

IoT Based Car Parking System using XTENSALX6

¹S.Anitha ²M.L.S.N.S Lakshmi ³Ch.Hima Bindu

¹Assistant Professor, ECE Department, QIS college of engineering & Technology

²Associate Professor, ECE Department, QIS college of engineering & Technology

³HOD & Professor, ECE Department, QIS college of engineering & Technology

Abstract-The goal of the smart auto parking initiative is to make parking simple and hassle-free. With correct knowledge of the parking spot availability, our initiative assists drivers in parking their automobiles efficiently and quickly. The business may effectively collect parking fees as well. It includes an ESP 32s as the microcontroller units to update the information regarding the parking slots, Ultrasonic sensors are interfaced. The android app keeps the check of the number of cars entering and exiting the parking space, the servo motor used as gate, for the entry and exit of the cars. The Ultrasonic sensors detect the availability of the parking space and update the information to ESP 32s and Blynk software is used for cloud services. The purpose of this project is to develop a straightforward automatic system for allocating parking spaces that solves parking allocation issues using inexpensive parts like microcontrollers. Parking lots offered at shopping centers, malls, multi-store buildings, etc. typically have staff members assigned to physically guide traffic and assign parking places, making the task more difficult. The parking allocation issues are made easier by this project. The development of a parking system that takes into account the reserve of parking spaces with the best parking spaces, which is primarily based on cost and time, is one of the finest alternatives for developing advance parking slots. Parking fees and distance to the destination must also be factored into the cost function.

IndexTerms-ESP32s; IoT; occupancy detection; Blynk Software; Xtensa LX6;

I.INTRODUCTION

We presented a solution for a smart automatic car parking that gives the user a parking space at any moment due to the lack of parking spaces. Users can reserve a parking spot for their cars using a smart phone by giving the necessary information .similar to name, time, and date. LEDs are available to display information about free parking. After a successful parking attempt, the data will be automatically automated. The device is based on the modules Android Application and Node MCU ESP8266 Interfacing, using LED. An open source IoT platform is Node MCU. This system had so demonstrated to be practical for the car parking automation's purposes, and this system aids in squander the time of the automobile driver because the user can reserve a parking spot in advance. The clock automatically stops whenever the user pulls into a parking spot, by recognizing that the placement of the parking lot and passengers has not been altered. Only once when a person vacates a space, it appears to be reserved for all other users. When a user leaves allocation, it is indicated that the space is "open" for other users. In this essay we'll talk about the issue with car parking spaces and the various options that exists system, each with benefits and drawbacks. Additionally related to this discussion paper is Describe the system's shortcomings and potential improvements to make parking more convenient system with the aid of an Android application using the Slot Allocation method. If the system is designed properly, all the limitations mentioned in the previous systems can be integrated using an Android app. This system is going to alert the users to Parking spaces are empty. Instead, the user can select he parking space in advance instead of waiting at the parking lot, the customer is given information about the parking on their mobile devices. Each slot will have an IR sensor attached to it to check for open slots. The node MCU ESP8266 receives data from the sensors and stores it supplied to the smart phones after being converted to text format. The sensors are linked together. The Node MCU and the Wi-Fi module read the signal before transmitting it. Now Users are given parking information so they may select the best spots.

RESEARCHELABORATIONS

(i) Smart Car Parking System using Arduino UNO

The IOT module is deployed off-site and utilized to monitor and notify the availability of a single parking space in the planned smart parking system. By verifying the availability of parking spaces, this study introduces an IOT-based coordinated framework for effective and simple car parking. The suggested smart parking framework includes an IOT module that monitors and signals the accessibility of a single parking space. The research also provides a perspective on the engineering of the framework from an abnormal state. In the final section, the framework's operation is examined with an example that shows how well the suggested show works. The vacant slot is indicated using an Arduino and an ultrasonic range detection sensor. Ultrasonic sensors are used to measure distance so that drivers may discover an open parking space and park their vehicles.

(ii) IoT based Car Parking Management System using IR Sensor

The Internet of Things-based automobile parking management system is made to display vacant or available parking spaces. It includes an LCD display, anode MCU as a microcontroller, and an IR sensor. Once the IR sensor has determined whether or not a car has entered the parking area, the LCD display is used to show the driver the available parking space. As the parking places are continually inspected, the information on the LCD panel is updated continuously. The suggested parking system was developed using Internet of Things (IoT) technology, which is the least expensive, most effective, and most efficient. The main objective of the proposed parking system is to assist or facilitate the identification of parking places by automobiles. Additionally, the recommended parking system may be used for administrative administration purposes

The Arduino receives a 5V supply, which powers the entire system. The servomotor may run on up to 12 volts because of how it is connected to the CPU. The microcontroller receives inputs from the IR sensor at the door. The microprocessor opens the gate in response to commands from the servomotor, which the servomotor then utilises to move. Infrared sensors are in the slots. As a result, the LCD display's count lowers and shows empty space between LED signals. The gate is aided in operation by a servomotor. If the parking garage closes, all of the spaces are taken. With regard to employing RFIDs, privacy is not permitted. It is challenging to provide RFID transceiver tags to every car that appears to be parked.

III ALGORITHM

Step1: Start

Step2: The components were using to complete our project are as below

- 1 ESP32s
- 2 Ultrasonic Sensors
- 3 TowerproSG90microservometer
- 4 Push button switch
- 5 Voltage Regulators

Step3: Give connection to all the required components carefully

Step4: We have to link our project to our mobile application by installing blynk IoT app

Step5: User have to register in the data base to get user id and password to get access for parking

Step 6: after registration to the deserved venue we have to click and hold on the on/off button
To open the gate

Step 7: By seeing the vacancy slots in the Mobile we can easily park our vehicle in that slot.

Step8: when you ready to exit the parking slot we have to switch on the payment switch

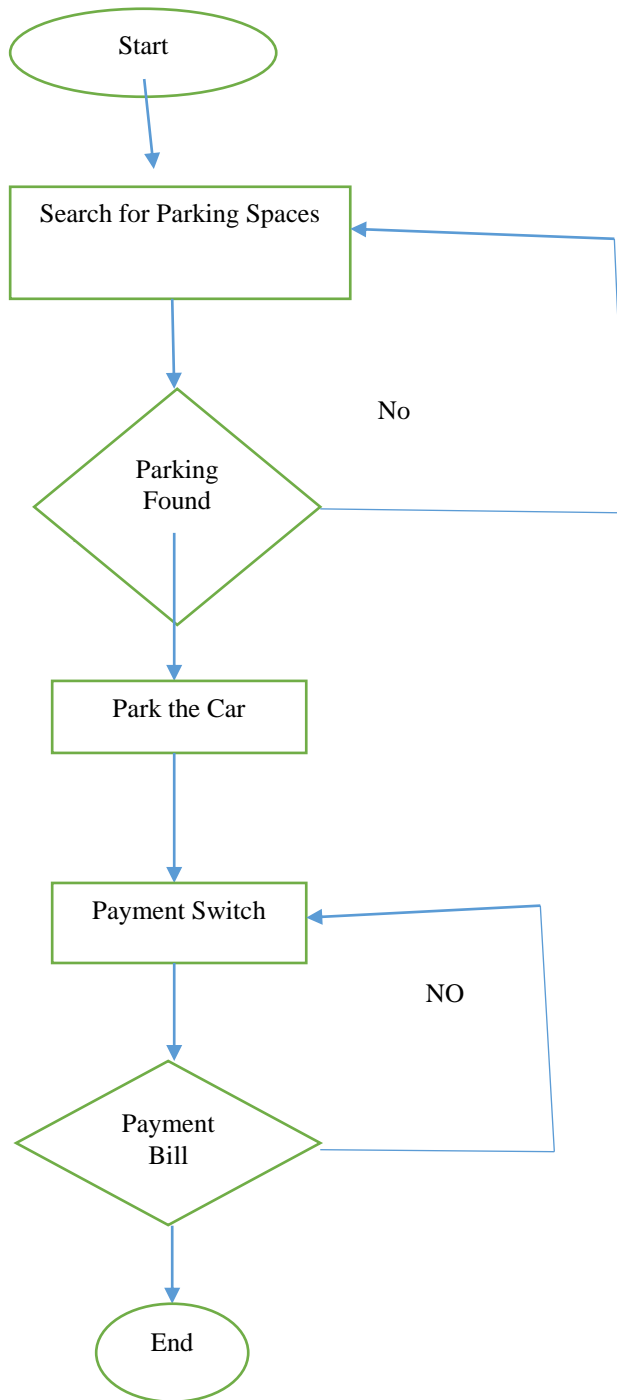
Step9: Then in the blynk IoT it will ask for user id and password after it ask to pay amount after paying the process will complete.

Step10: If the payment is not done successfully then it will ask again.

Step11: after successful payment the exit gate will open

Step12: End

IV FLOW CHART

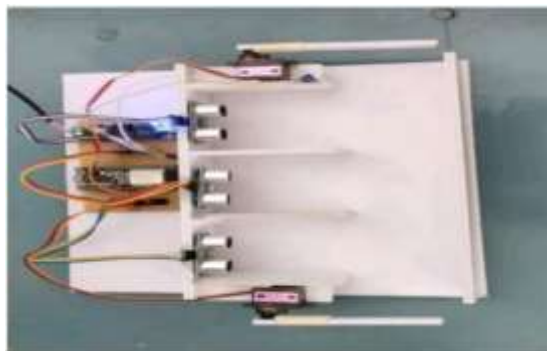


V RESULTS OR FINDINGS

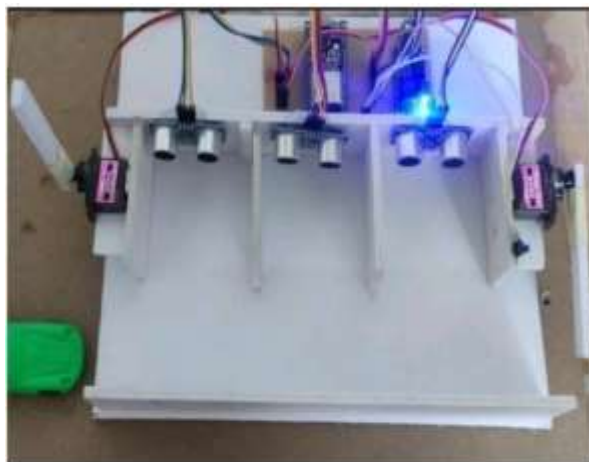
(i) Project Setup



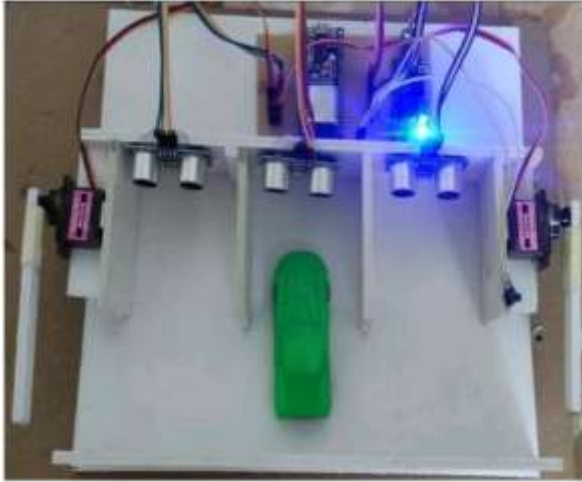
(ii) Availability Of The Parking Slots



(iii) Opening Up the Entry Gate



(iv) Caris Parked at 2nd Slot



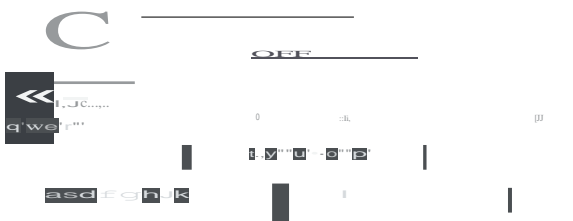
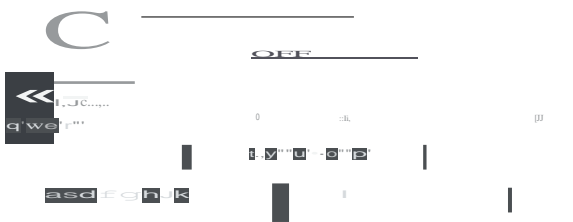
14:07•

X Parking Project OL



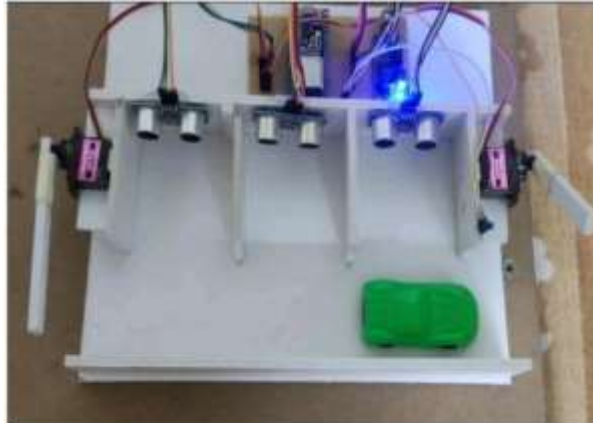
(OFF)

v) Payment Screen

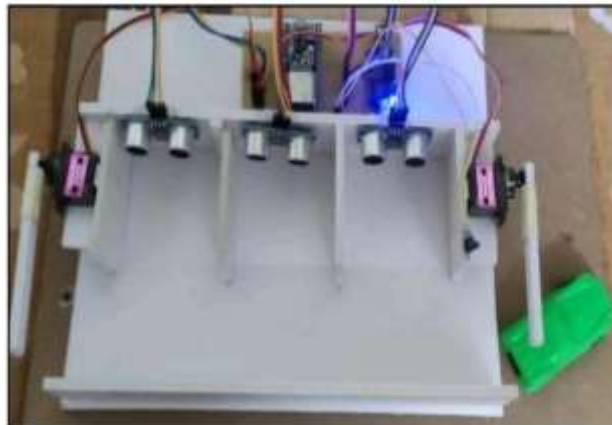


l
 <:?, zxcvbnm
GD

(Vi) Car is Ready to Exit



(vii) Closing Exit Gate



VI CONCLUSION

The issue of traffic congestion in front of the parking garage is resolved by this approach. Traditionally, there hasn't been an automatic mechanism for distributing parking spots for cars. As a result, parking will be allocated simply and efficiently on a first-come, first-served basis. This technique is made more credible by pointing individuals in the direction of available parking spaces and providing precise locations. Users from remote locations could book a parking slot for them by the use of a mobile application. Data storage and retrieval are made simpler by using the cloud. The amount of time spent looking for a parking space and occurrences of cars being parked incorrectly will both decrease with this suggested architecture for a smart parking system. Additionally, it lowers labor costs and physical labor requirements, eliminating the need for manpower investments and allowing for significant financial savings. The efforts put forward in this initiative attempt to improve the city's parking infrastructure, thereby raising the standard of living for its citizens.

VII REFERENCES

International Journal of Applied Engineering Research

- a. Swapnil R. Kurkute, Dipak Patil, Priyanka V. Ahire, Pratikha D. Nandanvar, "NFC Based Vehicular Involuntary Communication System", International Journal of Advanced Research in Computer Science, ISSN No. 0976-5697 Volume 8, No. 5, May-June 2017
- b. Prof. Yashomati R. Dhumal, Harshala A. Waghmare, Aishwarya S. Tole, Swati R. Shilimkar "Android Based Smart Car Parking System" International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering (AnISO3297: 2007 Certified Organization) Vol. 5, Issue 3, March 2016.
S.R.Kurkute,C.Medhe,A.Revgade,A.Kshirsagar,"AutomaticRationDistributionSystemAReview".Intl. Conf on Computing for Sustainable Global Development, 2016.
- c. Mr. Basavaraju S R "Automatic Smart Parking System using Internet of Things (IOT)" , International Journal of Scientific and Research Publications, Volume 5, Issue 12, ISSN 2250-3153,December 2015
- d. Renuka R. and S. Dhanalakshmi "ANDROID BASED SMART PARKING SYSTEM USING SLOT ALLOCATION & RESERVATIONS " ARPN Journal of Engineering and Applied Sciences, VOL.10, NO.7, APRIL 2015.
- e. M. Ataur Rehman, M.M. Rashid, A. Farhana and N. Farhana, "Automatic parking management and parking fee collection based on number plate recognition", International journal of Machine learning and Computing
- .8. Swapnil R. Kurkute, Kakrale Priti Nivrutti, Kale Shraddha Sunil, Kudav Aboli Santosh, "PCB Quality Monitoring", International Journal of Modern Embedded System (IJMES), ISSN: 2320-9003(Online), Volume No.-5, Issue No.-1, Page No-13-16, February, 2017
9. Priyanka S. Patil, S.K. Shah, "A Review: Development of Android Applications WHATS HERE Places", International Journal of Advanced Research in Electronics and Communication Engineering (IJARECE), Volume 4, Issue 4, April 2015.
10. Prof. D. J. Bonde , Rohit S. Shende, Ketan S. Gaikwad, Akshay S. Kedari, Amol U. Bhokre, "Automated Car Parking System Commanded by Android Application", International Journal of Computer Science and Information Technologies (IJCSIT), Vol. 5, Issue-3 , 2014.
11. Prof. Yashomati r. Dhumal, harshala a. Waghmare, aishwarya s. Tole, swati r. Shilimkar. "Android based smart car parking system", International Journal of Advanced Research In Electrical, Electronics and Instrumentation Engineering, (aniso 3297: 2007 certified organization), vol. 5, issue 3, March 2016 (2016): 1371-1374.
12. S. R. Kurkute, Gopal Girase, Prashant Patil, "Automatic Energy Meter Reading System Using GSM Technology", International Journal of Innovative Research In Electrical, Electronics, Instrumentation And Control Engineering, ISSN: 2321-2004 (Online) Volume No.-4, Issue No.- 3, IF- 4.855
13. S. Chou, S. Lin and C. Li., "Dynamic parking negotiation and guidance using an agent-based platform", Expert Syst. Appl. Vol. 35, No. 3, PP. 805-817, October 2008,
14. Hitendra G., Wasnik Askhedkar R. D. and Choudhary S. K., "Optimal Automatic Car Parking System for Indian Environment", Indian streams research journal, Vol. 1, pp.1-4. 2011
15. Swapnil R. Kurkute, Aishwarya Thenge, Shivani Hirve, Diksha Gosavi, "Cattle Health Monitoring System- A Review", International Journal of Advanced Research in Computer and Communication Engineering, ISSN (Online) 2278-1021, Vol.7, Issue 1, PP-139-140, DOI 10.17148/IJARCCCE.2018.7122 January 2018
16. Satish V. Reve and Sonal Choudhrix, "Management of Car Parking System Using Wireless Sensor Network", International Journal of Emerging Technology & Advanced Engineering. Vol.2, p.732. 2011
17. Ms. S. Kiruthika, Dr. D. Surendran "SMART CAR PARKING USING GARDUNIO AND ANDROID APPLICATION" Journal of Computer Science and Information Technology IJCSMC, Vol.5, Issue.2, February 2016, pg.230-234