Survey for a Cloud Based Parking System using IoT Technology

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Abstract: Recently the upcoming technology of cloud is being used to solve many common problems we take this cloud based system and use it for the effective deployment of the smart parking system. The smart parking system is relatively new system which creates a platform for easy booking of parking slots and effectively manages the parking in a mall. The basic feature of the parking system is to make it easier for the customer to select the slot, and for the in-charge in a quick manner. Using the technology of QR code we authenticate the users who are or will be parking and make the identification of the user efficient. Thereby, we implement this technology and make the life easier for the user and create a benchmark for future development.

Keywords: Smart Parking System, IOT, QR code.

I. INTRODUCTION

In the development of intelligent parking system was created to reduce the cost of hiring people better use of technology to get better and optimised results. In the current scenario the parking is done in any space which the driver finds through luck and experience. This process takes much time and effort and may lead to the worst case of failing to find any parking space. In our research we found this problem of at most importance for drivers and many citizens ,the alternative is to find a predefined car parking space with high capacity. Multiple vehicles need multiple car spaces, so from hummer to a basic nano there is a variety of requirement in terms of space .Small cars can easily park a while huge cars might not get the required space.

This study is aimed to provide information of parking spaces for the driver and make reservation using smart devices such as tablets, phones and many more. To create a well defined solution we need to take advantage of the significant developmental technology that is information of things technology. The system created will not only ease the citizen but also provide a defined parking space for the user.

Using technologies such as Ultrasonic sensors, car parking can be revolutionised. Using hardware based structures like Arduino one can create an IoT based network to efficiently program the hardware and use it for effective deployment and give the client a better service. The human resource costing is also a primary source of non-income the human resource can be minimised and thereby creating these system essential. In smart cities all the system will work together to create dynamic software based which will be unique for every user. In our survey we found that these systems are very much essential and a primary requirement from every citizen.

II. REVIEW OF RELATED LITERATURE

A. Smart parking system

Smart parking systems are very popular in many countries these systems create a nexus of multiple systems together the system help to create better services optimised the space usage, improve the efficiency of parking system and help the traffic in the city move more freely. Currently there are multiple companies who have expressed interest in creating such system smart parking adds to the better customer experience and also create scenarios where visitors spend less time looking for space to park. The smart parking system creates advantages with its cost efficiency and economical space requirements .it serves as better source of revenue generating up to 250% in rent over the span of 10 years.

We surveyed multiple owner of such parking space, the benefit shared were seemed to be most welcoming to the new owner of such parking spaces, in our talks with Bryan Peering from the base town centre he shared that the technology, aligned with excellent support and inside will be a very good investment it will add to the customer experience where visitors will spend more time in the shops instead of looking space to park. Smart parking will actually help in accurately predicting in sensing spot occupancy in real time. It will simplify the parking experience and will add value for parking stakeholder like drivers. The system will play the major role in creating better urban environment by reducing the emission of CO_2 and other pollutants.

B. Conceptual framework

The rapid growth in the number of vehicle worldwide is intensifying the problem of the scarcity of parking space. Again according to industrial data 30% traffic congestion occur due to vehicle drivers struggling to fine the parking spaces, these in turn are magnifying the necessity of smart

parking system. Today's intelligent parking management system is capable of providing extreme level of convenience to driver as well as simplifying and automating the business operation and administrative function of the parking site owners. The higher growth rate in the registration of new cars worldwide the major boom from regional economies such as Asia pacific will open the window of opportunity for parking management system. The global parking management industries are excepted to grow at a compound annual growth rate of 11.4% from 2014 to 2019. the parking management market is estimated to be at 5025.9 million dollars in 2016. the market is excepted to grow in tandem with the growth in vehicle ownership and parking facility development. Need for smooth traffic flow, business benefits to the parking site operators and decreasing hardware and connectivity cost are the key driver for the parking management industries.

III.RESEARCH METHODOLOGY

Using multiple base points and in-depth research to view benefits and the implementation creating a better and faster life for drivers and citizens seen here. Our research using multiple one on one interview with stakeholders created a bond and gave us multiple time bound instigations for innovation and study of new technology. Incidentally, the requirement for this structure is increasing and our research is focussed on the same. Multi-dimensional data created this modular infrastructure based sensor system which will go beyond the basic ground sensor. To create a city which is smart the intelligent parking system is an important break through the potential benefits of such an intelligent parking solutions will be:

- 43% less time spent looking for parking.
- 30% less parking related vehicle kilometres travelled.
- 8% less traffic volume when increase in parking availability.
- CO_2 gas reduction in emission.

IV.ARCHITECTURE

A. System Architecture:

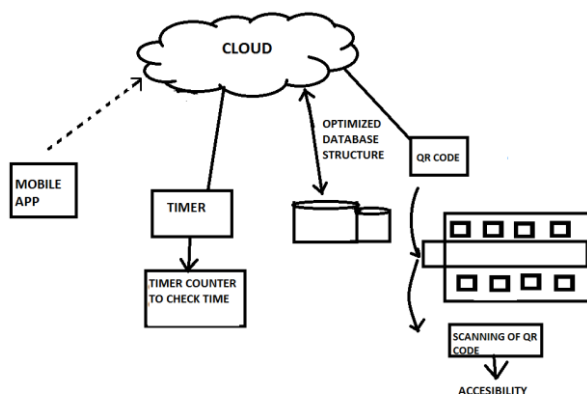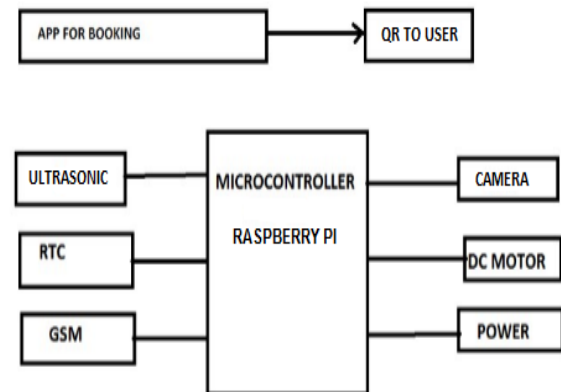Fig 1: System architecture

B. Hardware Architecture:

Fig 2: Hardware Architecture

V. DISCUSSION

Traffic congestion caused by a vehicle is an alarming problem at a global space and it has been growing exponentially. Car parking problem is a major contributor and has been still a major problem with increasing vehicle size with luxurious segment and confined parking spaces in urban cities. Searching for a parking space is a routine and often frustrating activity for many people in cities around the world this search burns about one billion barrels in worlds oil every day. As the global population continues to urbanize without a well planned convenience driven retreat from the car these problem will worsen. According to a report smart parking could result in 22000 gallons of fuels of saving till 2030 and approx 300000 gallons of fuel saved by 2050 if implemented successfully.

Smart parking systems typically obtains information about available parking spaces in a particular geographic area and process is real time to place vehicles at available positions it using using low cost sensors, real time data collection and mobile phone enabled selection that allow people to reserve parking in advance or predict where they will likely find the spot. When deployed the system smart parking thus reduces car emissions in urban centers by reducing the need for people to needlessly circle sitting blocks searching for parking, it also permits cities to carefully manage their parking supplies. The smart parking helps solve one of the biggest problems on driving in urban areas; finding empty parking spaces and controlling illegal parking.

VI.CONCLUSION

The major enabler or driver for smart parking are the problem for urban livability, transportation mobility and environment sustainability primarily is about enhancing the productivity level and the service level in operation, some of the underling benefits could be lowering of operating cost while building value for customer to drive occupancy, revenue and facility value. We have evolved from traditional servicing channel like toll booth and

parking attendance to incorporate pay station, meters and gates.

Parking is a 25 billion dollar industry which has seen minimalistic innovation and implementation. The majority of investment has always been in creating energy efficient hybrid and electric vehicle, which in turn does not solve the problem causing the same problem as urban grade lock.

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