Eleyon
SOUTH ASIAN JOURNAL OF ENGINEERING AND TECHNOLOGY

Full Length Article

Smart Car Parking Using AI

P.Vivek [a], Sasi Phani Reddy Bandi[a]

[a] *UG Student,Department of Computer Science and Engineering,Nandha College of Technology,Erode-52, Tamilnadu, India*
[a] *UG Student,Department of Computer Science and Engineering,Nandha College of Technology,Erode-52, Tamilnadu, India*

***Corresponding Author**
mugunthkumar99 @gmail.com
(Vivek.P)
Tel.: +91 6379732852

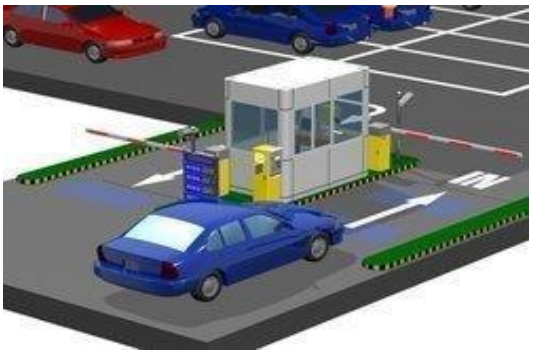
Received : 19-2-2019
Reviewed : 25-3-2019
Revised : 26-4-2019
Accepted : 05-5-2019

DOI:

Abstract : In recent times the concept of smart cities have become very popular. Thanks to the Internet of things the idea of smart city now seems to be completed. 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.

Keywords: Internet of Things, Smart Parking, Smart City

1 Introduction



The concept of Internet of Things (IoT) started with things with identity communication devices. The devices could be tracked, controlled or monitored using remote computers connected through Internet. IoT extends the use of Internet providing the communication, and thus inter-network of the devices and physical objects, or 'Things'. Internet means vast global network of connected servers, computers, tablets and mobiles using the internationally used protocols and connecting systems. Internet enables sending, receiving, or communicating of information.

Thing in English has number of uses and meanings. Dictionary meaning of 'Thing' is a term used to reference to a physical object, an action or idea, situation or activity, in case when we do not wish to be precise. IoT, in general consists of inter-network of the devices and physical objects, number of objects can gather the data at remote locations and communicate to units managing, acquiring, organizing and analyzing the data in the processes and services.

2 PROBLEM STATEMENT & OBJECTIVE

2.1 Problem Statement :

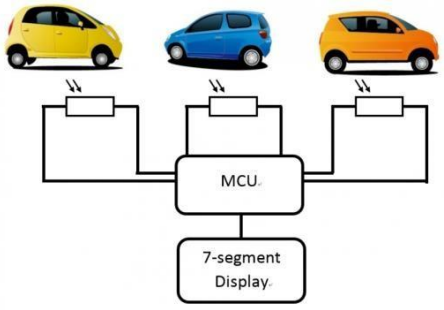
1. Parking management influences drivers search time and cost for parking spaces.

2.It may also causes traffic congestion.
3.Finding a parking space in most metropolitan areas, especially during the rush hours, is difficult for drivers.
4.Difficulty arises from not knowing where the available spaces may be at that time traffic congestion may occur..

2.2 Objective

1.Parking space reservation can help drivers to reduce the search time dramatically.
2.With the real-time reservation service, the drivers can find and reserve their desired vacant parking spaces quickly. Therefore, the gasoline and time in search of vacant parking space is reduced.
3.It reduces time in search of vacant parking spaces is reduced so it reduces traffic congestion caused due that.

3 Architecture

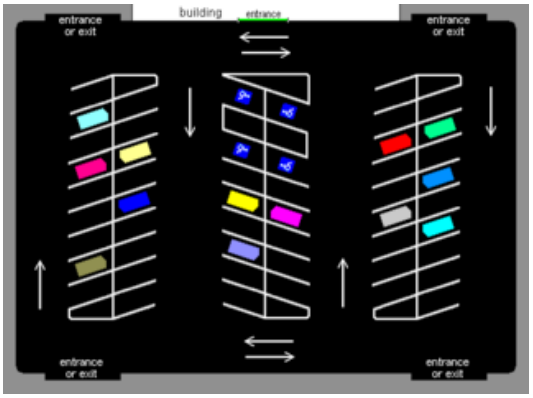


Power Supply
Power supply gives 5v supply to the PIC microcontroller and other block also work on 5v DC.
IR Sensor
The IR sensor used to detect the car in parking. If car is present then it shows on cloud as that parking slot is allowed if not allowed then it will shows that parking slot empty.
Reservation
If you booked parking then from booking time then it will booked for next 5 minutes and countdown start at timer.
Buzzer
If any other person parked their car in booked slot then alarm will get buzzed periodically for some time as per set.
LED
On LED we will show the indication of booked slot. LCD LCD part is used in security area for check out the parking is allotted or free.

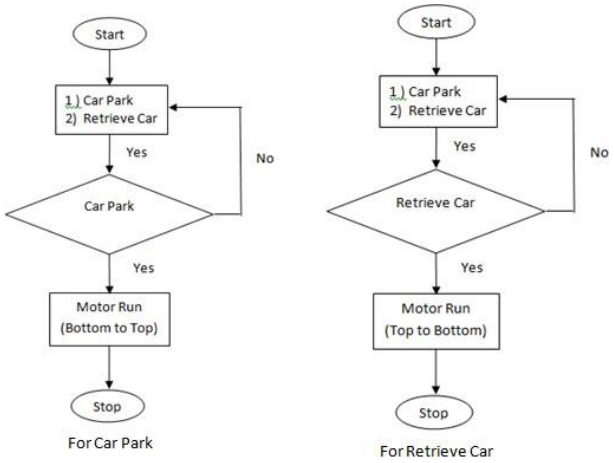
3.1 WORKING PRINCIPLE

Algorithm

1. Start.
2. Turn on the power supply.
3. IR sensor will get activated.
4. Search online for empty parking slot from android application.
5. Space detection will start.
6. If space is detected data sends and stored on cloud by sending system status by GSM.
7. LED will start showing the number of parking slots. Display on front LCD that the slot is booked.
8. Else go to step 5.
9. Shows space on cloud.
10. We can now book empty parking slot online.
11. LED indication will get off.
12. IR sensor will open a gate.
13. End.



3.2 Flow Chart



The working flowchart system for Automated Car Parking System

4 Conclusion

The concept of Smart Cities have always been a dream for humanity. Since the past couple of years large advancements have been made in making smart cities a reality. The growth of Internet of Things and Cloud technologies have given rise to new possibilities in terms of smart cities. Smart parking facilities and traffic management systems have always been at the core of constructing smart cities. In this paper, we address the issue of parking and present an IoT based Cloud integrated smart parking system. The system that we propose provides real time information regarding availability of

parking slots in a parking area. Users from remote locations could book a parking slot for them by the use of our mobile application. The efforts made in this paper are indented to improve the parking facilities of a city and thereby aiming to enhance the quality of life of its people.

REFERENCE

Chang E.Y., Li H., Wang Y., Zhang D. and Zhang M. (2008), 'PFP: Parallel FP-growth for query recommendation', in Proc. ACM Conf. Recommend.Syst., Lausanne, Switzerland, pp. 107–114.

Chang W.L., Chen P.L. and Lin K.W. (2011), 'A novel frequent pattern mining algorithm for very large databases in cloud computing environments', in Proc. IEEE Int. Conf. Granular Comput. (GrC), Kaohsiung, Taiwan, pp. 399–403.

V.S. Sureshkumar ."Privacy preservation for cloud Data using Triones in Multi cloud", International journal of innovative Research in Engineering Science and Technology pp:1-7, Issue Special issue, volume3,2016

Chunyan H., Hong S., Huaxuan Z. and Shiping s. (2013), 'The study of improved FP-growth algorithm in MapReduce' in Proc. 1st Int. Workshop Cloud Comput. Inf. Security, Shanghai, China, 2013, pp. 250–253S.

Dean J. and Ghemawat S. (2008), 'MapReduce: Simplified data processing on large clusters', Commun. ACM, vol. 51, no. 1, pp. 107–113

A.Beloglazov and R. Buyya. Energy efficient allocation of virtual machines in cloud data centers. In Proc. of the 10th IEEE/ACM Intl. Symp. on Cluster, Cloud and Grid Computing (CCGrid 2010), 2010.

R. N. Calheiros. CloudSim: a toolkit for modeling and simulation of cloud computing environments and evaluation of resource provisioning algorithms. Software: Practice and Experience, Wiley Press, NY, USA, 2010.

VMware Inc. VMware distributed power management concepts and use, 2010.

Y. Song. Multi-Tiered On-Demand resource scheduling for VM- Based data center. In Proc. of the 2009 9th IEEE/ACM Intl. Symp. On Cluster Computing, pages 148-155, 2009.

C. Vecchiola and Aneka: a software platform for .NET-based cloud computing. High Performance & Large Scale Comp., Advances in Parallel Computing, pages 267-295, 2009.

Preethi, B.C. and Vijayakumar, M. " A novel Cloud Integration Algorithm(CIA) for Energy Efficient High Performance Computing Applications in Big Data Multimedia Applications", Romanian Journal of Information Science and Technology, vol. 2, no.1, pp. 1-11, March 2018

Prakash, S. and Vijayakumar, M., "An effective network traffic data control using improved Apriori rule mining," Circuits and Systems, Issue 10, Vol. 07, pp. 3162-3173, June 2016.

V.S. Sureshkumar, D. Joseph Paul, N.Arunagiri, T.Bhuvaneshwaran , S,Gopalakrishnan "Optimal Performance And Security Of Data Through FS- Drops Methodology" ,International Journal of Innovative Research In Engineering Science and Technology , pp:1-7, Issue 3, volume5,2017

Prakash, S. and Vijayakumar, M., "Risk Assessment in Cancer Treatment using Association Rule Mining Techniques," Asian Journal of Research in Social Sciences and Humanities, Issue 10, Vol. 06, pp. 1031-1037, June 2016.

Cong S, Han J., Hoeflinger J. and Padua D. (2005) 'A sampling-based framework for parallel data mining', in Proc. 10th ACM SIGPLAN Symp. Prin. Pract. Parallel Program, Chicago, IL, USA, pp. 255–265.

Vijayakumar, M. and Prakash, S., "An Improved Sensitive Association Rule Mining using Fuzzy Partition Algorithm," Asian Journal of Research in Social Sciences and Humanities, Issue 06, Vol. 06, pp. 969-981, June 2016.

V.S. Sureshkumar "Optimized Multicloud Multitask Scheduler for Cloud Storage and Service by Genetic Algorithm and Rank Selection Method" ,International Journal of Advanced Science Engineering and Technology , pp:2-7, Issue 4, volume 3,2014

Saveetha P and Arumugam S, "Study on Improvement in RSA Algorithm and its Implementation", International Journal of Computer & Communication Technology, Vol.3 No.6,PP.78, 2012.

V.S. Suresh kumar, Vijaya Rao.S, V Vijay, D Nagarjun, G Thangavel "E-Commerce Recommendation over Big Data based on early reviewers for effective product marke ting Prediction Rates", South Asian Journal of Engineering and Technology, pp: 202-204, Issue 204, volume 202, 2019

Saranya M and Nithya K, "Campus Navigation and Identifying Current Location through Android Device to Guide Blind People", International Research Journal of Engineering and Technology (IRJET), Vol.02,Issue :

08,Nov 2015.

Gokulraj P and Kiruthikadevi K, "Revocation and security based ownership deduplication of convergent key creating in cloud", International Journal of Innovative Research in Science, Engineering and technology. Vol. 3, Issue 10, ISSN: 2319-8753, October 2014.

V.S. Sureshkumar, A.Chandrasekar, "Fuzzy-GA Optimized Multi-Cloud Multi-Task Scheduler For Cloud Storage And Service Applications", International Journal of Scientific & Engineering Research , Volume 4, Issue3, March-2013

Saveetha P, Arumugam S and Kiruthikadevi K, "Cryptography and the Optimization Heuristics Techniques", Int. Journal of Advanced Research in Computer Science and Software Engg , volume. 4, Issue.10, ISSN: 2277 128X, October 2014.

Nithya K, Kalaivaani P C D and ThangarajanR, "An enhanced data mining model for text classification", International Conference on Computing, Communication and Applications,PP.1-4,2012.

Dhivyaa C R, Nithya K and Saranya M, "Automatic detection of diabetic retinopathy from color fundus retinal images", International Journal on Recent and Innovation Trends in Computing and communication,Vol.2 ,Issue 3, ISSN:2321-8169, 2012.

V.S. Sureshkumar, Dr.M. Vijayakumar, "DDoS Attack Detection By using Traffic Flow Analysis for Streaming Data ", International Journal on Engineering technology and Science pp:2-7, Issue 8, volume 2,2015

Kamesh V, Karthick M, Kavin K, Velusamy M and Vidhya R, "Real-Time Fraud Anomaly Detection in E-banking Using Data Mining Algorithm", South Asian Journal of Engineering and Technology,Vol.8,supplementary issue.1,PP.144-148,April 6,2019.

Vijayakumar M and Prabhakar E, "A Hybrid Combined Under-Over Sampling Method for Class Imbalanced Datasets", International Journal of Research and Advanced Development (IJRAD), Volume 02, Issue 05, pp. 27-33, December 2018.

V.S. Sureshkumar "Extended Framework For Dynamic Resource Allocation Using Asjs Algorithm In Cloud Computing Environment" , International Journal on Engineering Technology and Sciences, pp:1-7, Issue 8, volume 1,2014

Cong S, Han J., Hoeflinger J. and Padua D. (2005) 'A sampling-based framework for parallel data mining', in Proc. 10th ACM SIGPLAN Symp. Prin. Pract. Parallel Program, Chicago, IL, USA, pp. 255–265.

Dean J. and Ghemawat S. (2008), 'MapReduce: Simplified data processing on large clusters', Commun. ACM, vol. 51, no. 1, pp. 107–113