ISSN(Online): 2320-9801
ISSN (Print): 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Website: www.ijircce.com

Vol. 5, Issue 5, May 2017

Off-Street Parking Space Reservation Using Smart Phone Application

Akshatha B S, Uma S K

M.Tech Student, Dept. of C.S.E, P.E.S College of Engineering, Mandya, India

Associate Professor, Dept of C.S.E, P.E.S College of Engineering, Mandya, India

ABSTRACT: Stopping Guidance and Information frameworks are getting to be plainly essential parts of clever transportation frameworks because of the way that autos and foundation are ending up plainly more associated. One noteworthy test in creating proficient PGI frameworks is the questionable way of stopping accessibility in stopping offices. In this paper, we propose another framework where the client can save the stopping opening in the off-road parking spot utilizing PDA application. The Smartphone application is an easy to use, low of cost and the client subtle elements are put away in the Sqlite database. Be that as it may, contrasted with the current framework, this application will help in sparing the client's chance in seeking the stopping opening, which prompts decrease in fuel utilization and air contamination. The Renesas RL78 Microcontroller will control all the usefulness of alternate parts in the framework which includes in sending and getting the AT orders through GSM Module, Controlling the pivot of toll door through Stepper Motor, Checking if the entered OTP in the Key Pad is right or wrong, and so on. Before setting off to the stopping range, the client can hold the stopping space, go to the stopping territory and stop the auto in the saved opening. The outcome are completed in 4 stopping space in a board utilizing all the equipment parts associated with each other. An Android application is utilized to book the stopping space and checkout from the stopping opening.

KEYWORDS: Renesas RL78 Microcontroller.

I. INTRODUCTION

Intelligent transportation technologies (ITS) have been transformed from a luxury option to a necessity in most of the cars in recent years. Today more main stream cars are connected directly to the internet than in the past, via 3G or 4G networks. This level of connectivity has enabled engineers to develop custom-made applications/software for each car and has encouraged numerous ITS application scenarios. As sensors become less expensive, and both cars and infrastructure get more connected, the amount of available information increases drastically. The information from infrastructure and cars along with the computational power which exists in modern cars will have a great impact on the speedy implementation of different ITS technologies. One of the important and growing field in ITS is parking assistance and Information Systems. It is frustrated to find parking in large cities and it is waste of time and money due to the lack of accurate information about where parking spots are available at the time when they need. Shoup states that the average searching time for parking spots in New York city between 11 A.M. and 2 P.M. [2] during a weekday is 10.6 minutes. The adventure of looking for parking in a congested environment leads to circling around areas. This causes air pollution, fuel consumption and additional congestion. In addition, the scarcity of parking locations and the changing of parking rules and restrictions make parking more awkward and challenging, especially to drivers that are not familiar with the area. Most of the issues associated with finding parking can be solved or reduced by using new technologies.

II. RELATED WORK

In [1] creator depict that how the sensor is solid for the savvy living condition and directing some test which sensor is most basic and considering this data might be utilized for overseeing sensor dependability from a useful perspective . In [3] creator talk about that the sufficient utilization of travel time application in the go by the client. To achieve a goal a client ought to get a precise travel time expectation. There are two classifications in the accessible travel time. They are immediate technique and roundabout strategy. The immediate strategy are tedious and costly

ISSN(Online): 2320-9801
ISSN (Print): 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Website: www.ijircce.com

Vol. 5, Issue 5, May 2017

.Whereas, the backhanded technique are not. So we utilize Loop locator which is a circuitous strategy which gathers travel time forecast information in a ceaseless premise over a drawn out stretch of time. In [4] creator tells that the foreseeing a travel time in a roads. i.e., if the client leaves a place at any given moment t, At what time will he/she will achieve the goal. To foresee the time the framework utilizes the straight relapse with time changing Co-productive. The expectation is done on the premise of the present activity circumstance in mix with the authentic information. In [5] creator introduces that to gauge future travel times on road utilizing stream and inhabitance information from single circle locator and verifiable travel time data . By Using this model, the travel time will be anticipated utilizing ongoing and chronicled data. i.e., considering the everyday travel time and expecting that today's movement will be all the more .Likewise, the framework will appraise the travel time and anticipate the travel time. In [6] creator tells that examination between parametric (traditional gauges of transportation arranging) and non-parametric (traffic condition figures). i.e., arranging models utilizes financial information and patterns to conjecture over a time of year, though in the movement condition models forecast conditions inside the hour utilizing the roadway sensor. In [7] creator examine that utilizing the keen stopping framework , the client can find the parking spot accessible in the evaluated zone and lessen the contamination and fuel utilization .Within the data given by the savvy stopping framework , drivers can dodge the streets which is completely possessed and find empty parking spot somewhere else in the assessed range . This will likewise decrease the activity. In [8] creator depicts the shrewd stopping framework doles out and holds a parking spot for a client in light of the client's target work that joins nearness to goal and stopping cost .This paper understands the Mixed Integer Linear Program(MILP) issue at every choice point in a period driven arrangement . The arrangement of each MILP is an ideal designation in light of current state data and subject to arbitrary occasions, for example, new client demand or parking spots getting to be noticeably accessible. The allocation is updated at the next decision point ensuring that there is no resource reservation conflict and that no user is ever assigned a resource with higher than the current cost function value.

III. PROPOSED SYSTEM

The block diagram in figure 1 contains mainly Renesas RL78 Microcontroller, GSM Module, LDR Sensor, Stepper Motor, Key Pad and LCD Display. This proposed system describes how to build a time saving parking system for the off-street parking space which will make parking experience customer friendly and secure. In this system, the user can book the slot, park the car in the given slot and checkout from the slot. The upside of the framework is that the client can book the opening before heading off to the stopping space. Likewise, another favorable position is that seeking time, air contamination and fuel utilization will be lessened.

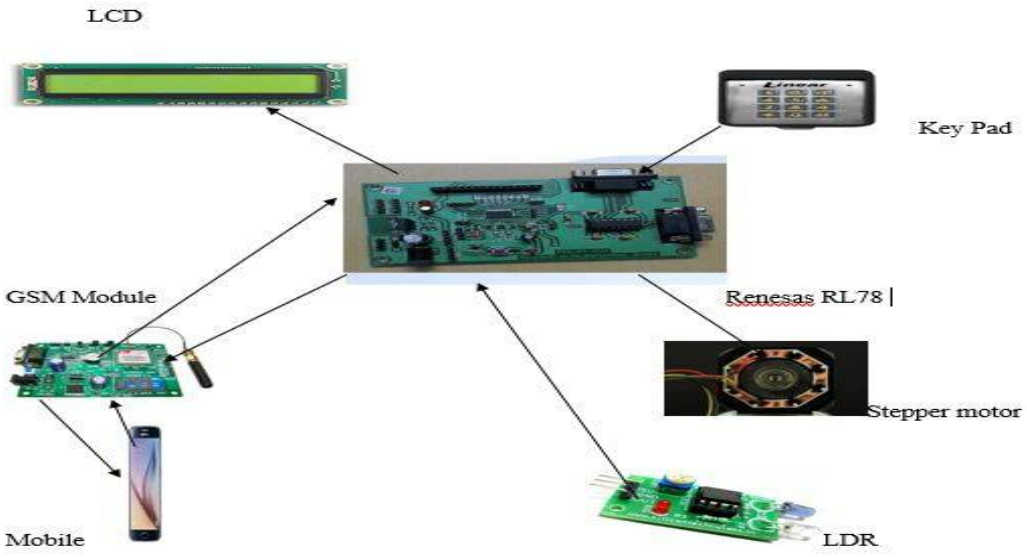

Figure 1: System Architecture

ISSN(Online): 2320-9801
ISSN (Print): 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Website: www.ijircce.com

Vol. 5, Issue 5, May 2017

IV. PSEUDO CODE

Step 1: Initialize the system.
Step 2: User login's to the login page using the smart phone application.
Step 3: If the user is registered, then the user will enter the username and password in the login page and click on the login button.
else
The user should click on the register button to get registered.
Step 4: After registration, the user will book the parking slot.
Step 5: After booking the slot, the Renesas RL78 Microcontroller will sent an OTP number to the user through GSM Module.
Step 6: The user arrives at the parking area, then enter the OTP number in the key pad. After verifying the OTP number, the stepper motor will rotate the toll gate.
Step 7: After parking the car in the parking slot, the LDR sensor will turn-off the light indicating that the car is parked.
Step 8: After using the parking slot, the user will checkout from the application. All these process is displayed in the LCD.

V. SIMULATION RESULTS

In the figure 2, we can see the overall system connection. Here all the components are connected to gpio pins in Renesas RL78 Microcontroller in the board. Tx and Rx pins of Renesas RL78 Microcontroller are connected to Tx and Rx pins of GSM Module in a reverse order. LDR Sensor are set up in the each parking slot. Stepper motor and key pad are present at the entrance of the parking area. Initialization and working process data is displayed in LCD display.

The System architecture showed in Fig.1 which describes the overall architecture of the system. It shows which components are used in the system and how each components are connected to each other. The Renesas RL78 Microcontroller, GSM Module and Mobile will communicate in both ways and LDR Sensor and Key pad will send the information to the Renesas RL78 Microcontroller and Stepper motor and LCD display will receive the information from the Renesas RL78 Microcontroller. The above working is clearly shown in Fig.2 that how the components are embedded in the board and how each components are connected to one other. The GSM Module will work after insert the sim to it. After entering the OTP number in the key pad, the stepper motor will rotate the toll gate and user will park the car in the slot, then the LDR Sensor will freezes the slot. The whole process like receiving the message from the user, OTP sent to the user, entering the password, opening and closing of the toll gate will be displayed in the LCD display.

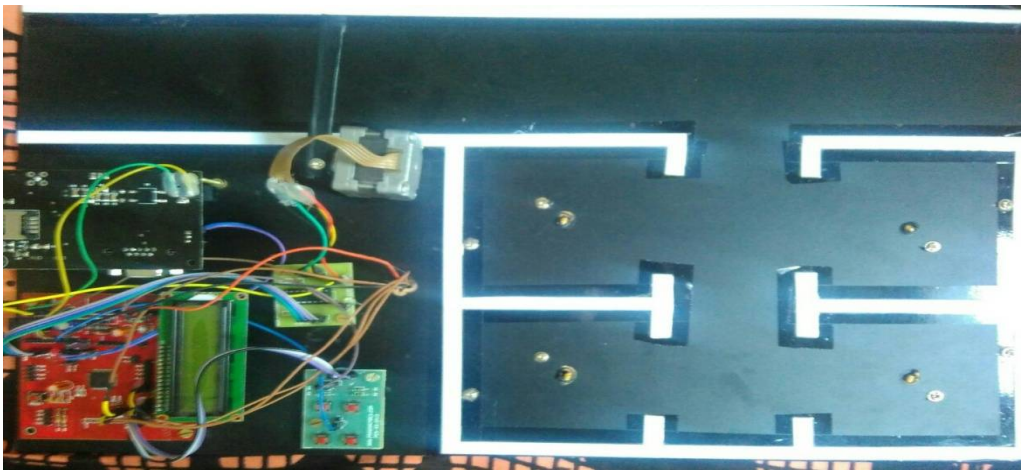

Figure 2 shows the connection of hardware components.

ISSN(Online): 2320-9801
ISSN (Print): 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Website: www.ijircce.com

Vol. 5, Issue 5, May 2017

VI. CONCLUSION AND FUTURE WORK

The proposed model considers temporal correlations of parking availability data, as well as spatial correlations. It is used to recommend the parking location with the highest probability We used real time actual parking data from San Francisco area to evaluate the results, and verify the model. The results indicate that the proposed system recommend sparking locations to drivers with high reliability. The accuracy of predictions depends on the time horizon ahead. For a 20 minutes prediction horizon the system was demonstrated to recommend a parking location to a driver with an accuracy of about 95%.

In the application we have dumped only one number , so in future this application can be connected with the cloud where the other users can get the information like OTP , bill etc. Another work is,this application can be used in the On-Street parking .The server can use the On-Street parking slot and use the same application to book the slot.

REFERENCES

1. C. D. Nugent, X. Hong, J. Hallberg, D. Finlay, and K. Synnes, "Assessing the impact of individual sensor reliability within smart living environments," IEEE International Conference, vol 11, pp. 685–690, 2008.
2. D. C. Shoup et al., "The High Cost of Free Parking", USA: Planners Press, American Planning Association, vol 7, pp.100-125, 2005.
3. L. D. Vanajakshi, "Estimation and prediction of travel time from loop detector data for intelligent transportation systems applications," Texas A&M University, vol 7, pp. 1-304, 2004.
4. J. Rice and E. Van Zwet, "A simple and effective method for predicting travel times on freeways," IEEE Trans. Intell. Transp. Syst., vol. 5, no. 3, pp. 200–207, Sep. 2004.
5. J. Kwon, B. Coifman, and P. Bickel, "Day-to-day travel time trends and travel time prediction from loop detector," Transp. Res. Rec., J. Transp. Res. Board, vol. 1717, pp. 1–18, 2000.
6. B. L. Smith, B. M. Williams, and R. Keith Oswald, "Comparison of parametric and nonparametric models for traffic flow forecasting," Transp. Res. C, Emerging Technol., vol. 10, no. 4, pp. 303–321, Aug. 2002.
7. M. Y. I. Idris, Y. Y. Leng, E. M. Tamil, N. M. Noor, and Z. Razak, "Car park system: A review of smart parking system and its technology," Information Technology Journal, vol 8, pp. 101-113, 2009.
8. Y. Geng and C. G. Cassandras, "A new 'smart parking' system based on optimal resource allocation and reservations," 14th IEEE ITSC, vol 7, pp. 979–984, 2011.

BIOGRAPHY

AKSHATHA B S is a final year student of Master of Technology (M.Tech) Pursuing in Computer Science and Engineering, P.E.S college of Engineering, Mandya, Karnataka, India. she received Bachelor of Engineering (BE) in 2015 from MIT college of engineering, Mysore, Karnataka, India. Her research interests are Embedded System, Android application, wireless sensor networks etc.

UMA S K is currently working as Associate Professor in Dept of Computer Science and Engineering, P.E.S College of Engineering, Mandya, Karnataka, India.