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Automatic Car Parking with Arduino, LDR Sensor

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Abstract: ***Now days it is very important to save the time, money in terms of travelling and parking too. If any one goes to the shopping, people didn't know, is there any space to the vehicle parking or not,in such a cases to save the public time, automatic car parking helps. Working principle is depends on the sensors which is already arranged in the parking area and LDR sensor which is at the entrance of car parking. It's all manage with LDR sensors and Arduino micro controller .the simulated results with proteus software pursued .***
Keywords: Car parking, vehicle parking, Arduino, surface parking etc.,

I. INTRODUCTION

In the last few years many people have started coming in from the small towns to the big cities. With time they started improving their standard of living and in turn led to the increase in number of vehicles.15-20 years ago there were no malls or shopping complexes, but now-a-days there are a lot of shopping malls and complexes where a huge amount of people come in everyday to buy day to day stuff. Smart car parking is an automated, flexible, user friendly, and highly efficient technology as the booking of parking slot for the driver's vehicle is made possible using an Arduino.

Also, the operator can easily keep the truck of vehicles entering and existing the parking space and parking fees collected. A smart vehicles parking is a system that helps drivers to find a vacant spot using sensors in each parking space by detecting the presence or absence of a vehicle.

The technical problem that we have addressed is figuring out a way to find the closest parking spot for a car. Quick, cheap, reliable, and efficient system design is the heart of this project. The idea came about observing the inefficient of current methods of parking enforcement (several peoples continuously roaming around the floors and checking parking slot). Over the decades our country has developing drastically, now we are in this state that we have a lot of well contacted roads, commercial building and increasing number of automobiles.

While parking these automobiles in parking space we use the manual procedure of parking. Which most of the cases is unplanned and lack of discipline due to this, people can park their cars anywhere they want to, which creates a mess as people do not follow the particular cue most of the time. As a result of this, a huge traffic jam takes place in that place. While parking in and retrieving car due mismanagement cars can get dent by bumping with each other as there is lack of sufficient space. This leads to arguments, fights among people which sometimes make huge traffic jam.

This is also an economical loss as we need to repair our damaged car and also a car consumes extra fuel while parking in or out. Traffic jam is an issue here as it kills our precious time. Due to this chaos in parking our valuable time gets wasted. It harms the students, office going staffs and emergency patients to a great extent.

II. LITARATURE REVIEW

This covers the methods and types automated car parking systems, related literature and studies presented focus on some theories statement and ideas of different authors and writers in relation to design and construction automated car parking System.

Types and methods of automated car parking system: The Equivalent Car Space (ECS) that can be accommodated at the parking site would vary with the technology used.

There are two basic technologies available for multilevel parking, which are briefed in the following paragraphs Conventional Multilevel: Conventional multilevel parking system can be underground, above ground or both under and above ground structure. The above ground structures are usually Open-deck parking structures,

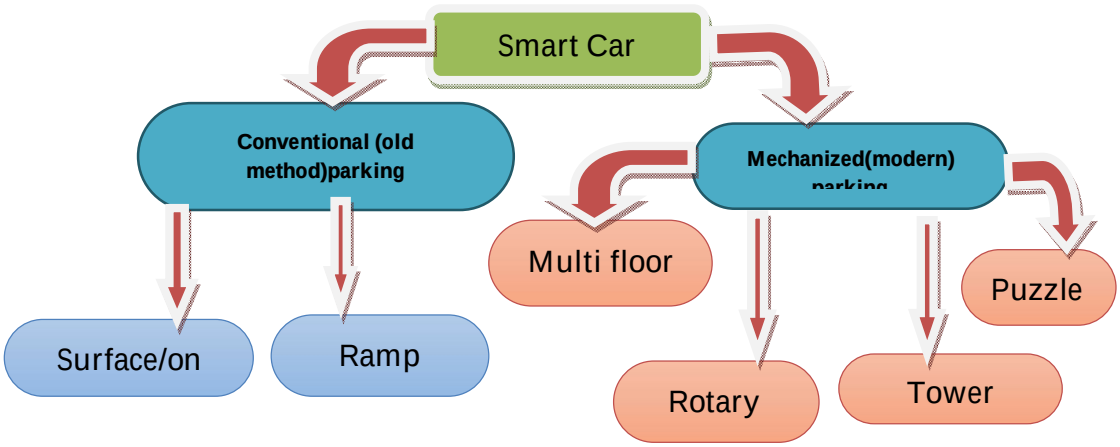

Figure 2.1. Types of smart car parking

1) *Automated Multilevel:* As against cars being driven (on ramps) or carried (in car lifts) to different levels in conventional multi-level parking, cars are driven at only one level for parking or retrieval. Cars are parked in steel pallets and a target pallet comes up or down to the driveway level at the press of a button, for parking or retrieval.
2) *Puzzle type or Modular:* This system can have more than two levels of parking. Its design has a structure that enables use of all parking entrances and exits on ground level. The parking pallet moves left, right, upward, and downward and has always a minimum of one empty slot for movement. Car parker can have multiple levels above, pit style below, or a combination of both.
3) *Elevator type or Tower:* The elevator type often called the Parking Tower, is designed to automatically move the vehicles on a pallet vertically on the elevator, it then transfers it horizontally left or right for storage. Very fast retrieval time is accomplished in less than two minutes. This system is suitable for medium or large scale buildings. It can also be used as a standalone tower for a parking garage business. Since it is controlled by an integrated computer system, the overall operation can be viewed with one screen and its operation is very user friendly.
4) *Multi floor Parking Type:* The Multi-Parking system has been designed to automatically move the vehicles by lift which then transfers it to a waiting cart on one of the multi levels. The carts then travel horizontally and place the vehicle in its appropriate slot. This system is suitable for middle and large scale buildings as well as independent public parking garage. The multi parker can accommodate as little as 20 vehicles to several thousand units. It is therefore suitable for large scale projects. It can move more than 2 vehicles at the same time for maximum efficiency.
5) *Rotary Type:* The perfect solution to park the maximum number of cars in the least amount of space. The design enables you to park either 7,8,10, or 12 vehicles in the space of only 2. There is no need for a parking attendant, just insert the key and press your parking space number and the pallet will rotate either clockwise or counter clockwise. It will automatically sense which way to rotate by space number.

A. Research Literature Review from Papers

[1]The Addis Ababa city Transport programs Management office indicated it is persistently working to modernize city's transport infrastructure and to bridge the supply-demand gap observed in the public transport service, according to a press release sent to the Ethiopian Herald. the office is exerting efforts to ease parking problem through development of optimized parking system in the city, partially with the construction of smart and grounding parking system. The office exerting efforts to easy parking problem through development of optimized parking system in the city, particularly with the construction of smart & ground parking systems.

The construction of parking infrastructure at Megenagna (East Addis), Wello sefer (on the way to Bole International Airport) and has been 85% complete. Parking infrastructure of various kind are under construction in the city at accost of worth over 100 million birr, Moreover the other construction projects like underground parking and traffic complex are also set to kick off soon, office deputy Manager Woyessa Fayissa told the Ethiopian Herald.

In a proposal to transform the public transport service system, the office is working on transforming state owned transport service system; the office is working on transforming state owned transport service providers and building new terminals in selected areas of the metropolis. Moreover, the office is working on modernizing pedestrian pavements to relive traffic jams and ensure smooth traffic system.

The newly built smart car parking in Ethiopia's capital, Addis Ababa, has begun trial operation. The car parking building was built at outlay of million birr and it is located in neighborhood commonly known as Megenagna. The parking building is 15 stories and lays on 170 square meters of land. It has the capacity to accommodate a total of 140 cars at once out of which 50 will be on the grounding floor. According to transport program coordination office of Addis Ababa city, the smart car parking will go operational in few days. The parking would create job opportunities for 20 people, office furthered.

The office also noted there would be 60 smart car parking that will be built in the capital city. In Ethiopia steel facilities that can at once hold 90 cars in space which could originally hold nine cars. It is continental first, a facility meant to ease vehicular parking and to keep with global trends in the area of vehicle safety. This is Africa's first smart parking facility located in one of the continent's fastest growing cities, Addis Ababa in Ethiopia. A recent CGTN Africa report showed the smart Megenagna parking where a modern lifting systems safety parks cars in a huge steel story building.

[3]An automatic car parking system with further advancement in the smart parking systems the problem of finding vacant spaces and all the hassle is going to deprive.

Various methods are prevalent for development of autonomous or intelligent parking systems. Study of these systems shows that these require a little or more human intervention for the functioning. One of the intelligent systems for car parking has been proposed by making use of Image processing. In this system, a brown rounded image on the parking slot is captured and processed to detect the free parking slot. The information about the currently available parking slots is displayed on the 7-segment display. Initially, the image of parking slots with brown-rounded image is taken. The image is segmented to create binary images. The noise is removed from this image and the object boundaries are traced. The image detection module determines which objects are round, by estimating each object's area and perimeter. Accordingly, the free parking space is allocated.

[4] private mobility that subordinates all other types of public motilities (walking, bicycling, taking transit); environmental resources use in terms of both production and use of automobiles, roadways, and related infrastructure; automobiles as a primary object of individual consumption that confers status upon its users; the dominant culture dictates automobiles as the most appropriate mode of mobility; and, most importantly, auto mobility is a mechanic complex, socio technical interrelationships which facilitate individual and mass auto mobility.Key elements of this interlinked mechanic complex include construction and maintenance of roads, traffic and parking control, associated environmental and healthcare costs, suburban development construction, urban planning, and economic linkages such as oil or automobile production.

[5] In this work Global Positioning Systems (GPS) technology (also known as Satnav) is used to determine and track a vehicle's precise location. In this domain, it is used to offer information about the location and availability of parking spaces at the destination. The server in the system associates buildings on the campus with parking lots in the order of distances to the building. After locating the nearest available parking lot, the user sends the NAPA server a message that he/she has parked. Then the server updates the information about the lot accordingly. When the user leaves the parking lot, the NAPA server can automatically charge the appropriate parking fee if necessary. This system is capable of finding parking spaces in specific car park areas. A parking reservation system is developed in such a way that users can book their parking spots over short message services (SMS) using the GPS. The SMS is processed by a wireless communication instrumentation device called a micro-BTU (Remote Terminal Unit). The proposed prototypes have the following specification; the circuit has a simple design, the reliability level is high, and the system accuracy is excellent.

[6]The driver will place the vehicle in front of the garage door and there will be a monitor available where the number of available parking slots will be displayed. The user will have to provide his mobile phone number and car's registration number and the operator will give command to open the gate, a car parking tray will come & will park the car in the garage. The user will receive a SMS which will contain a code. After the car is parked a time counter will count the amount of money to be deducted till the car is parked out. While parking out the driver will have to provide the code to the operator at the exit gate. The user will receive a SMS stating the amount to be paid. After paying the amount the car parking tray will park out the car using the same process it was parked out.

Rupali Bhardwaj [7] has introduced the concept of smart parking guidance system. A various factor considered in the decision of the parking choice is done by parking utility function. Driving time and distance, the distance on foot, the cost of parking, traffic congestion by guidance itself and possibility to find vacant parking lot when a car enters. To analyses the effect of considering a factor, six different importance's according to the total weight of factor are proposed and evaluated the validation of proposed algorithm is performed by the simulation test. For the multi -level car parking system having the different maximum number of concurrent parking requests, six kinds of preferences putting different weight on various decision factors have been evaluated and compared with the base. Using the proposed algorithm, it has been proven a lot, utilization of parking resources in the city, and traffic congestion can be improved.

The proposed system and algorithm enables car drivers to find the most appropriate parking lot and redundant time and energy.Jo-Hongis Wang and Wando Hey has introduced the project that aims at saving the ground space required for parking. Using the parking system any number of cars can be parked according to the requirement, This Micro controller Based Car Parking System enables the parking of vehicles, by displaying the available slots thus reducing the parking space that is used by users.

[8] Car parking system is a system that is used to help managing cars in parking area in other to avoid congestion and arrange cars in an allocated position. Intelligent Parking Service is a part of Intelligent Transportation Systems (ITS). Certain big cars are not able to fit into the normally available parking spaces.

Hence there is a need for a system; which can take all relevant information into consideration, for finding the parking vacancy. The objective of such technologies is the reduction of the burden on driver, improvement of the traffic capacity, and provision of reliable and secure car functions.

In the last fifteen years, academic research on outsourcing smart parking systems has evolved rapidly, growing so fast that, to date, there has been scant opportunity for the research community to take a collective breath and complete a global assessment of research activities.

There are several methods employed for the vehicle parking. The concept of new smart parking solves the parking problem by using mixed integer linear problem. The disabled person can park the vehicle at specially designed locations. In this system a new smart parking system is implemented for cities.

This system assigns and reserves a parking space for a user (driver) based on the users distance from the parking area and parking cost and also ensures that the overall parking capacity is effectively utilized.

[9]One characteristic of an advanced civilization is its ability to transport large amounts of people and resources in a logical, efficient, and expedient manner. As parking facilities grow large, advanced methods of parking management are needed to reduce inefficiencies in finding available parking spaces. Smart parking systems (SPS) have arisen in high-density population areas to help patrons easily find parking in a crowded facility.

These SPSs are able to monitor parking space usage and direct drivers to available spaces. The primary method of collecting usage information has come in the form of sensors at entrances and exits or sensors at individual parking spaces. Several methods of disseminating availability information have been developed such as variable message signs and mobile/internet interfaces. This study seeks to evaluate the usage of SPSs on university parking search times (PST), a valuable parking facility performance characteristic, using discrete event simulation (DES).

A critical consideration is the installation costs since costs generally determine the feasibility and viability of a project. The installation must be simple enough for opening automated car parking garage to MSEs. The power consumption is small because of Arduino mega used 5v- 12v.

III. METHODOLOGY

There are many types of designing and Construction of Automated Car parking System. The conventional car parking methods like surface/on street and ramp based, method which is un manageable method of using area and an wanted wastage of fuel and time. The entire parking method can affect many problems including car crash, crowding the road and loosing of parts of car. In modern car parking a multi floor type, puzzle, tower, rotary and sensor based ground space car parking are used in developed country then we select from this modern car parking sensor based ground space car parking and rotary based on the cost and simplicity for our research project.

In case we select this two car parking system ground and rotary car parking are have many advantage we can use in small area combine the two parking and they uses simple and cheap material cost when we compare to the others modern car parking system .

Block Diagram

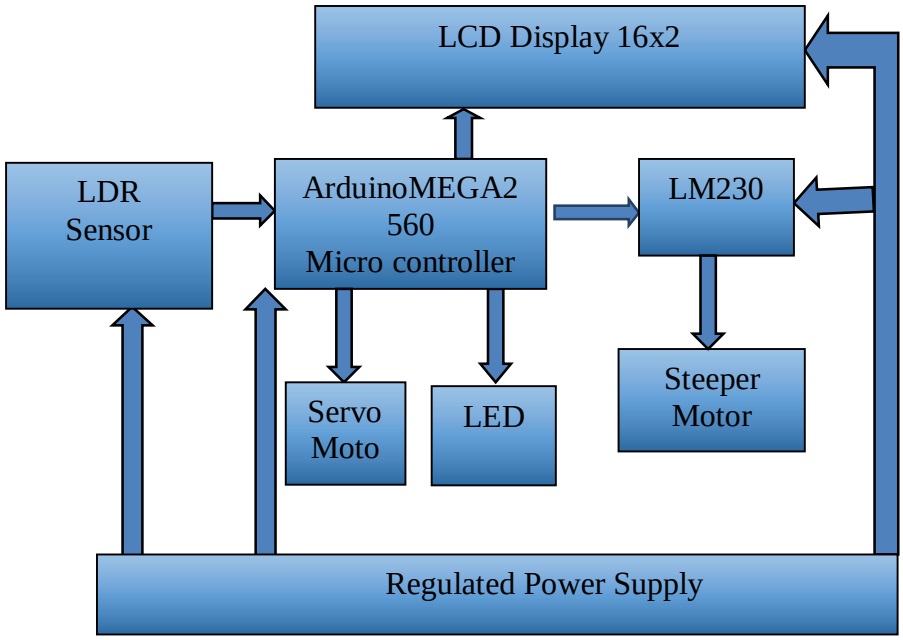

Figure3.1. Block Diagram Automated Car Parking system

IV. MODELING AND ANALYSIS

1) *Mathematical Model:* The closest available capacitor value to this is 2200uF capacitor which is still acceptable as it will further reduce the ripple in the output voltage. A 12 V regulator, LM7812 and 5 V regulator, LM7805 to regulate the output is due to its capability to limit the current in order to prevent excessive current and also reduce the amount of power lost as heat in the circuit. The assumption and standard details Capacity 8 or more cars ,Car available dimensions as per parking specifications

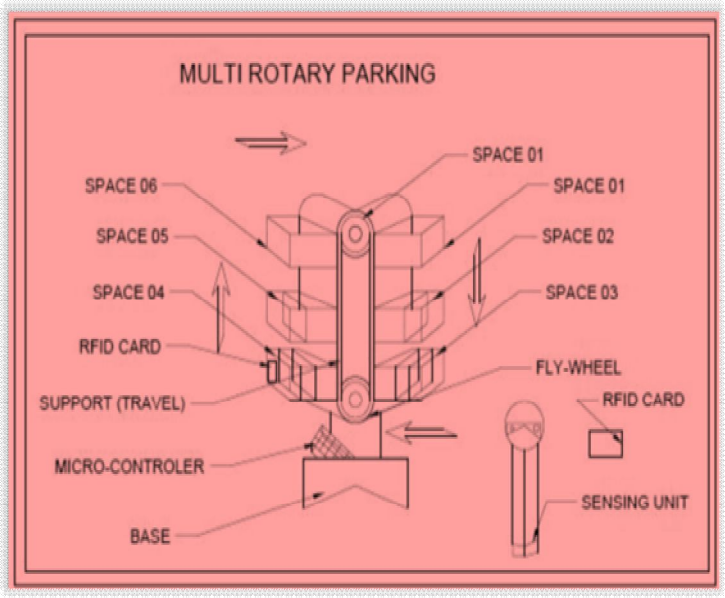

Figure 3.1 :rotary car parking for multiple car

Steps to design ground space automated car parking: Inventory of resources and conditions

2) *Map of the Area:* It is essential that a map of the area concerned is prepared and drawn to scale with sufficient accuracy to show all dimension so that the lengths of main and lateral can be scaled there from. It should be a counter map or, at least, should show all relevant elevations with respect to car parking garage, map location and critical elevation in the fields top garages. The elevation map as shown in fig 3.2 provides information about parking area and how to use it. For control mechanism, we divided into two zones the first zones covers six cars and the second zones divided into two one for controlling room and the second is for rotary car parking.

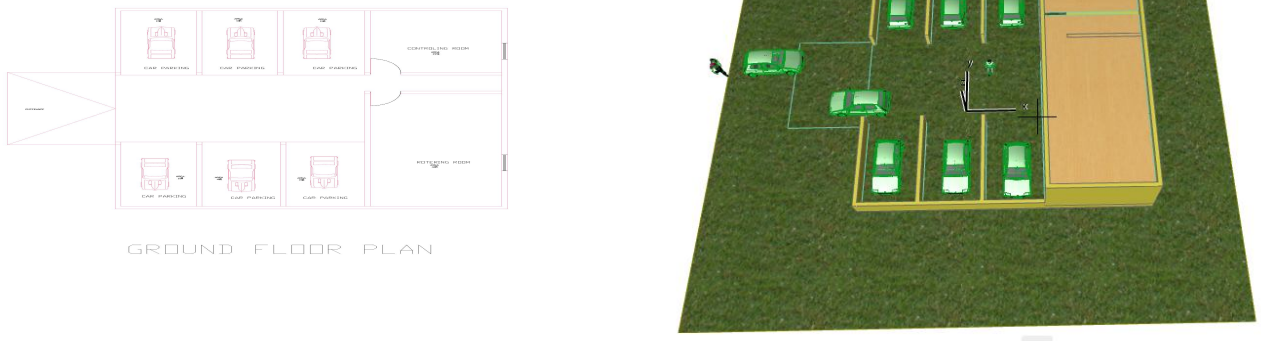

Figure3.2 floor plan & top view

3) *System Software:* System software for data reading and controlling the various devices is written in Assembly language. A simplified diagram of the algorithm is shown in the fig.Executing the software program the First when a car enters the gate LCD displays empty parking slot that empty parking slot was sensed by the IR or LDR sensor we are using object sensor to sense the car in the parking slot. The TX and RX-was kept in the parking slot. If any car parks at one slot the TX-transmits the signal and the RX can't receive any signal therefore display, displays "NOT EMPTY". If the signal is received by the LDR receiver, then display displays "WELCOME Free slots=6", through Micro controller.

4) *System Performance:* The whole parking area is divided into 2 sectors, each according to the level or standard of car parking. Resistive LDR sensors are transmitting data to the LCD whether the slot is free or not and the incoming car and outgoing car. When the car is entering or exit the parking, the LCD increasing the amount of entering and decreasing the exit amount of car using LDR sensor which is fed to the Arduino micro controller and is set to the exist number found in the parking.

5) *Software Analysis:* The software used for our project is professional Proteus 8.5 software and Arduino 1.8.5 software. Proteus 8.5 is a single application with many service modules offering different functionality (schematic capture, PCB layout, etc.) and source code. Our project program is written using Arduino 1.8.5 software. The wrapper that enables all of the various tools to communicate with each other consists of three main parts. A LDR sensor is interfaced on analog Pins A0, A1, A2, A3, A4, A5 and A6, from which this sensor sense the car that is present on or not and if the car is reached below the critical point then motor will be turned on if there is free space in the slot and if slot has no free space (fully) the servo motor is turned off which is interfaced on digital PIN 12. Each activity displayed on LCD which is interfaced on digital pins.

6) *Circuit Design:* Designing of power supply:Figure 3.3 Shows Power Supply required for Micro controller, sensor and LCD (16x2) is 5v and if want 12V in case we have extra 12V.

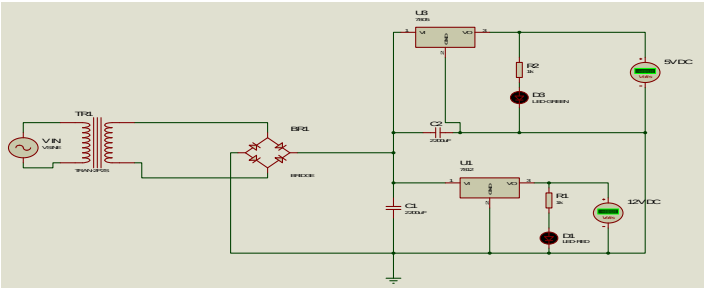

Figure 3.3 Power supply

7) *System Design:* The automated car parking system is designed and simulated in Proteus professional 8.5 Simulation software. Figure 3.4. and figure 3.5 shows that system design of automated car parking in Proteus professional 8.5 software.

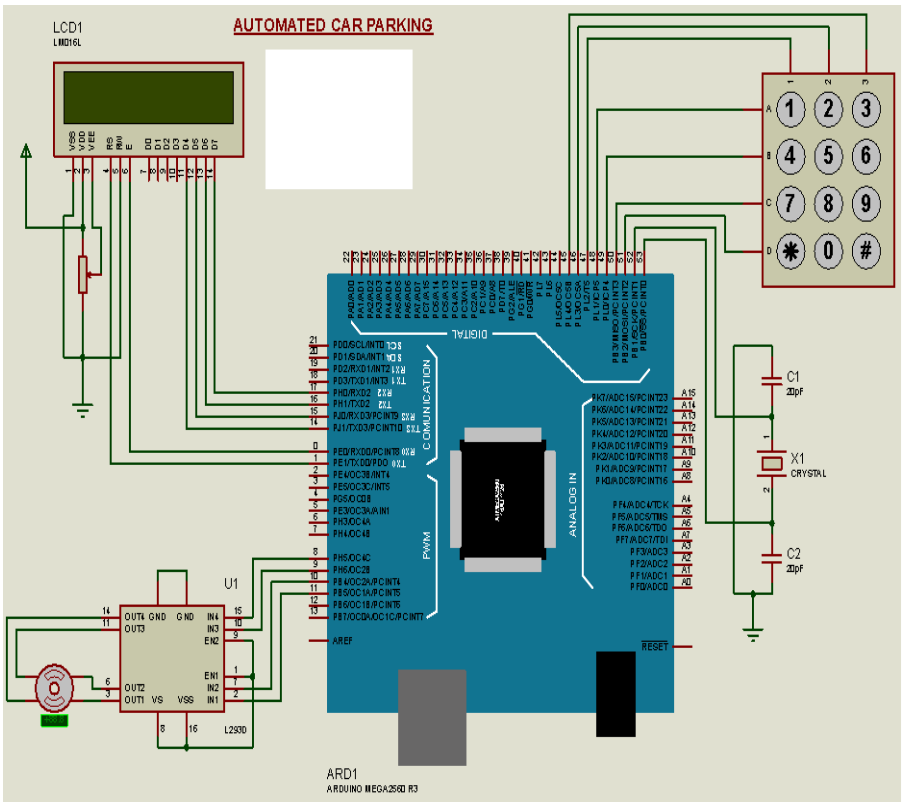

Figure 3.4 Design of automated rotary car parking system

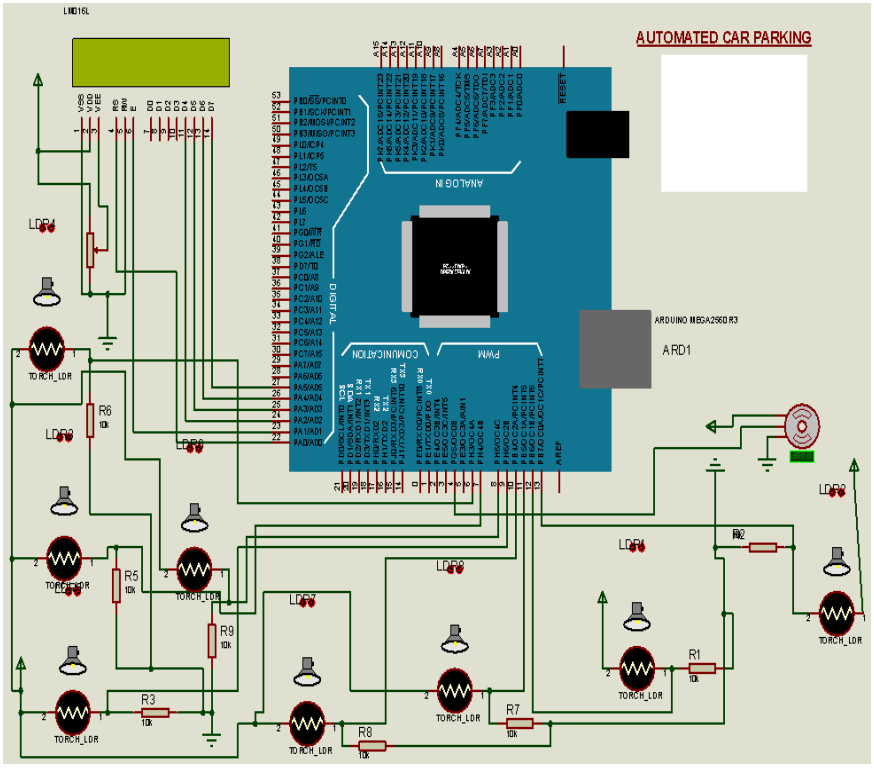

Fig 3.5 Automated ground car parking system

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V. RESULTS AND DISCUSSION

The automated car parking system is designed and simulated in Proteus professional 8.5 Simulation software. Figure 4.1.shows that overall design of automated car parking system in Proteus professional 8.5 software.

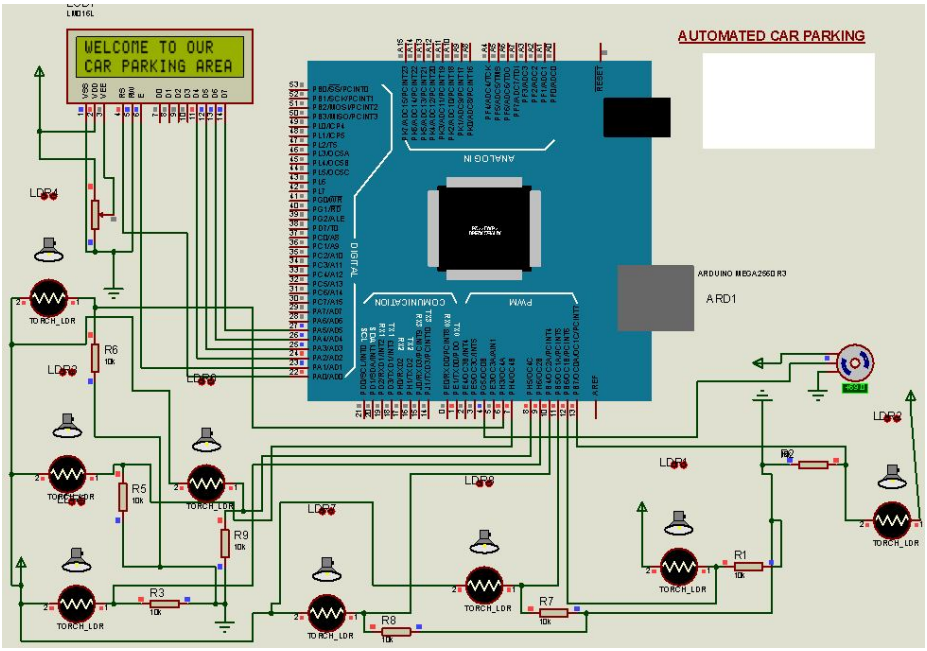

Figure 4.1 Overall system design

Figure 4.2. Shows when the first car is come the sensor sends signal to microcontroller then the servo motor automatically open the gate state and the LCD become decrease from the total number of slot.

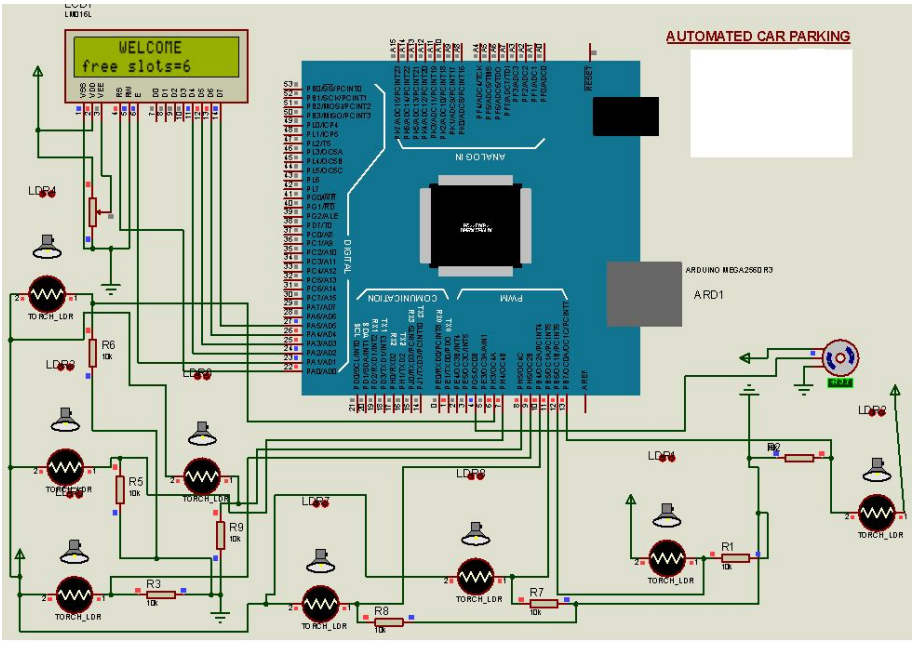

Figure 4.2 when the all slots are free

Figure 4.3. Shows when the all slots are occupied, the sensor sends signal to micro controller but the servo motor OFF state and the LCD displays thanks for coming no free slots.

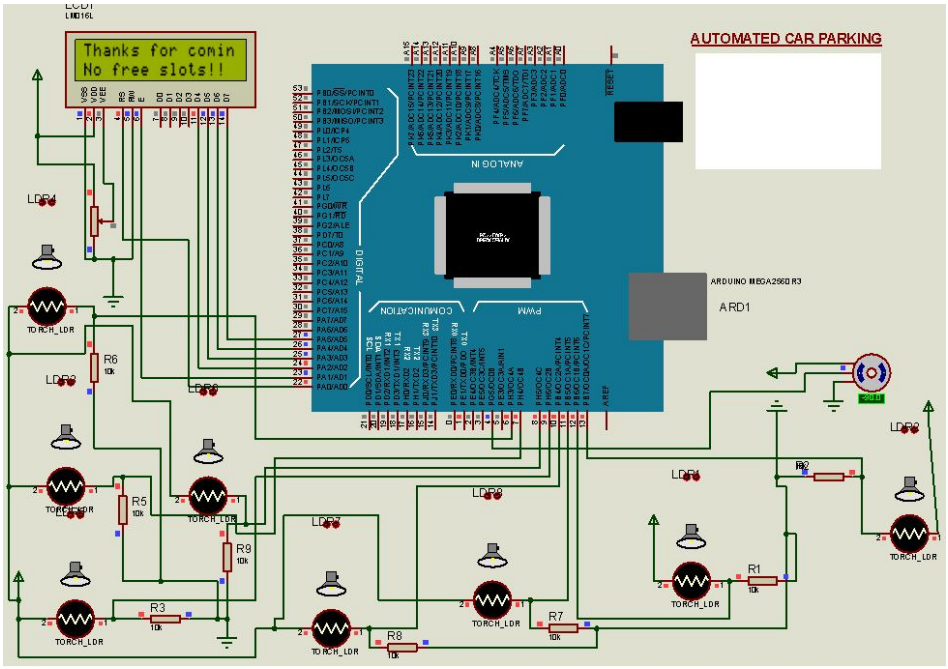

Figure 4.3 when the slot is full

VI. DISCUSSION

The LCD display as shown in figure above will be installed at the main entrances of car parking the intersection of the main channels. In other places, it can be installed according to the needs. Display the quantity of the current free parking spaces in the connected region in the form of number and text. It can be 24-hour used. The internal procedure can be modified at any time according to the customers' demands to display the other needed information of the users.

Maintenance and Trouble Shooting:General principles regarding the maintenance of the whole system

1) *Arduino Mega:* The Arduino require virtually no maintenance but attention must be given to the following procedures: Occasionally clean any dirt or put out the Ardiuno in a proper place while it is sensitive to damage in simple way Any accumulation of dirt .Keep all connection in best soldering way. Do not lay the circuit on moisture area. The arduino mega have usually have many parts and all parts are their own function including input voltage, data input and output so it need more attention while we are configuring
2) *LCD Display:* The LCD pins should be given the following attention: When installing the LCD pins, make sure that the LCD are not damaged or all pins are connected properly .Do not apply oil, grease or any lubricant to the circuit. Because there are no any mechanical movement parts .The LCD usually have too many purpose while displaying all our output results in case it needs careful when we using it . After several season's operation the circuit may need soldering if there is crack place or reloading the program. This is done by troubleshooting the power supply or the circuit that needs soldering or rehot the crack area and reloading the if the program can stop.In general, check all equipment at the end of the season and make any repairs and adjustments and order the spare parts immediately so that the equipment is in perfect condition to start in the next season.
3) *Trouble Shooting:* The following are the general guidelines to identify and remove the common troubles in the automated car parking systems: No display at all .Check that the LCD gets the power. If not, test all the circuit and line that is connect to the LCD. Check the power supply unit at all .Check if the LCD gets all data from arduino mega.Check the LCD if its broken . The gate is not open/close .Check servo motor. If it burns .Check that the nozzle is not blocked. Preferably unscrew the nozzle or use a small soft piece of wood to clear the blockage. Do not use a piece of wire or metal as this may damage the nozzle. Check if the servo motor can get the data from the arduino mega .Check if the sensor is functional. No data can process at all .Make sure if the program is running correctly. Check if the program is loading to Arduino .Check if the Ardiuno is working.

VII. CONCLUSION, RECOMMANDATION AND FUTURE WORK

A. *Conclusion*

Designed control system was found to be working satisfactorily, although some improvements on its performance are still possible. It provided sufficient information for further project in this area, despite limited implementation time. After doing study on Automated Car Parking project it is found that ACP systems can be introduced in our country and it will be beneficiary in the context of our country. The main benefits are time and fuel saving. It can also provide sustainable parking management in an eco-friendly manner. As the GHG emission will be less in amount and the surroundings will be clean. There is less maintenance cost for this system so it is helps the property developer in cost saving. It provides security to the parking ground. ACP systems reduce the hassle in parking grounds and traffic jam. It will benefit the property developer to increase their revenue which will add to the government tax revenue. So in a way it is also helping the government by increasing tax revenue. It will also encourage Automation Engineering in our country which will make advancement in increasing usage of technology. Therefore we should introduce ACP systems and enjoy the benefits. Using this system:It can save manpower, Reduce car jamming Covers those customers who are wasteful their time for parking their car :It could lead to small place when staying their car at the right manner.The design is low power, low cost, small size, robust and highly versatile. The automated control is implemented here to avoid damage crash of while parking their car.

B. *Recommendations*

A few improvements can be suggested to the next version of the automated car parking system. The use of several sensor may be allowed with the addition of a multiplexing circuit and have more options maybe customization, such as the way of billing mechanism.A single power supply is desirable to replace the dual (AC/DC) supply of the prototype. A full-wave rectifier and a voltage regulator should be incorporated on the PCB to ensure the stability of the 5V and 12V source.

VIII. RECOMMENDATIONS

In the future we use it in conjunction with a solar panel, so that the entire system is eco-friendly. In our future work we are planning to have an automated car parking system with the help of wireless sensor network.
GSM based automated car parking & reservation. IRID based smart car parking.

REFERENCES

[1] The Ethiopian Herald (Addis Ababa) 24 March 2017 Tagged :Business. East Africa. Ethiopia. Transport. Urban Issues Ethiopia: smart car parking. By Homa Mulisa. Ethiopian Bundling a first in history houses for retire senior gov't official worth 25 mil, each My 23,2016 Dayang Auto-Parking Equipment co .Ltd, manufacturer of parking systems in china, has won the construction bids
[2] Construction at 3 sites, Anwar Mosque, Churchile road and Wello sefer, had already started Source : Fana Broadcasting Corporation
[3] The smart parking systems were initially implemented in Europe, USA and Japan (Shaheen et al., 2005) but later on as the other countries started developing, these smart parking system are being installed in these countries as well.
[4] According to Sheller and Urry (2000 p738) auto mobility is the interrelated Combination of key components including:
[5] This technique proposed in (Pullola et al. 2007; Chon et al 2002; Hanif et al. 2010). Chon et al presented a location-based system called NAPA. (Hanif et al. 2010) proposed a new smart parking system using SMS services.
[6] Maksura Mubashirin, Srabosti Mahmud Automated car parking System Spring 2017 BRAC University Dhaka, Bangladesh
[7] ISO 9001:2008 Certified International Journal of Engineering Science and Innovative Technology (IJESIT) Volume 4, Issue 2, March 2015 Rotary Automated Car Parking System
[8] Rupali Bhardwaj Department of CSE Dash bhagatpolytechnic college Bard-wale, dhuri, India, Volume 4, Issue 6,June 2014 ISSN: 2277 128X International Journal of Advanced Research in Computer Science and Software Engineering Research Paper Available online at:www.ijarcsse.com Chandni Patel#1, Monalisa Swami #2, Priya Saxena #3, Sejal Shah#4
[9] International Conference on Green Computing and Internet of Things(ICGCIoT). 2015 M. S R, "Automatic Smart Parking System using Internet of Things (IOT)", International Journal of Scientific and Research Publications, vol. 5, no. 12, 2015.
[10] Fries, R., Chowdhury, M., Dunning, A., and Gahrooei, M. (2010). Evaluation of real-time parking information. Transportation Research Record: Journal of the Transportation Research Board, 2189, 1-7. doi: 10.3141/2189-01.

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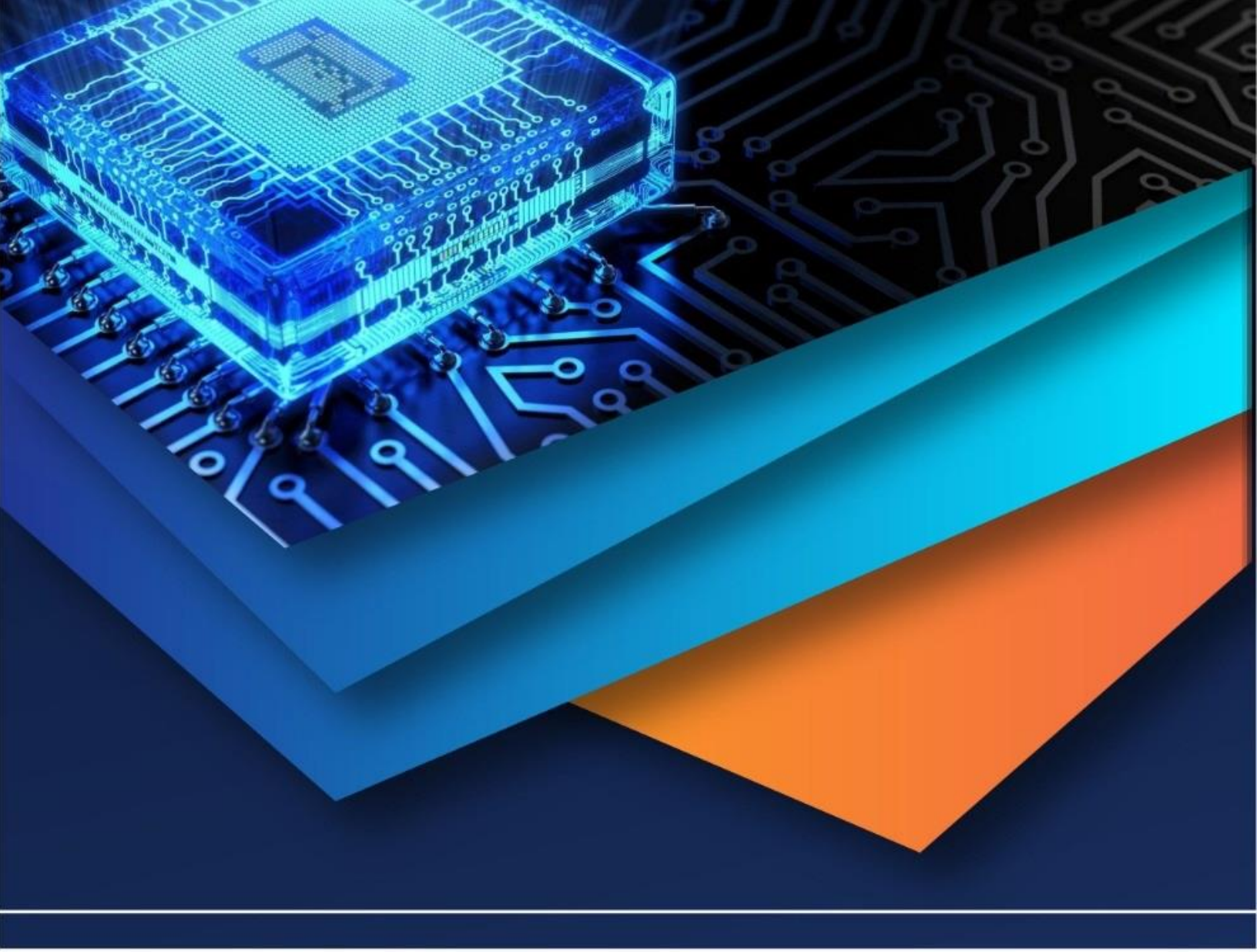

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