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Research Article

Smart Parking System

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Abstract: As days roll over civilization of society is rapidly growing and utilization of Essentials is maximized .In countries like India we have basic wishes in life such as a 'home to live and a car to drive ' usage of car are also increased and it is a urgent need to systematically plan the car parking and effectively use the given space as technology usage is the mantra for success.We had proposed a model for implementing "Smart Parking System" which can be used in several places like malls, theatre, apartments, government and private offices etc . The principle behind the proposed model is Internet of things (IOT),the given space is effectively utilized by dividing it into a number of slots.

1. Introduction

Considering the modern day world we can say the technology is getting new and new features adding up to it , we cant conclude on anything to be considered as a end ,Never settle to anything can be termed as a modern day Veda for living a life in todays World. Shaping the technology to the most appropriate way of finding a needfull solution to the given problem is essential.

At the 21st Century living from the morning where we wake up to the night we go to sleep we come across a series of problems that are rised in our day to day life and stands as a objective to every human. The possible ways of finding the solutions are many in number but finding a optimal and a appropriate solution is vital. We can see that for every problem in this modern day life we can get a perfect solution only if we give a complete technology based result for it ,because Technology in the current day is evolved in such a rapid rate like a man is as laziest to his core. It has a bought a number of tools such as IOT, Machine learning, Arguemented reality, Virtual reality, Natural Language Processing, Radio Frequency applications etcthese sort of tools developed based on a prescribed problem yields a effective solution. First a social threat problem which deserves a solution is considered and aoptimal ,effective, efficient, vital solution is obtained and it is being implemented in a social gathering.

We clearly know that the usage of cars in this era is maximized to an very much unpredictable condition. Car a chief automobile which is used for transportation between the source and destination. This causes major threats to the society such as traffic jam ,accidents, pollution etc but our topic here is about the parking system is handled , Because in any sort of a social gathering place we have a large number of automobiles gathered there, but the space which is being allocated there for parking is comparatively very less. Henceforth it is an important thing to effectively use the given space, this particular problem is faced in several day to day travelling places like Shopping Malls, Theatres, Marriage Hall, Temples, Church, Cricket Stadium and a number of various social gathering spots.

The proposed model is designed in such a way , that a given space that is the total area which is being allocated for the parking of that particular location is considered at the first and we effectively calculate the total amount of area which is required to park a single car is being calculated based on it dimensions like length, width, height etc. then the total area is being divided by the amount of area required to park a single car is calculated. By this we can draw a conclusion that how many cars can be parked in that particular area which is in-turn termed as the total parking capacity of the given parking area system , this is the basic overview of the design of the Smart Parking System.

We make use of IOTi.e Internet of things inorder to implement a effective solution to this problem , the usage of such tools gives the user, a more friendly environement which is more comfortable by the user. This enhances the overall quality of the product developed and helps boosting its success rate.

The block diagram consisting of the basic elements by which the proposed model constructed is as shown in the below figure 1.1 .

Block Diagram

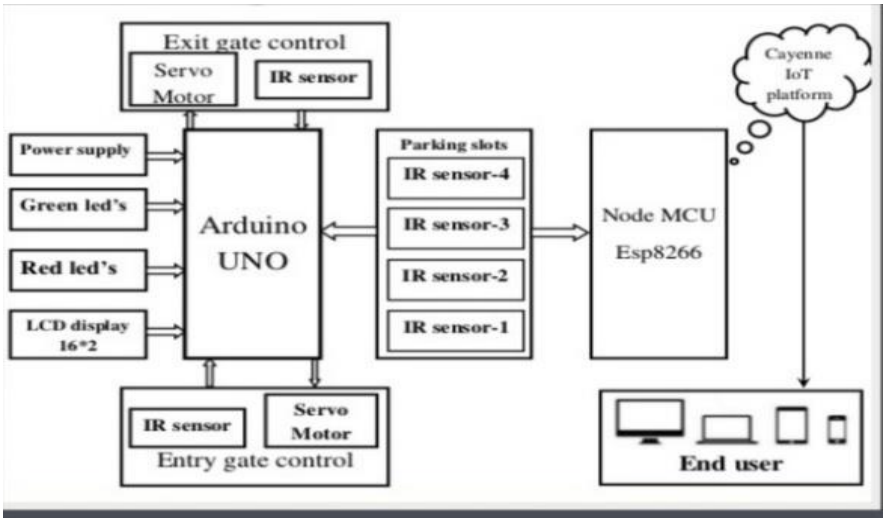

Figure 1.1

2. Working and Implementation

Smart parking system consists of both technology and innovation of human to overcome the disadvantages of traditional parking system what we see in our daily life. With the advance in technologies in the electronic world man power is reduced , one of such case is Smart parking system based on IOT . Here lets talk about how exactly this proposed system works.

Specially in urban areas the major problem one focuses is parking their vehicles. By introducing this smart parking technique the major problem of people is resolved. It's all under our finger tip we can book our parking slot without any burden anywhere, anytime all you need is a smart phone. Not much time is wasted in search of parking slot. The major problem that is traffic congestion is reduced.

Firstly user /client downloads the parking system application and install it in their mobile phones. They start browsing for specific parking area around their destination. Once the parking area is selected, they go for the search of particular vacant parking slot. Later parking time is selected and the slot will be reserved. After confirmation vehicle can be parked safely in the booked slot at a parking area. This all about the working from client side.

When we come to working of service provider , in each slot there are led lights present to indicate the vacancy. When the led is ON it refers that the slot is vacant. If the led light is Off it indicates the slot is already occupied. We make use of IR Sensors in order to process the data related to the entry and exit of automobiles. T data of each car booked is stored in the database. Using cloud, processing and storage of data is done. Payment is done and the client can use their reserved slot.

In this world where the things are drastically changed or advanced with lightning speed, smart parking system is one of the best technology we have come across .

The below given diagram indicates the common flow of system of working. The below indicated figure 2.1 is used to analyse the inter- dependance of the given attributes accordingly.

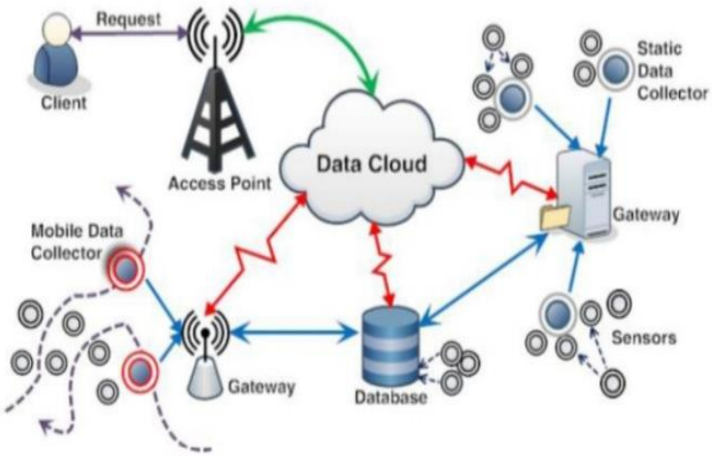

Figure 2.1

3. Method strategy

Firstly a smart parking requires a space for implementation .We can see that whenever we go to any social place where there is huge gathering of crowd the main tool used for their transportation is a automobile such as car,and the space allotted for parking them is less ,we need to set up protocols for them.

Here the total given area is being divided into the number of individual slots , where a given automobiles can be comfortably parked .In our model we show the implementation of four cars we have a pain of IR sensors for each individual slots in order to sense the presence and absence of a car .

We make use of green LED's and red LED's to make an indication if we have green LED glow then it is understood that the parking space is vacant and at that slot the car can be parked whereas if the red color LED is glow it indicates that the particular slot is already occupied by a car and we cannot park any automobile there.

We have a 16 x 2 display in order to explain and provide instructions to the user there display will indicate the user ,basically the name of the parking sytem ,Date time , the total number of parking slots , the available number of parking slots the total time that a car can be parked (time period).this LCD display acts as an clear quide for the user for parking of different auto-mobiles.

4. Applications

Easy accommodation of vehicles at a time .

Non – complicated organization of the parking .

Reservation of parking slot .

Saves time , fuel and space .

Reduction of pollutant such as CO2 in the atmosphere and creates better environment with good health and hygiene

5. Conclusion

In the Introduction we discussed various social problems and considered our topic of discussion i.e the problem related to the car parking system. We could successfully discuss what is the actual problem , how it is affecting in our day to day life, what informal measures it is creating, understanding the problem and finding a

solution , then importantly using an appropriate tool and analyzing an optimal solution. This gives rise to new type of solutions for the existing problems which is always acted as an core element in the part of constructing an effective element. We can conclude that the proposed model is an effective and implementable solution

The model which is developed is an IOT based project, when the issue of parking is considered all the calculations required are automatically calculated and the main intentions here is to improve the overall quality of the parking sytem used in the current day by eliminating an not needed confussions in the parking area. It is an cost effective model and can be implemented in various Social gathering this is an essential element also.

6. Result analysis

Through this model we had developed an effective prototype for implementing a smart parking system. The main advantage of this developed model, is it is more user friendly , easy to explain and also can be definitely assured that anyone can understand and follow the protocol set up.

Here firstly the LCD display which is being placed at the opening of the parking system will clearly define the total number of slots present and also the available spots where an automobile can be comfortably parked. When we enter the parking system go to the respective slots if a red light is indicated it provides a clear message that the slot is already filled with an automobile and we cannot park any car in that slot. Where as if a green light is indicated it is understood by the user that the particular current slot is empty and the automobile can be easily parked. This indication of the LED's in each slot is guided by a pair of IR sensors

The key aspects and the major advantages of the developed smart parking system model is being highlighted. The key aspects such as user friendly , cost effective, easy method strategy for its implementation is justified accordingly. Hence one can easily assure the effective, efficient working and completely utilizable method stratregy.

Based on the analysis performed it is evident that it can be implemented in various social gathering spots such as a Temple, Church, Theatres, Shopping malls, etc. This would definitely serve as an effective solution to the problem.

7. Acknowledgement

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