A Study on Smart Parking System In Indian Malls Using AR

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Abstract- *In our day to day, life people encounter a lot of problems one of which was the parking-related issues which were faced by quite a number of people I decided to come up with the solution but rather than just jumping to conclusions we did a brief research on the existing parking system where we came to a conclusion that although there exist a lot of theories and none of them were quite implemented so we decided to come up with our own solution and give it a try in which we tried to approach with the different concept of using AR technology and cloud-based services.*

I. INTRODUCTION

In modern times, with technological development and the increase in population, the lifestyle of people is changed, the definition of basic needs is changed and modified in which owning a personal vehicle isn't just a luxury but a necessity to showcase pride. People don't prefer public transports which results in traffic on roads and, it's very difficult to find a place to park a vehicle in shopping complexes, malls, or market yards.

In an era where time is compared to money, people waste lots of time standing in queues to find a perfect parking slot, despite all their efforts go in vain.

As a result, you can easily dodge all the traditional parking methods of standing long hours in queues just to end up with nothing.

To solve these problems, we are introducing an app that will make it easy for any human to park his vehicle in a more easy and convenient way.

This project provides a unique and innovative solution to solve modern days problems by introducing an Automated car parking system. This system works with the help of AR for better understanding and navigation.

Augmented Reality (AR) is an enhanced version of the real physical world that is achieved using digital visual elements, sound, or other sensory stimuli delivered via technology.

II. LITERATURE REVIEW

Study on Automated Car Parking System Based on Microcontroller.

In this era of technological development and increase in population, the lifestyle of people is changed, the definition of basic needs is changed and modified in which owning a personal vehicle isn't just a luxury but a necessity to showcase pride. People don't prefer public transports which results in traffic on roads and parking lots wasting a lot of time standing in queues. At times where 'Time is Money' this research paper provides a unique and innovative solution to solve modern days' problems by introducing an Automated car parking system. This system works with the help of a Microcontroller along with LED boards for better understanding and navigation. This system works on a very basic principles making it flexible and accessible for everyone.

A Study on Smart Parking System using IoT for Indian Malls

Finding a parking place is a big challenge in today's era and will increase as days pass. It leads to wastage of time as well as fuel and sometimes leads to frustration. To solve these issues, we can use the screen to check are there any slots vacant to park vehicles in parking. If the slot is vacant the owner, then has to give their phone number to the gate operator who will open the gate. As the car passes through the gate, he will receive a code. Once the owner completes his work and leaves the parking slot, it will again be vacant on the screen, making it convenient for further customers. The code shared with the owner can be verified for parking fees and other charges at the exit point.

The smart parking system can be designed using raspberry pie and Arduino boards making it less power consuming and high performing.

Smart Parking Systems: Reviewing the Literature, Architecture, and ways forward.

This is an age where huge real-life problems are solved irreproachably. Big hands to our urban governance and

their substantial approaches. One of the biggest problems nowadays includes   pollution. An increase in the number of cars in the cities increases carbon emissions which is a hurdle to our developing country. Cars looking for parking slot burns a lot of fuel which is pure waste. So, the core aspect of this research paper is to find easy parking solutions using our fast-growing technology. It explains how the parking can be managed smartly in the buildings and finally concluding with modules with a satisfying clarification.

Gsm Based Securing For Smart Car Parking System Using LabView.

This is a modern era. Urbanization is at its peak which means demand is more than supply apparently such a thing was also observed in car parking. The parking slots available are causing quite chaos. Since the parking area is operated manually but there is a way to improvise it, all the things can be automated using simple techniques and software installed in the facilities. In this research paper, one such way was described particularly. It describes how IR sensors and software are used particularly. It is described how IR sensors and software is used to allot a slot in the parking area. First of all, the software takes in the information of customers and allots the seat through SM. Then IR sensors come into play and guide the customer to the respective slots which decrease a huge amount of chaos among the customers related to parking slots. It is a brilliant idea and leading us to move ahead in the digital era.

Although this is a review of four different papers, the main motto remains constant and unchanged which is to improve the parking system. The 3rd and 4th ideas are quite similar, which provide the information only regarding to the booked or vacant slots. The 3rd uses sensors whereas the 4th uses raspberry pie and Arduino boards. The major difference would be the 4th one also provides you the time spent and the charges accordingly when you leave the place or else the remaining function of displaying slots booked or vacant remains constant. The 1st and 2nd paper provides the same but with a more detailed and an expensive solution. Along with slot availability display, they promise a detailed route, both are a big hole for the pocket to install in parking, but results look promising. 1st paper includes Microcontrollers and LED boards to guide the user whereas 2nd paper provides an option by going completely driverless with the help of trays. So, to conclude, although all 4 aims to the betterment of parking systems. 1st and 2nd are quite detailed but expensive. 3rd and 4th are quite useful but for limited purposes only.

III. WORKING

When you visit any place with many parking lots (i.e., Malls, big shopping complexes, event areas, airports, etc..), downloading the enroute app will enable the system to check the availability of empty parking lots for you and display it.

Now the system will allot you the most convenient slot available.

Once you occupy the allotted slot, the app will temporarily save the data on the cloud.

When the payment is made online a QR code will be generated which must be scanned to pass the entry barrier.

The application interface with the help of AR will now direct you to the allotted slot with the proper directions so that you reach the parking slot in a more easy and convenient way.

The system will use the GPS built in the phone to direct you to the allotted slot like google maps.

AR technology will be used to show the directions on the device.

Once the car is parked, the database will be updated which will reflect that the slot is engaged.

Not just limited to parking, AR technology can also be used to explore through the mall.

When you want to exit, the app will guide you towards the exit using the same technology mentioned above.

Also, when you empty the slot, the stored data will be withdrawn from the cloud making available for further usage.

At the exit gate, you again must, this will ensure that the vehicle is now outside the parking and thus the parking lot is now empty.

This data will get updated to the database to display the new availability of lots for other vehicles.

IV. CONCLUSION

This research paper aims to bring attention to the common problem faced by people during their day-to-day life by wasting a lot of time standing in queues which also results in traffic jams often. So, there was a detailed review done on

the existing ideas used to solve the same problem. After doing that we came up with a unique solution ourselves which is an app. By using the app the above problems can be easily solved, resulting in saving many man-hours. Also, the app is quite user-friendly which makes it easy to access by any human in need. It is a very effective method to replace traditional parking systems and make them more efficient

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