space which increases the number of cars on the streets unnecessarily and contributes towards the congestion not to mention the pollution caused by their exhaust fumes and the noise emanating from their engines.

PARKING is an expensive process in terms of either money or the time and effort spent for the free spot”chasing.Parking spaces are found to be more than plenty in some places and very rare to nd in others.Valuing approaches had played an important role in the general parking accessibility for consider-able length of time .Here comes the important question: do we need to have more parking spaces or do we need better parking management. We believe it is the later and thus the motivation

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behind this work is about better parking management with fair and profitable pricing policies.One of the key issues that smart urban communities identify to is car parking facilities and traffic management systems.When we visit the different open spots like shopping centers, multiplex silver screen lobby and lodgings during the celebration time or ends of the week it makes all the more problem issue.The fundamental commitment of our proposed frameworks is to discover status of the parking area and provide secured parking.

Our system has pulled in expanding considerations from both academic and industrial communities. It can be sent in different sorts of conditions to monitor and gather data. We portray an android based intelligent vehicles parking system.User can login to android application through biometric. In the system, all the available as well as non-available slots are being viewed into a vehicle park field.Radio frequency identification (RFID)is a non specific term that is utilized to describe a framework that transmits the the identity (as a re-markable serial number) of an object or person remotely, using radio waves.RFID tag is utilized to recognize the approved client.RFID tagging is an ID system that uses small radio frequency identification devices for identification and tracking purposes.System allows run time payment of money. If time is exceeded then accordingly rates are being increased.

Finding a parking space in urban areas is a daily challenge for drivers across the world,due to the increasing amount of vehicles. Among of many different sorts of standard stream blockage, there are likewise numerous types of parking related blockage. This causes numerous unwanted issues, for exam-ple, ecological issues, air contamination, commotion vitality utilization and parking spot lack. An investigation led between 1927 and 2001 in the central business areas of eleven urban areas on four landmasses reached the conclusion that around 30 % of the autos in the road turned parking lot are searching for a parking space and the normal time to discover a control space is eight minutes .

Todays technologies make it possible to gather refreshed continuous parking data for example, parking area, limit, parking charges and current accessibility of various parking facilities, which can be utilized for a more intelligent parking guidance .This can be summarized under the term smart parking" that can be thought to be a subgroup of smart cities". The use of smart phones has been increasing in the last few years , which opened many possibilities to assist humans in every day life. Especially contracts for broad band access on mobile devices increased significantly in the last five years in Switzerland. To overcome the parking issue novel techniques such as smart phones can be used. For example to show parking availability and to guide drivers to free parking spots. The increase in broad band access on mobile devices brings up new possibilities such as displaying real-time parking data on mobile web maps like Google Maps .There has already been a lot of effort put in this topics to find possible solutions to solve the parking problem.The key goal of this work is the optimization of existing space by the use of modern technologies and by offering a less cost intensive solution.

II. SYSTEM ARCHITECTURE

Three parts in the keen stopping model, including stopping zones, clients and the database shrewd stopping framework. The administration framework decides the stopping costs and communicate lives stopping accessibility data to clients (likewise drivers).After getting parking data, the client chooses wanted parking garage and holds a space. When client holds a parking spot, Admin produces an unique RFID tag and sends it to the client. Accordingly, the condition of parking resources is changed by clients parking choices.

The state of a parking lot is the number of occupied spaces versus total spaces.Each parking area approaches the Internet to speak with the administration framework and clients, and offer parking data with other parking areas. In each parking garage, the reservation expert is conveyed for confirming the individual client's personality and reservation request.Reservation authority identifies each user by the unique RFID tag which has been send by the management system to the user at the time of reservation.

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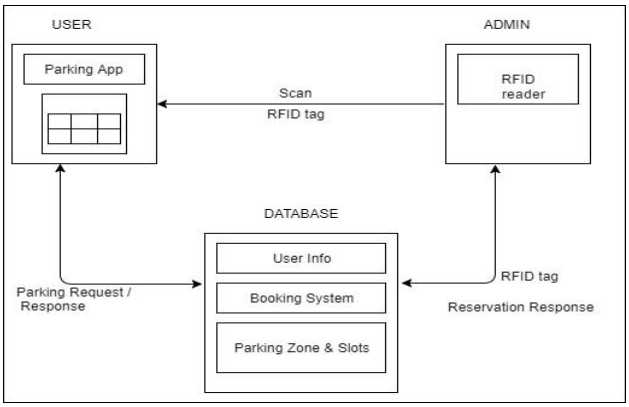

Fig. 1: system architecture

III. LITERATURE REVIEW

”Smart Car Parking System”, by Sunil Dhakne1, et al. In this paper the mix of continuous reservations with share time reservations, powerfully performing framework choices (reservation time imperatives and evaluating) as per constant usage data, and offering the drivers the decision of picking different goals and reservation sort.

”Cruising for parking”, by Donald C. Shoup In this paper check stopping is an unreasonable sponsorship since it urges drivers to accomplish something that damages

other individuals and may not profit the drivers them-selves.Cities must then throw good money after bad by spend-ing more to fix the congestion and pollution problems they have created

”Smart Parking System an Intelligent webApplication for Parking Search and Reservation”, by Govind Kamlesh Gupta et al. This system helps drives to find a optimal parking spot. Finding a spot for parking is based on a unique algorithm which is combination of KNN i.e. k nearest neighbor and avail-ability of parking slots. Special security feature is introduced which contains QR code mechanism to allow driver who has booking QR code.

”An Algorithm of Parking Planning for Shrewd Parking System”,by Xuejian Zhao et al.presented a novel strategy for stopping making arrangements for shrewd stopping sys-tem,transform stopping arranging into a sort of straight task issue by holding stopping questions in a line for some time. Build up another estimate calculation The experimental results on simulation clearly show our method is a feasible method which can give timely and efficient solutions for a real time smart parking system.

” Technical Solutions to Overcrowded Park and Ride Fa-cilities ”,by Kyriacos C. Mouskos et al. This paper is mainly focused on A prototype parking information and reservation system through the web and cell phone. It incorporates a stopping reservation calculation and arrangement strategy, an online stopping reservation framework and a mobile phone based stopping reservation and data system also This paper proposes an ensemble classification method together with a motion model in order to deal with the above issue. Exami-nations demonstrate that proposed strategy is fit for emulating GPS conduct on vehicle following.

we propose a savvy stopping framework consolidating WiFi and remote sensor organize. In this framework, geomagnetic sensors are utilized to distinguish the control of parking spots, and WiFi is utilized for route. A model framework has been produced.

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”A savvy stopping framework utilizing WiFi and remote sensor In recent years, the demand of accurate positioning and navigation is increasing,especially in a complex indoor environment, such as underground mines, shopping malls,by Cheng Yuan;Li Fei et al.etc. We often need to obtain the location of terminal device and its holder.

”Relative location estimation of vehicles in parking man-agement system”,by T. Read et al. The primary requirement of content distribution is to efficiently deliver and share these multimedia-rich contents to the vehicles traversing the network.

”The investigation of Cyber-security experimentation: The prevent venture”, by T. Benzel et al.presents the DETER project,which creates DeterLab, an office gave to the experi-mentation and educating of digital security ideas.

”Park Here! a smart parking system based on smart phones embedded sensors and short range Communication Technolo-gies”, K. C. Chan and M. Martin, present solution targets common city environments, where no per-spot sensors are available, and there is no remote service allowing the reser-vation in-advance of a parking spot. For this scenario, we propose a new algorithm for the computerised detection of parking actions performed by the user, through the analysis of smart phone embedded sensors (accelerometer/gyroscope), and of the Bluetooth connectivity.

”A Comparative Review on Car Parking Technologies”,by R.Ranjin et al. In this paper, parking technologies that allocate optimal parking slots for users are studied. These methods are analyzed on the basis of system complexity, scalability, cost, fairness, and techniques used. For a small parking area, it is not essential that the system must provide very high fairness. Moderate fairness, less complexity, low cost factors can provide an efficient parking management system..

IV. SUMMARY

Due to the rapid development of technology, the use of smart mobile devices and their applications has become increasingly common. The conveniences these technologies provide have also brought about the development of a variety of applications. In recent years, small urban areas have become more densely populated;therefore, this study planned a city parking integration system based on smart mobile devices and their applications so that parking management systems can offer other services, such as navigation and reservation functions, beyond simply providing the number of empty park-ing spaces. The current research ultimately aims to achieve real-time, convenience, and integrity of services to increase users willingness to use the services and compensate for the not sufficient of systems in the past.In this system, parking management systems not only provide users with the number of vacant spaces, they also provide real-time information on parking lots and guide users to open parking spaces, as well as reduce costs for labor management and positioning facilities.

V. CONCLUSION

we conclude that we can book our own parking slot us-ing slot allocation within less amount of time.Here we can overcome the traffic congestion and provide automated billing process using the android application.It is one of the efficient way for solving parking problems. This framework works on real time parking information based on which it makes reservation and on spot resource allocation of parking spaces for drivers. This work focuses on a parking system with prior reservation to overcome waiting in the queue. Smart parking with reservation framework builds the income for specialist organizations, gives benefit separation to clients with various requirements, eliminates traffic congestion pertaining for parking.

VI. FUTURE SCOPE

The main purpose of this project is to reduce the traffic congestion that occurs in an around the urban areas which is caused by vehicle searching for parking.This work is addi-tionally extended as a completely computerised system using

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multilayer parking methods.Safety measures such as tracing the vehicle number so as to avoid theft and automatic billing process can also be design.We planed to expand the test on the real time environment where the user can the ”smart parking system ” in their hand-held devices.

Evaluate system using real-time data and greater number of resources and destinations. Simulate different parking arrival scenarios in real life. Different algorithms and techniques can are used

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