Advance Parking Management System.

Aalokkumar Datta[1], Madhuja Chingale[2], Ajinkya Davari[3], P.S.Pise[4]

[1234]Department of Electronics Engineering, D.Y. Patil College of Engineering & Technology, Kolhapur.

Abstract- By looking towards scenario of today's market and business; and approaches of peoples towards their standards ,to deal with the ever growing problem of parking management with issues like lack of space for parking, wastage of time to find parking space this paper proposes an advance solution for managing and monitoring free parking space and automated parking of the car. It aims at implementing smarter and better parking guidance mechanism with architecture which will settle within less land space and reduces significantly vehicle travel time and parking time.

Keywords- The combination of architecture and embedded system,parking thousands of vehicles automatically, Secured payment , Efficient parking, Unique RFID to motorist.

I. INTRODUCTION

Currently, most of the existing parking areas do not have a systematic system. Most of them are manually managed and are not much efficient. The main problem that occurs at the parking area is the time being wasted in searching for the available parking spaces. Users will keep on rounding theparking area until they find an empty parking lot. This problem usually occurs in the areas, where the number of vehicles is higher as compared to the availability of parking spaces.

There are many methods that are employed in the design of smart parking system. Few such methods are listed in the references as follows. In [1], an automatic method for estimating the traffic using image processing technique is carried out. This method uses Gamma Correction as a method for estimating the traffic by using a threshold value. In [2], a system that involves the detection of UAV images has been proposed. This method uses a catalogue based approach by storing different kinds of car images in a database and then the obtained image is compared with the images stored in the database and the vehicles are detected. In [3], an automatic method for traffic surveillance has been carried out. In this system, moving vehicles are automatically separated from the image sequences by a moving object segmentation method. In [4], a system for locating vehicles in a parking lot by using image processing technique has been proposed. In this method, the gray levels of the input image are processed by using log-transform. This extracts edges and counts the number in each parking division and then decides if each division is occupied or not. In [5], an automatic method for counting of vehicles captured by unmanned aerial vehicle has been performed. This method involves the use of SVM Classifier for detecting the car vehicles and counting them. In [6], the detection of parking space by drawing reference dots in the parking lots has been proposed. The area of the reference dots are calculated in order to find whether the area is occupied or not. In [7], a system is designed to capture the rounded images drawn at the parking lots and processes the image to produce the information about the empty parking spaces.

In our system car is given with the unique RFID at the entrance and control room takes the mobile number of driver for further

communication if require as well as vehicle number & photograph of driver for security purpose, the process of data entry is fully computerized which takes less than 10 sec time. Then motorists allows to go in lifts section. For the purpose of data entry and permission allocation system has software here 'Visual Basic' is used as a software platform, In addition to that it has algorithm to find nearest free slot, that information conveyed to microcontroller from PC port via USB to serial converter further process is done by a microcontroller that is to park car at provided slots by commandinglift controls automatically.At the time of departure vehicle is recognized by same RFID given to that vehicle at the time of entrance. Again PC conveys the information to controller to taken back a vehicle. Billing issues are done at control room and allows vehicle to go.

The remaining part of this paper is organized as follows. Section 2 briefly describes the related works. Section 3 presents the analysis on the requirements of an intelligent car parking management system. Section 4 overviews the design of our system. Section 5 describes the implementation of a prototype system. Section 6 reports the system testing results. Finally, Section 7 concludes the paper with a discussion of our future works.
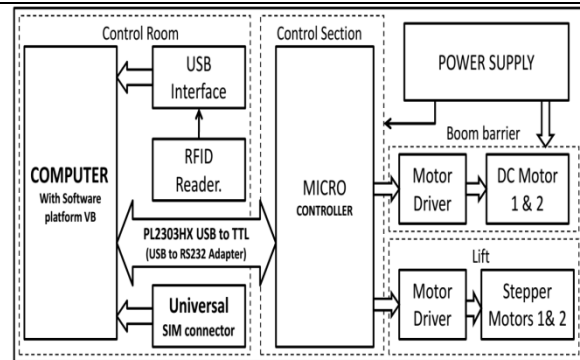
II. SYSTEM MODULE

Figure 1.Block diagram of proposed work.

Above figure shows the block diagram of proposed work. Basically whole system divided into five section as shown in figure i.e. Control room section, Control section, Power supply, Boom Barrier section and Lift section. Now let us discuss each section separately with it's functions and interfaces.

CONTROL ROOM SECTION

Following figure shows the overview of control room section which has important functions as mentioned. Control room is provided with computer in which software is created using VB as software platform for controlling all the actions like data entry (Vehicle number, Motorists cell phone number, Approximate time of parking), monitoring parking slots, scanning the unique RFID which had given to the motorist at the time of entry, giving control commands to lift as per slots available and at time of taking out the vehicle back, sending text message to motorists before 10 min. of allocated time, billing issues at the time of departure.
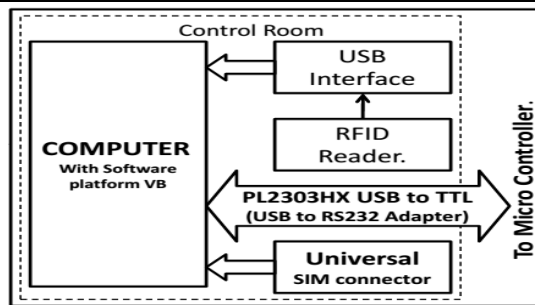
Figure 2. Block diagram of Control room section.

For all the functions mentioned above the arrangements as follows, RFID reader is interfaced to computer via USB, PL 2303 USB to TTL which is USB to RS232 adapter is used here to interface computer with micro controller via that command signals to lifts provided as per the slots available and at the time of departure command given to controller to take the required vehicle back, Universal SIM connector is used to further communication with motorists.

CONTROL SECTION

Controlling all the section centrally, we used here microcontroller. By considering that microcontroller should not under loaded or over loaded we use AT89s52 controller from 8051 family with its special features.

BOOM BARRIER AND LIFT

In our project separate two barriers are used one at entrance and another at exit, to allow to enter or go outside after billing issues successfully. For functioning of barriers we used here DC motors as shown in fig.1. Lift is used here to carry vehicles up and down and positioning the vehicles at allotted slot.

III. RELATED WORK RESULTS

We used visual basic as a software platform and successfully implemented, the first login page of our system is Admin login page as shown below.


After login to the system we have to open the arrival form,in arrival form we have to enter the vehicle number, Mobile number, have to select type of vehicle data entry time which is very less approximately less than 10sec. The screen shot of arrival form as shown below.
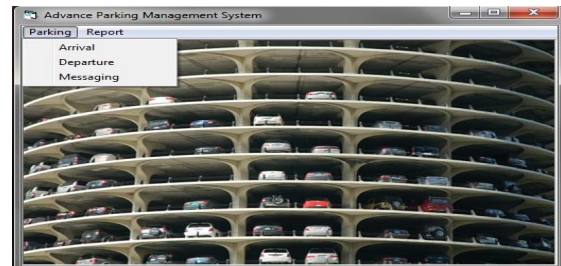
Registration form of arrival as shown below,
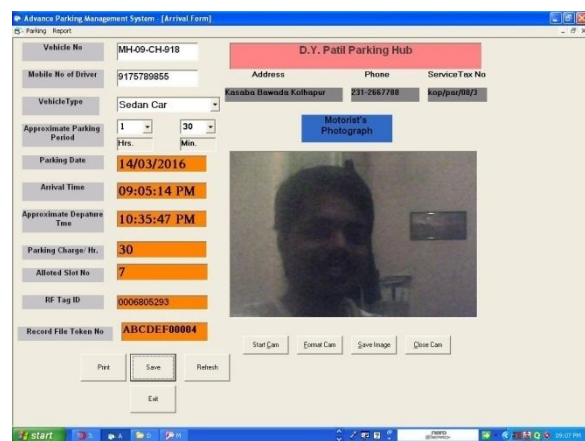
After giving permission from system car will go towards lift the cad designs of the model as shown below,
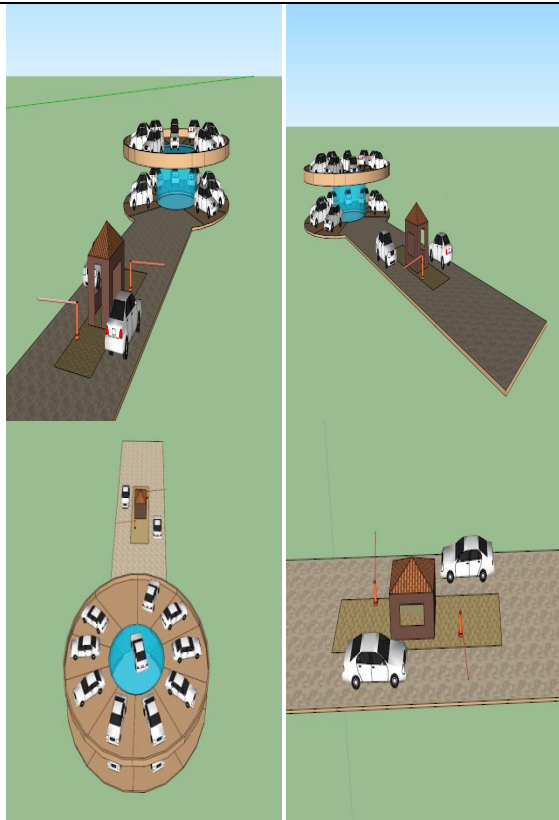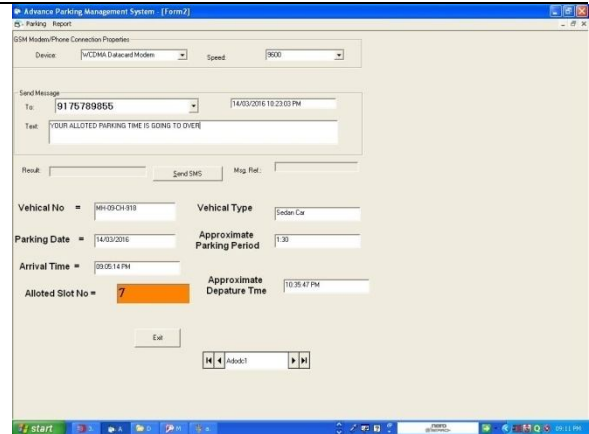

These are the different views of the CAD model. The original view of demo model as shown below,
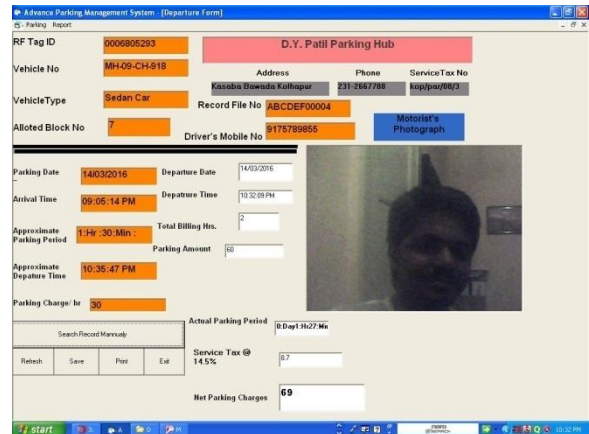

Actual view of proposed work :

Before expiry of parking slot time system will send message to motorist. Message form as shown below,

At the time of departure as soon as same RFID scanned software open all the data related to that particular vehicle and will calculate the charges automatically, Departure form shown as below.

After finishing payment issue exit barrier will open and motorist permitted to go with his/her vehicle.

The setup of interfacing PC with microcontroller shown below,

IV.ACKNOWLEDGEMENT

It is with great relation and enthusiasm that we presenting this paper. We have tried our best to touch all the aspects of this subject. Firstly we wish to express our deep sense of gratitude to*Prof.Mrs.P.S.Pise and Mr.P.M.Harshe* whose valuable guidance, supervision and inspiration proved to be great help.

We would also like to express our gratitude to our principal *Dr.V.R.Ghorpade*sir and H.O.D. *Prof.A.N.Jadhav* sir whose presence itself has been a source of motivation and encouragement.

Finally Special thanks to *Dr.Mrs.A.V.Kadam* of 'R & D department, D.Y.Patil College of Eng. &Tech.,Kolhapur' and *'Science and Engineering Research Board'* for sponsoring our research work.

V. CONCLUSION

Thus the objective of the proposed system has been successfully achieved. The system made general purpose which can be accept globally and ready to serve all the application which mentioned earlier, on field directly. The time for searching the availability of parking lots has been eliminated by reducing dataentry time as well as introducing and employing automated lift .The integration of Visual basic, SIM card reader and RFID have made it a smartest system. The results which obtained also included in this paper.

VI.REFERENCES

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