



A Review of Parking Management System at SSCET Campus

Shreya M. Barde^a, Shradhesh R. Marve^b, Manish S. Ramteke^c, Omkar V. Ghode^d, Sonali R. Khade^e, Purva R. Isankar^f, Kundan H. Peshattiwar^g

^{a,c,d,e,f,g}B. Tech Student, Shri Sai College of Engg. & Tech Bhadrawati, Chandrapur, 442902, M.S. India

^bAssistant Professor, Shri Sai College of Engg. & Tech Bhadrawati, Chandrapur, 442902, M.S. India

DOI: <https://doi.org/10.55248/gengpi.2022.3.7.15>

ABSTRACT:

As we know the Parking Problem is a major problem nowadays, so this research is basically for improving the Parking System on College Campus. Now, students, teaching staff, and Stakeholders are facing many problems regarding parking on our campus, where parking area shortage is a common problem in SSCET college. One of the main solutions is to equip a Proper parking Management system on our campus. Because the improper arrangement of Parking is provided to student's teaching staff and visitors. In this Research, we will be able to solve parking problems in our college by restructuring parking arrangements and we will be Implementing a good parking facility system for the SSCET campus and making good arrangements for the parking system by making a proper Survey of the area of Campus i.e., the area required for Parking as well as the type of parking for two-wheelers as well as four-wheeler.

Keywords: Parking Management System, Survey, Traffic Count, Questionnaire Survey

Introduction

The campus parking area has been experiencing challenges in the recent past. This can be due to the increased traffic on the campus. However, it has also been observed that the parking area has to be improved to increase campus traffic. In this regard, the parking area should be divided to allow for approximate parking of vehicles. Parking facilities are very essential to avoid congestion of vehicles that are caused by roadside parking vehicles. The proper parking facilities lead to less consumption of fuel and are not adequate for the vehicles causing congestion then it will be more people to park their vehicles along roadsides having various problems within campus health issues and increases in temperature on the campus. Nowadays SSCET campus is facing serious parking as there is a fright of parking facilities the supply of vehicles is maximum than the spaces available within the college campus for parking.

The number of vehicles has been increasing at an alarming speed in the campus Parking Area. This has created a high demand for parking spaces on the campus ground. The campus requires spacious parking for the ever-increasing number of automobiles available on the campus. In addition to the existing parking, the yard should be well marked and well arranged to ensure bike owners, and car owners get space for parking their vehicles.

On college campus traffic congestion also having its resultant ill effects and frustration have become the order of the day. The necessitate for traffic evaluation and assessment is likely to improve for future development of the Road Transport Network. (Bhorkar et al., 2016)

Park their vehicles nearly without overlapping. this has been a great problem where some car, bike parks their vehicles in two parking spots they include student and staff at the campus this project work will recommend an improvement of a parking facility on the campus considering the current situation on the campus student and staff at the campus have been experiencing problems in getting where to park their vehicles. However, sometimes the available parking spaces are often occupied by outsiders. In this case, students and staff members are forced to drive around the campus in search of parking spaces.

1.1. Objectives Of Research

The aim of implementing a parking management system is to reduce time and increase the efficiency of the current parking management system. We can park our vehicles in our slot because of that there is no towing problem and our vehicles have as been parked in a secure condition. Following are the aim and objectives of a design and analysis of parking facilities for SSCET.

- To improve parking facilities on campus.
- To make safe, convenient and of parking and transport facilities for all stakeholders.
- To provide a parking system that is efficient and easy to use.

1.2. Motivation Of Research

Parking is a vital part of transportation since vehicles have to be parked off time during the day, hence it is essential to get good management of parking space use of it. Parking problems among other things are major problems, major problems facing society, especially the university environment due to the cost of parking facilities and the limited number of available parking spaces. Explained that although building more parking

facilities appear to be the direct solution to the parking problem it is difficult to do so due to space and found challenges. This only gives one an option of ensuring that the existing facilities are effectively and efficiently utilized through policies that encourage such to ensure efficiency.(Marve et al., 2016)(Marve et al., 2020)

1.3. Need For Research

- Parking spaces are very important in college campus areas. The college campus area must have enough parking spaces for vehicles likes, motorcycles, buses, and cars.
- This enables to quickly finalize the spot available which will save time, resources and effort.
- Which parking it must ensure that where we stop our vehicles doesn't cause blockage, at the same time vehicles should be parked at a place where it is allowed to.
- Parking lots are cleared spaces that are meant for students, teacher's staff and stacks holidays to park their vehicles without any worries.
- Providing economic, and environmental benefits and sustainability.

1.4. Necessity of parking

That there are more and more vehicles parking on campus and this leads to a shortage of campus parking capacity. Because sometimes students and employees have not enough parking area. For students and faculty members who are new to your campus, offer visible signage that makes it crystal clear where to park. Campus signs are not intended to double as weather to promote head-on collisions and stamp out ambiguity.

Parking is increasingly becoming an issue on the college campus, and the problem is getting worse with an increased enrolment of students. The spaces for parking in the parking lot are not enough to accommodate the number of vehicles owned by the college staff and students. Other car owners like visitors have begun parking their cars in insecure places outside the college compound. It is administrative seems not aware. During the morning hours and break time, there is always an enormous problem of traffic. The wrong parking of cars causes a messy situation and the result is a long snarl up of vehicles trying to move, but they cannot. Wastage of time takes place in that process(Bhorkar et al., 2016)

1.5. Methodology in Counting vehicles

As per research works, we have applied a manually count method for collecting vehicle amounts in a particular region, vehicle moving i.e., two-wheeler, four-wheeler etc. further data is collected in such a manner that a graph is to be drawn with the help of this collection from data. Traffic volume was calculated by the Interval of 30 minutes at Peak hours i.e. from 09: 00 AM to 11:00 AM & 05:00 PM to 7:00 PM as well as Non-Peak Hours remaining hours (Marve & Baitule, 2016)

1.6. Population

As per research, Population increased due to which the number of vehicles percentage is increased in the last three Decades in a regular manually survey was carried out with taking help of the Municipal Council & Census town which gives clear data about the growth in the population of Chandrapur District.(Shende et al., 2018)

Year	Population	Growth
2022	3,60,777	4,798
2021	3,55,979	4,110
2020	3,51,869	3,556

Literature Review

1.7. Contrived the Collateral Parking System

The author prescribed that in the smaller parking spaces are is very difficult pre the and its mall time. In this paper,the authors are creating a prototype of parking so to reduce g the collateral of the parking so to reduce the parking time reduce the engine running the parking pollution and reduce occupying the space. The angle of the steering system but always having the angle to the level of the angle at 90 * cannot be achieved ina normal steering system. To minimize this issue, we have perpendicular rotation o of the parking System to makeIt easier. This collateral Vehicle area also to park in less space area.(Krishnamorthi et al., 2020)

1.8. Parking System – The author tries to say that the finding has become a suitable parking Space significant concern for people residing in metropolitan Cities. The main reason behind This is a lack of parking space The traditional. parking methods cannot be used today as they are ineffective at utilizing space. Hence it is vital to find an alternative parking system, tracking of parking slots is also essential which can be done using a lot System. The paper also explores the various types of car parking systems.(Shah et al., 2021)

1.9. IOT-Based Smart Parking System -The author analysis that more than half of the world's population lives in urban areas so the cities have reached full occupancy. As a result,the number of vehicles in the cities is also increased due to this most of the people spend their valuable time searching parking slots to park their behind It is a hectic job to find parking space to park their vehicles. Work proposes. This paper is an attempt at some above-mentioned problems. The System developed here is an integration of internet of things cloud technology, android application and user authentication for the ADAS system Internet of things is the internetworking a physical device embedded with electronics that enable those physical devices to connect to the internet. Io was freest introduced in 1999, at auto ID Center and first used by Kevin Aston in this System lot technology is used to connect parking slots in the parking area to the internet. Here. Cloud technology is related to doubting, updating and deleting is central server and the android application provides a vet interface. Allows users to get real-time status of parking slots, book shots and also displays parking Change which has to be passed.(Mahendra et al., 2017)

1.10. Analysis and Proposal for Construction of Parking System - The author prescribed that the phenomenon of difficult parking and disorderly parking, which has serious impacts on citizens' quality of life and the running of urban roads. Unavailability of sufficient parking spaces at rest areas results in illegal and unsafe parking at entrance/exit ramps, and other unauthorized areas. It is found that long-term parking is the key reason causing parking congestion, which is due to unclear function orientations of the parking lots. Car parking has always been an unresolved issue in most municipal cities. Despite efforts by officials of the relevant government departments to put forth new policies and launch various solution proposals from time to time; followed by aggressive actions in the implementation of improvement action plans, their work seldom yieldstangible/visibleoutcomes, and the problem remains. The traffic on roads and parking space has been an area of concern in the majority of Indian cities. To avoid these problems, recently many new technologies have been developed that help in solving the parking problems to a great extent. Thus, day by day due to the rapid increase in population in the cities throughout the world, industrialization, infrastructure development etc. leads to increased commercial motor vehicle traffic. The available land area is limited. Therefore, the management of parking systems to improve parking characteristics is of great need. In this paper, we have examined the current scenario of the parking system on the college campus of a renowned institute, making suggestions to resolve the illegal, long-standing, entangled parking issues faced indoors.(Boob & Biswas, 2018)

1.11. Automated Car Parking System -The author tries to say that the concept of the automated parking system is driven by two factors: the need for parking space and the scarcity of available land. The earliest use of an Automated parking system was in Paris, France in 1905 at the Garage Rue de Pontius. The APS consisted of a groundbreaking multi-story concrete structure with an internal elevator to transport cars to upper levels where attendants parked the cars. In the 1920s, a Ferris wheel-like APS (for cars rather than people) called a paternoster system became popular as it could park eight cars in the ground space normally used for parking two cars. Mechanically simple with a small footprint, the paternoster was easy to use in many places, including inside buildings. In 1957,74 Bowser, Pigeon Hole systems were installed and some of these systems remain in operation. However, interest in APS in the U.S. waned due to frequent mechanical problems and long waiting times for patrons to retrieve their cars.(System & Girma, 2015)

1.12. Smart Vehicle Parking -The author prescribed that a unique identification number is required and for this number plates can be a useful identification by identifying and capturing with the help of number plates. This method can be useful to manage the parking area and the same can be used for payments. Advantages Firstly this system captures the image of parking lots and then it will give information regarding the availability of free parking space and the picture will capture in a rounded image. With the help of the Camera, we can see the engaged condition of car parking. By using a single camera, we can detect many vehicles in the parking area and it will use a like sensor to take photos of vehicles. 2. Disadvantages The main disadvantage of this system is when the weather is bad then its effect the clarity of the vehicles. The camera should be placed at a good position where it can see all the car park and there is no interference by any objectThe mechanism which is required to design the whole parking lot mechanically is rack and pinion. Car park management, with networked wireless sensors and active RFID. This system uses networked wireless sensors to monitor the cars in the parking area. For the unique identification of cars, every car must have an RFID tag which would be embedded in it. Advantages This system will be very effective in the terms of simplicity and cost management for the user over the lot management model. Gate management services: As an example, a gate can be opened automatically, using an RFID reader and the vehicle's tag at the gate. Disadvantages No driver guidance system to guide towards the parking lot.(Balmiki et al., 2020)

1.13. Design & Analysis of Parking-The Author Explains that the traffic survey was carried out from the Patch of Gandhi Chowk to MEL, Mul Road in Chandrapur District. The most congested area from that Survey is to be justified as the Bus Stand Area where the most no vehicular congestion is observed. So,the author decided to make such a Multi-Storied Car parking Building Near Bus Stand Area so that the Traffic Congestion in this area may be reduced. As this Site lies in the Centre of the City and can be reduced much traffic. This research presents the design of a multi-storied car park for the mitigation of traffic challenges in public areas using various case studies. various design aspects which are considered are arrangements of deck and ramp, planning the dimensions, the bay width, aisle width, ramp dimensions, planning grid, alignment paths to exit barriers, means of escape distances, travel distances from the car to the destination, security, visibility, space allowances and lift provision.

1.14. Low-cost cost wireless Parking system-The author tries to say that the resultant scarcity of parking space has begun to spill over to other aspects of urban life in form of congestion, fuel loss, dispersed land use and low air quality. Therefore, it is imperative to solve that on one hand provides space for parking while simultaneously managing demand for parking on the other. Proper design of parking spaces is very important for a good transporting system. If there will be lack of parking space and facilities then it will be a chaotic condition for everyone. But designing any parking space is not an easy job. It seeks a lot of parameters which we need to know, we need to find out with the help of simple data by applying some technique. In this paper, an initiative has been taken to identify the major centres of congested car parking in major hubs of Kolkata and its probable measures of suggestion to combat the issue. This area. Suffering from an overall lack of parking space at a time, resulting in drives having difficulty in finding a space and excessive traffic congestion. It can be concluded that provided measures are taken, the city can combat its car parking problem issue. The procedure followed for the analysis of the need fora parking facility is depicted in the methodology of their study. A manual survey, as well as a google form, was submitted to more than 283 people and common results were considered Then an analysis of data was done using pie charts and percentage calculation. In the future scope of this paper design of parking. They are facing so many problems. Two of those acute problems is parking problem and traffic congestion. There do not have accurate parking management in their metro cities and mainly for their developing cities. This paper focuses on such problems contextual to Capacity. Due to this, there is an increment in population and number of vehicles that have resulted in traffic congestion and parking problems in this city, and street space hasn't increased. so far, the population of this city is in seven-digitnumbers. (Mutiarra et al., 2018)

Conclusion

As this Research paper is based on Literature Review part of our Research so till Conclusion of this research is to mainly Reduce congestion in the parking area of SSCET Campus i.e., the total area used for parking is 1577 Sq. mt. As there is a huge need for Parking at the SSCET campus, The Proposed campus parking area has buses, Four-Wheeler as well as two-wheeler which can be experiencing challenges in the recent past. This can be due to an increase in the use of own Bikes on Campus. However, increased traffic on campus has also been observed. The parking area should be divided to allow for appropriate parking of Vehicles. This proposed Parking System will reduce efforts in the searching slot for parking of an individual. Also, the use of less own vehicles may reduce vehicle pollution. We observe that the smart vehicle parking system in an IOT-based system provides a solution for all the existing problems of the parking system. This new parking system can solve all the challenges for all traffic-related issues. The random users who did not register can see the available parking slots. Also, will provide information to the users about the nearest places such as hospitals, hotels, schools etc.

References

- Balmiki, D., Singhal, M., Singh, A., & Tyagi, D. (2020). A Research on Smart Vehicle Parking System. *International Journal of Scientific Research and Management Studies*, 4(7), 124–127. <https://www.ijrms.com/volume-4-issue-7/index.html>
- Bhorkar, Marve, S. R., & Payal, B. (2016). A Survey on Environmental Impacts Due to Traffic Congestion in Peak Hours. *IJSTE-International Journal of Science Technology & Engineering* |, 2(08), 2009–2012. <http://www.ijste.org/articles/IJSTEV2I8054.pdf>
- Boob, R., & Biswas, A. P. (2018). Analysis and proposal for construction of parking facility at mit college campus. *International Journal of Civil Engineering and Technology*, 9(7), 20–30.
- Krishnamorthi, S., Prabhu, L., Dinesh, A., & Joseph, J. J. (2020). Contrived the collateral parking system. *IOP Conference Series: Materials Science and Engineering*, 993(1), 0–6. <https://doi.org/10.1088/1757-899X/993/1/012003>
- Mahendra, B. M., Sonoli, S., Bhat, N., Raju, & Raghu, T. (2017). IoT based sensor enabled smart car parking for advanced driver assistance system. *RTEICT 2017 - 2nd IEEE International Conference on Recent Trends in Electronics, Information and Communication Technology*, Proceedings, 2018-January, 2188–2193. <https://doi.org/10.1109/RTEICT.2017.8256988>
- Marve, S. R., AbhijitNanaji Chalkhure, S., Jumde, R., Murlidhar Khobragade, R., Gurudas Chunarkar, A., Maroti Thakre, S., & Professor, A. (2020). Design & Analysis of Multi-Storied Car Parking Building (G+2). 9(4), 1988–1996. http://www.ijirset.com/upload/2020/april/132_Design.PDF
- Marve, S. R., & Baitule, M. B. P. (2016). Traffic Congestion Minimization Study for Hingna Area of Nagpur City , MS . India. *International Journal of Engineering Research & Technology (IJERT) ISSN:*, 4(30), 1–4. <https://www.ijert.org/research/traffic-congestion-minimization-study-for-hingna-area-of-nagpur-city-ms.-india-IJERTCONV4IS30024.pdf>
- Marve, S. R., Bhorkar, M. P., & Tech, M. (2016). Analysis of Traffic Congestion of Hingna Region in Nagpur City. 2593–2598. <https://www.irjet.net/archives/V3/i4/IRJET-V3I4514.pdf>
- Mutiara, G. A., Agung, A. A. G., & Handayani, R. (2018). Low cost wireless parking module design and implementation. *Proceeding of 2017 11th International Conference on Telecommunication Systems Services and Applications, TSSA 2017*, 2018-January, 1–5. <https://doi.org/10.1109/TSSA.2017.8272905>
- Shah, A., Shah, D., Satpute, A., Shinde, M., & Shinde, S. (2021). Literature Review on Parking System. *Article in International Journal of Engineering and Technical Research*, 10(10), 100–104. <https://www.researchgate.net/publication/355370817>
- Shende, S. R., Pathan, S. F., Jumna, A. G., & ... (2018). A Review on Design of Public Transportation System in Chandrapur City. *Journal for ...*, 04(01), 41–47. <http://www.journal4research.org/articles/J4RV4I1007.pdf>
- System, C. P., & Girma, T. (2015). Design and Simulation of Microcontroller-based Automated. 7522(June), 236–241. <https://www.ajol.info/index.php/star/article/download/133478/123089>