



SMART PARKING AVAILABILITY FOR CAR USING IOT

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Abstract: The fundamental issue in today's swarmed stopping office is clog and finding an empty parking spot. during this paper, a route strategy is suggested that minimizes the stopping time, in sight of gathered constant opening data of stopping spaces. within the proposed technique, a focal server within the stopping office gathers the information (utilizing IR sensors) and assessments the inhabitancies of each stopping openings. At that time, the server utilizes this data gathered as part of on going to figure the simplest reasonable stopping space for the client upon demand. this fashion is then sent to client's advanced mobile phone as reaction by the server which is able to then be shown on an android application. In vast occupied urban communities, to locate a void stopping space is extremely difficult. We are additionally uninformed of this stopping opening within the essential region. Along these lines during this paper, we propose a wise stopping framework. In this framework, we'll carry on a focal server, within which data about the enrolled stopping is put away. This framework proposes a safe and proficient stopping framework which is able to take an effort at sensor correspondence and secured remote system. The focal server will likewise sustain the include of the unfilled openings the stopping office and it'll demonstrate it to the client. As needs be, the client will choose appropriate stopping zone. see able of this, the evaluated most brief thanks to the chose stopping are figured and perceived to the driving force. Utilizing this framework, we are able to effortlessly find empty space for stopping and stopping holding up time is decreased efficiently. during this framework, we make sure of the difficulty of activity clog utilizing route technique. we provide a framework which will without much of a stretch find empty space for stopping. We plan a focal server that sustain data about the enlisted stopping zones. It additionally continues the tally of accessible space within the stopping ability and transmit it to the client. therefore, the client can without much of a stretch take choice visible of the closest stopping accessible. during this manner by utilizing route method, the client can get the foremost limited thanks to the chose stopping zone to stay aloof from congestion. Therefore the stopping holding up time is decreased effectively.

Keywords: RFID, Infrared sensor, ADC, AVM, SDK, microcontroller.

I. INTRODUCTION

Taking a gander at the current situation in stopping framework, it's watched that it's not proficient by any stretch of the imagination. the current stopping regions don't have any administration framework i.e. individuals haphazardly stop their vehicles I these extensive stopping ranges as per their accommodation on either section or exit. Furthermore, it's difficult for an auto driver entering an expansive stopping office to grasp which stopping zones are empty. Also, once an auto is stuck in a very congested range, it even takes longer to flee the zone. This prompts to more prominent time utilization and requires harder work. Additionally, this causes congested roads and here and there wastage of parking spaces prompting to lesser income era. In this paper, an Android application are going to be created that may empower a client to send data like his span of remain for parking lot over the system without giving out individual data to the stopping office server.

this may give the client a briefest thanks to the most helpful car park close him/her staying far from clog within the park. the purpose is to bring this fantasy into reality utilizing the merchandise advancement unit (SDK) that has been given by Android, and building a server which can accumulate data of all the accessible stopping spaces utilizing IR sensors.

II. EXISTING SYSTEM

The current strategy is irregular stopping of vehicles as indicated by driver's accommodation. during this strategy a person needs to manage every single vehicle to acceptable areas which are ordinarily not took after or maybe miss-guided. during this technique, area reporting must be done physically by the stopping office worker to the auto driver. Likewise the instalment framework remains manual making the procedure dull and protracted. Autos have to remain in line for his or her turn and shut by exchange happens which is moderate.



III. RELATED WORK

Paper [1], Proposes a navigation method that reduces traffic congestion time by using real time information about parking slots. This paper had used many algorithms for allocating vehicles to available parking slots. Simulation based evaluation is done.

In paper [2], Available parking slot detection and tracking system is proposed that fuses the sensors of an Around view Monitor(AVM) system and an ultrasonic sensor-based automatic parking system. This helps driver to select available parking slots and support the parking control by updating the information about parking slots.

In paper [3], Real time monitoring system for parking space management services proposed a system, which provides information to user about available parking slots and provide information to management team to monitor the status of available parking slots.

In paper [4], Design and implementation of smart parking management system based on RFID and Internet proposed a Parking management by using RFID tags and internet connection. Availability of parking space problem is solved by this paper.

IV. PROPOSED METHOD

Assumed: It is assumed that driver have smart phone and have installed the android app and have internet connection.

Overview:

In parking slot, when driver park their vehicles in sensor registered parking slots. IR sensor scans the slot and sends the updated status to server. User uses the pre-installed app to determine the available parking slots. Application fetches the updated information from server which information is formed available to user to cut back the tie up problem. First user registers using android app and login to central server. User will check availability of parking slots using GUI of android app. Here, central server comes within the picture which maintains the updated status of sensor registered parking slot. Through micro controller it gets the updated status of sensor. That status is formed available to user through GUI of android app

Architecture Diagram:

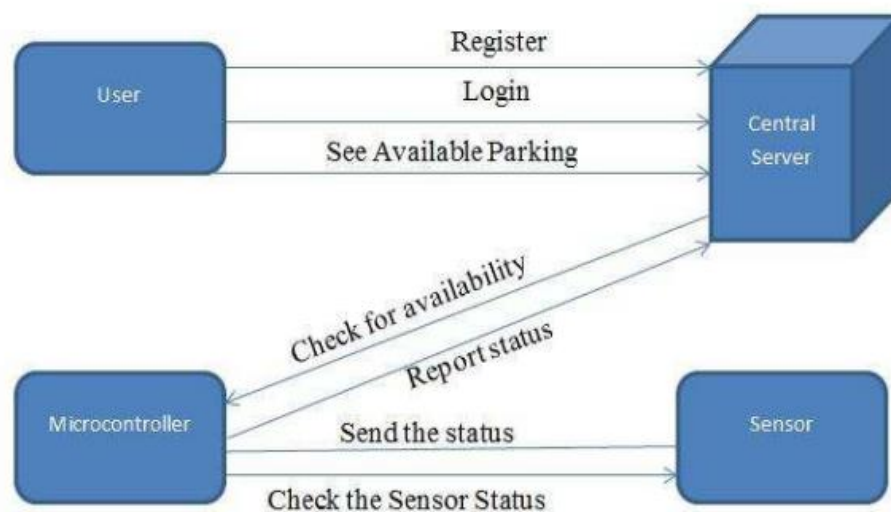


Figure 1. Architecture Diagram

Server Side

The Server side is that the foremost important an element of the framework. It handles the mixture heap of the clients (auto drivers) demands and answers them with proper courses. At the aim when the client enters the stopping office, he opens his application and enters the 'term to remain'. This field information is then sent to the server for the foremost effective stopping space assignment. The server on getting the clients provoke runs the knowledge through a



calculation which is extremely intended to need care of a strategic distance from blockage within the stopping office. As indicated by the length to continue through to the tip opening is designated, wherein the server apportions the client with the foremost effective time the foremost remote space and also the client with negligible time the closest opening to the exit to need care of a strategic distance from car influxes inside the parking spot. The portion of the stopping opening and also the course thereto is then imparted by the server to the client by means of the appliance in light of the client's underlying solicitation. While allotting the stopping spaces the server must give some thought to any or all openings' status of whether being full or exhaust ceaselessly. For this data IR sensors are introduced in every stopping space transmitting their readings to the server continuously. The server will continue a cluster memory to store the 'pening related information as 1/0 where 1 being full and 0 being unfilled. Therefore, the server utilizes this information from IR sensors identifying with the prospect of the stopping openings progressively to speak with the client and provides him the only real empty stopping office. The second errand of the server is likewise to pander to the RFID record of the client. On the section and leave the individual time logs are made to the server by the RFID scanners set at the toll entryways. At the aim when the client leaves the place and thus the leave time is enlisted within the server, the count of sum happens. The sum is figured on the premise of the time the vehicle spends inside the stopping office. the price pieces are pre-entered within the server and in like manner the sum is deducted from the clients RFID account well-kept by the database Customer application comprises the appliance on the client side. This application contains a login page and a page to enlist for innovative clients. The appliance speaks with the server utilizing web association. The appliance goes about as a guide for the client to direct him to his stopping space. Within the wake of signing within the applying the client have to enter a field 'length to stay' which is then conveyed to the server. Accordingly, the applying gets information from server with relevancy the stopping space to be utilized. This information is looked as if it would the client during a graphical way which may be effectively reasonable and interpretable

Client Application

Customer application comprises the appliance on the client side. This application contains a login page and a page to enlist for brand spanking new clients. The appliance speaks with the server utilizing web association. The appliance goes about as a guide for the client to direct him to his stopping space. Within the wake of signing within the application the client have to enter a field 'length to stay' which is then conveyed to the server. Accordingly, the applying gets information from server with relevancy the stopping space to be utilized. This information is seemed to the client during a graphical way which may be effectively reasonable and interpretable

Sensors

Infrared sensors or the IR sensors are low recurrence light emanating diodes which are put deliberately in every stopping opening everywhere throughout the stopping office. Every IR utilized as part of the framework may be a detached IR sensor which must be ceaselessly in working stage and send its information to the server progressively. The equipment interfaces the information from IR sensors to the server. While perusing this information during a nonstop sustain the server has predefined edge cutoff points to test if an auto is stopped within the stopping space or is it empty. The bottom and adage limit for the recurrence readings are settled on the conventional ground leeway of each vehicle, wherein a game's auto may have a coffee ground freedom and a games utility vehicle may have a position leeway.

V. SYSTEM REQUIREMENTS

Hardware components:

1. ADC (Analog to Digital Converter): ADC0808 IC is used to convert analog to digital all sensors are connect to ADC IC. It is used for sensor values.
2. Microcontroller 89C51 IC: 8 bit microcontroller. It has 8- bit bidirectional ports that are P0,P1,P2,P3. It has inbuilt UART for serial communication.
3. MAX 232: It converts signals from an RS-232 serial port to signal suitable for us in TTL compatible digital logic circuit.
4. ULN2803: It uses the low level (TTL) signal to switch on/turn off the higher voltage/current.
5. Sensors: We use Infrared Sensors for car detection within the parking zones. Each of the sensor nodes determines the occupancy status of a car parking zone without reference to the categories of sensors involved. The sensor nodes should read sensor data at a comparatively high rate to inform whether a car is entering or leaving a parking lot. The



sensor node in an exceedingly car parking zone measures the values of the AMR sensor periodically (e.g., 3 seconds) and wirelessly transmits the sensor values only if they show abrupt variations.

Software Requirements

Android OS:

Android is a Linux grounded operating system design primarily for touch screen mobile device similar as smart phones and Tablet computers. Originally developed by Android, Inc, which Google backed financially and latterly bought in 2005, Android was unveiled in 2007 along with the founding of the Open Handset Alliance institute of tackle, software and telecommunication companies devoted to advancing open norms for mobile bias. The first Android powered phone was vended in October 2008.

VI. OBJECTIVES

1. Install the parking application on the client side. The user needs to install the parking application on his/her Android phone.
2. Register to system for parking. There is necessary to register every customer with the unique RFID
3. System generates the information and update database of register user.
4. The system automatically generates the information and data is updated to database of respected registered user.
5. User can check the availability of parking slots. The system maintains the availability of the vacant parking slots in the parking zones.
6. Maintains the status of the car. The system maintains the status of the car entering the parking zones, whether the car is entering or exiting the parking.

VII. CONCLUSION

In this paper, an efficient and beneficial method is proposed that reduces the holdup. It also reduces the need of manpower. Also this method reduces the usage of paper ensuring green system. this method are further be extended for booking parking slots for vehicles for a few period of some time from advance. The mobile application is further extended upon various OS like IOS, windows etc.

REFERENCES

1. Jae Kyu Suhr and Ho Gi Jung, Sensor Fusion- Based Vacant Parking Slot Detection and Tracking, in Intelligent Transportation Systems, 2014 IEEE.
2. Lanxin Wei, Qishenq Wu, Mei Yang, Wei Ding, Bo Li and Rong Gao, Design and Implementation of Smart Parking Management System Based on RFID and Internet, Control Engineering and communication Technology (ICCECT),2012 International Conference.
3. Thong Peng Hong, Che Soh, Jaafar and Ishak, Real Time Monitoring System for Parking Space Management Services, System, Process & Control (ICSPC), 2013 IEEE Conference.