SMART PARKING SYSTEM USING IOT

Kolli Sai Jahnavi
Department of Networking and Communications
SRM Institute of Science and Technology
Kattankulathur, India
kj0840@srmist.edu.in

Rudra Vijaya Venkata Krishna
Department of Networking and Communications
SRM Institute of Science and Technology
Kattankulathur, India
rk7239@srmist.edu.in

ABSTRACT

In the current era of increasing population transportation, even more, is being transported. Due to the many vehicles and few parking spaces, it takes a long time to find an area during rush hour. So, to find a parking space for the vehicle, we designed an IoT-based smart parking system Where you can easily find a parking space with the help of the web application. Through this application, it is possible to check if the parking in the area is empty or not and to book the area. This project is accomplished by placing a camera on the barrier which scans the vehicle's license plate and provides payment details for the length of time it is generated.

Keywords- IoT,Smart Parking,Sensors,Cloud Computing,Time Duration, Parking lots.

INTRODUCTION

Clever Parking uses sensing devices which include car counting devices, cameras, sensors mounted in pavements, and so on. to discover parking zone occupancy robust sensing systems are being built to take a look at and transfer the data to the database in real-time. The machinewill increase the accessibility of parking with the use of sensors. The sensors are located inside the pavement of the selected parking spaces to apprehend if the parking place is occupied or vacant. Sensors communicate with the gateway and that data can be pushed to the cloud. Sensors then without delay display the supply of parking areas. this can be viewed on the APP or the sensors placed within the parking areas so drivers can easily perceive the distance. clever Parking makes use of sensing gadgets along with vehicle counting systems cameras,sensors installed in pavements, and so forth. to find out automobile parkingspace occupancy robust sensing systems are being built to observe and switch the facts to the database in actual time.

The machine increases the accessibility of parking with the use of sensors. The sensors are located within the pavement of the chosen parking areas to understand if the parking place is occupied or vacant.

The facts accrued from the sensors will be dispatched to the cloud storage and the person can get admission to the records through the internet software. The consumer can choose the parking area as a consequence and then the parking space may be proven as booked. Sensors speak with the gateway and that information may be proven as booked. Sensors speak with the gateway and that fact may be driven to the cloud. Sensors then at once display the supply of parking regions.

This can be considered at the APP or the sensors placed at the parking areas so drivers can without problems discover that smart Parking can be utilized in personal parkingmasses, hospitals, accommodations, purchasing department shops, public parking garages, offices, and so on. to make the parking problem-loose and time-ingesting. The wise parking device allows drivers to e-book parking spots in advance

and additionally get actual-time get entry to the parking areas on their cell devices. a few solutions will enclose an entire suite of offerings including park ing time notifications, online payments, or even vehicle searching functionalities for very huge lot

LITERATURE SURVEY REVIEW

All of the above shows that dealing with smart parking isn't an easy issue, and consequently, we find many extraordinary solutions that had been formerly supplied in this vicinity. The researchers presented a category of solutions within the discipline of parking in the course of the period of 2000 to 2016, further providing a general definition of the main tasks of growing smart automobile parks. traffic control, discussed in, has trusted a software element only via smartphone software primarily based on the group-Sensing idea so that the drivers themselves cooperate within the trade of information about the nation of the parking. To facilitate the previous technique, proposed counting on linked cars prepared with a GPS tracker.

some different researchers had been involved with issues of providing unique locations for people with desires, together with in, and others were involved with the issue of calculating parking time and the price method as in, who hired a QR code on automated gates to be able to calculate entry and go out instances without the want for bodily materials as in, that is based totally at the Park-Meter to calculate the parking time of the vehicles. counseled utilizing parking as charging stations for electric-powered motors at the same time. We note from the foregoing the remarkable diversity of seasoned-posed solutions. To excel on these answers, we propose a hybrid version primarily based on the integration of several thoughts, in which cameras can be used to perceive the vehicle via an automatic detection set of rules for the plate variety, further to a software program

device to music the variety of available parking spaces by coping with the parking positions when a vehicle enters or exits.

The hubs can be determined and managed from any place the framework that we suggest gives records regarding the accessibility of the parking slots with the assistance of versatile software so clients from the far-flung location can ebook the parking slots. A calculation is applied to build the effectiveness of a cloud-based parking framework and machine engineering innovation is utilized. thinking about the number of parking spots handy and furthermore considering the separation of the parking spot from the patron. The consumer can legitimately get to the cloud-based totally server and discover the information at the parking spot.

The patron can likewise introduce software in their cell telephones to get to these statistics. With the assistance of this calculation, maintaining the uptime of the purchaser to find out a parking spot can be limited. given that, remote innovation is applied right here the framework has high precision and effectiveness. In this framework, hooked-up units are applied to talk with one-of-a-kind automobiles.

The client leaves his car in any of the few bayous accessible mechanical elevate lifts the car out. A ticket key and id are given to the purchaser and its miles are simply known to the patron that is utilized to recover the car. The client need not deliver any paper price ticket due to the fact that an RFID card is given to the consumer. safety highlights must be stepped forward to make certain the customer's safety.

REQUIREMENT ANALYSIS

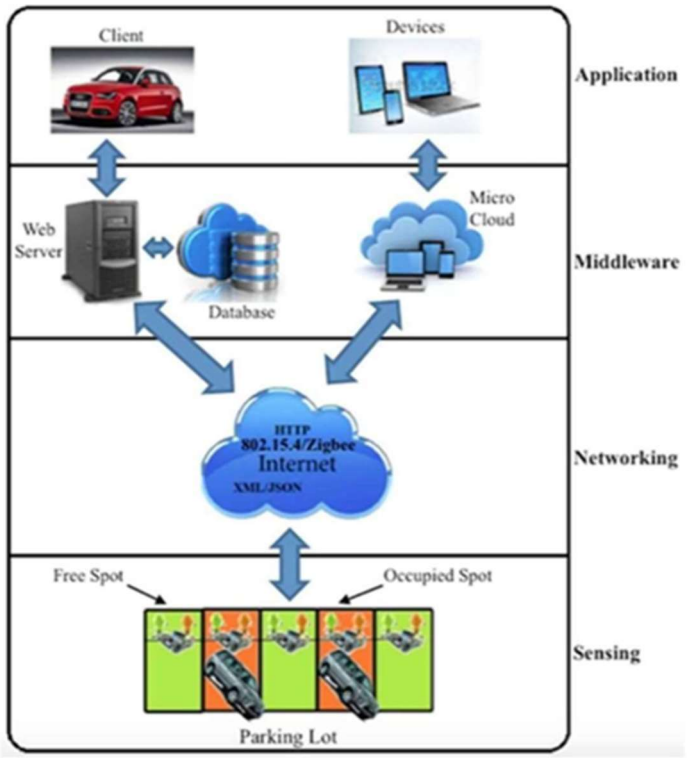
In this section, we discuss the requirements for designing a wireless sensor network for an intelligent parking system. While the conventional requirements of a parking system can be easily met, we still face more challenging problems by leveraging the benefits of a wireless sensor network. Below we list some important requirements for a parking system and then analyze its feasibility from the point of view of

wireless sensor networks. The common goal of all car parks is to attract more motorists to use their facilities for work purposes. Therefore, their basic structures must meet the following conventional requirements: (1) The location of the parking lot must be easily recognizable in the road network. (2) The entrance to the car park must be easily identifiable.

(3) The number of parking spaces should be large, and a parking space should be large enough to park a car. (4) Easy to go back and forth. However, a smart parking system should provide more convenience and automation for both the business owner and the customer. It must also meet the following requirements: (1) The system must provide many informative prompts or guidelines to help drivers find an available parking space. (2) The system should provide powerful functions to facilitate the management of a parking lot by administrators and managers. In accordance with the above requirements, an intelligent parking system should minimize human intervention and monitoring to reduce labor costs and human error losses and improve efficiency. In addition, the parking system must offer more precision, robustness and flexibility of operation, more comfort for customers, and reduced operating and maintenance costs for the entire system.

ARCHITECTURE DESIGN

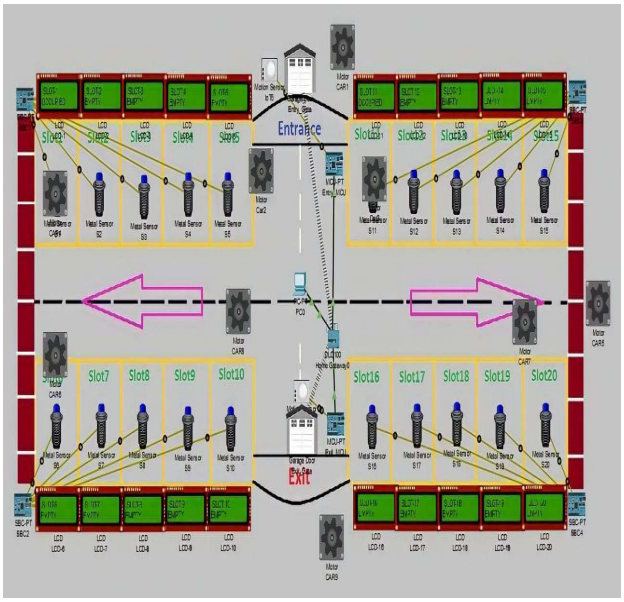
An intelligent parking system is an architectural framework consisting of various application platforms integrated into the parking lot to provide intelligent services.



A smart parking system is an architectural framework made up of various application platforms integrated into embedded systems. For example, reserved parking allows users to request at the application layer, with the request immediately processed through a network layer. To handle user requests, parking providers should use the network layer to handle transaction interaction. low. Finally, the transaction-level consensus mechanism protocol and the individual parking provider update the distributed ledger. He explained that the architecture of the smart parking solution is largely represented by four components: the application layer, the network layer, the transaction layer and the physical layer.

IMPLEMENTATION &WORKING

In the previous section, we discussed the architectural design of the smart parking system. Now, in this section, we are going to discuss the implementation process and how this methodology works. We experimented to show how our system works at every step, from checking parking space availability to parking a car in an empty space. This is achieved by implementing a smart parking system in a shopping mall parking lot. Below are the steps a driver must take to park their car in the parking lot. They work on this system at every stage, from checking the availability of parking spaces to parking a car in a free space. This is done, for example, by implementing an intelligent parking system in a shopping center parking lot. So, let's see how this application works with the example. Install the smart parking app on your mobile device. Then, using the mobile app, use your device's location to search for parking in and near your destination. Please select a specific car park. Go through the parking lot quantity. Select after exploring the car park
your parking space. Once you reach your destination, the selected parking space will be made available. Once you have successfully parked your car in the selected parking space, confirm your occupancy using the mobile application.



CONCLUSION

IoT is not only connected with the huge technology but also more connected with the wider community structure. In the current generation, smart parking is very convenient. In recent years, the use of intelligent parking systems has steadily increased. This is the most important part of smart cities as it minimizes traffic congestion. This project focuses on implementing parking sensing using the Internet of Things. The benefits of this smart parking system go far beyond preventing wasted time. Most of the features are also needed in a parking lot. Due to its use and effectiveness, it can be used anywhere.

REFERENCE

1.https://ieeexplore.ieee.org/abstract/document/9077885

2.https://ieeexplore.ieee.org/document/943219

3https://link.springer.com/article/10.1007 /s11277-022-09705-y

4.https://www.packettracernetwork.com/ Internet-of-things

5.https://dl.acm.org/doi/abs/10.1145/3436829.3436851

6. https://dl.acm.org/doi/10.1016/j.comnet.2021.108756
7.https://link.springer.com/article/10.1007/s1 1277-022-09705-y
8.https://dl.acm.org/doi/abs/10.1145/3436829.3436851
9.https://dl.acm.org/doi/10.1016/j.comnet.2021.108756
10.https://doi.org/10.1155/2018/7361597
11.Udendhran, R., & Balamurugan, M. (2020). Towards secure deep learning applications. Complex Intell.
12.https://doi.org/10.1007/s40747-020- Syst architecture for smart farm-ing-based 00225-5
13.https://doi.org/10.1007/s10586-018-1742-
14.https://doi.org/10.1007/s10586-017-1496- X

15. Manjusha, P., & Vasant, N.B. (2013). Wireless sensor network and RFID for smart parking system. International Journal of Emerging Technology and Advanced Engineering Website: www.ijetae.com (ISSN 2250-2459, ISO 9001:2008 Certifed Journal, Vol. 3, No. 4.

16.https://engineering.eckovation.com
17.https://rosap.ntl.bts.gov/view/dot/16240
18.https://ideas.repec.org/p/cd/itsdav/qt91r 3x8vh.html