

Self-Governing Rotational Vehicle Parking Framework with Gsm And Rfid Technology

Abhishek Singhal, Prachi Gauba, Sajal Goel, Gaurav Sharma

Department of ECE

SRM University NCR Campus Modinagar
Ghaziabad

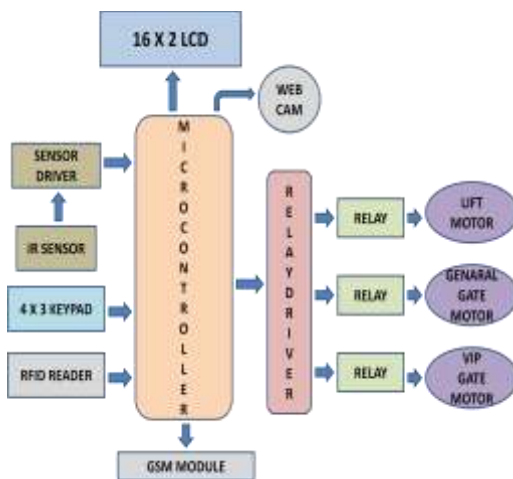
ABSTRACT:

Finding a parking spot in metropolitan urban areas can resemble searching for a needle in haystack. Albeit numerous urban communities have seen a noteworthy increment in the quantity of occupants who are starting to use carpooling or open transportation yet at the same time the accessible parking spot has not expanded exponentially. As a result of inadequate parking, our general public faces the critical test of worldwide gridlock. Due to which, there emerges a requirement for stopping framework that can suit greatest number of cars at all measure of space. The rotational parking framework empowers to park either six, eight, twelve or considerably more cars in the level space of just two. The framework does not require any parking specialist since it will naturally sense which approach to turn by the space number. Pivot of the parking stage is performed by the utilization of chain and sprocket mechanism which incorporates a suitable fueled brake engine for driving and indexing the platform. Furthermore, by examining this "Smart Parking" model we can undoubtedly overcome the parking space problems in traffic-based big cities.

INTRODUCTION:

The ideal answer for overcome limited parking space accessibility issue is to utilize the Rotary Autonomous Car Parking System. It has a place with the class of " Smart Car Parking" that incorporates Infrared sensors, Wireless communication and Radio Frequency Identification technology. Sensors are utilized to find the accessible parking spot by sparing consumer's time as well as fuel. By utilizing the wireless innovation called GSM empowers the Short Message Service that gives the charging data alongside the parking duration to the drivers. The RFID innovation empowers the framework to perceive and store the whole client data. Besides, we can make this framework portable by securing the whole parking get together on a truck or a carrier, is yet another real point of interest of this anticipate. It can likewise be redone for the utilization of bike parking. Least necessities have been explored at the conceptual design level. In this proposal, the real-time assembly can further include hydraulic cylinders and derricks steel wire ropes to perform the lifting operation of around twenty cars or more.

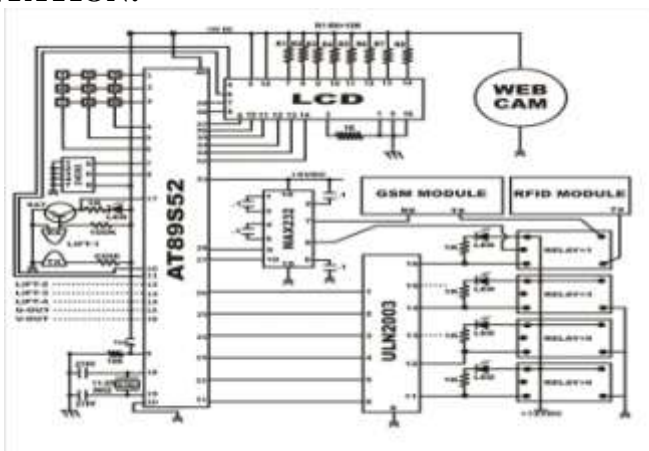
BLOCK DIAGRAM:



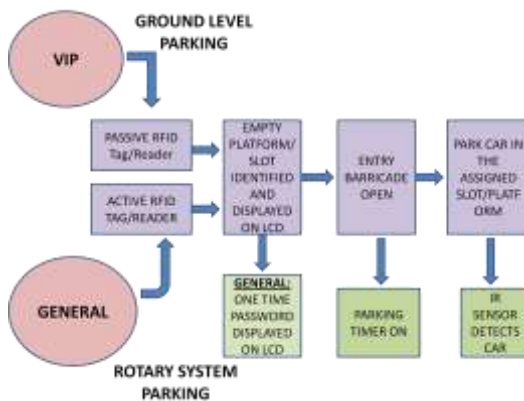
PROCESSING SYSTEM:

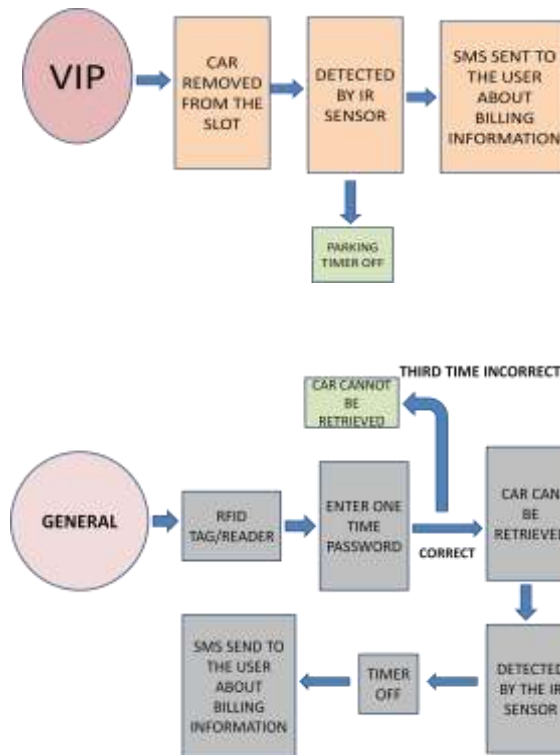
We have utilized ATMEL AT89S52 microcontroller as the fundamental handling framework because of its straightforwardness and productivity. It can likewise be executed utilizing Arduino or PIC microcontroller.

SCHEMATIC REPRESENTATION:



**LOGIC STRUCTURE:
PARKING:**



RETRIEVAL:**IMPLEMENTATION METHOD:**

The complete parking area is partitioned into two sections:

- A. The general rotating parking space.
- B. The VIP ground level parking space.

If there should be an occurrence of general rotating parking, when an car arrives at the passageway of parking garage, following procedure is carried out:

1. LCD screen delineates the quantity of accessible parking spot. The consumer utilizes dynamic RFID tag to benefit the empty parking platform.
2. As soon as the RFID tag is identified, the relating number to the accessible stage is shown on the LCD screen with the one-time secret word and blockade is lifted up consequently.
3. The parking timer is ON and the controller then enacts the engine so that the allotted unfilled parking platform is at the ground level.
4. The car is parked by the user on the platform and thus, the IR sensor detects the presence of the car.
5. Every time when RFID tag is distinguished by the controller, the engine is initiated so that the vehicle rack is stacked up and the following accessible unfilled stage is prepared at ground level to be gotten to by the consumer in the same request.
6. At the point when the individual needs to recover the vehicle, he should utilize his RFID tag and enter the one-time secret key doled out to him. On the off chance that the watchword is right, then the distinguished stage is brought down at the ground level by the engine revolution and in this way, the vehicle can be recovered by the consumer. On the off chance that the secret key is mistaken for the third time sequentially then the consumer can't get to the car.
7. At the point when expulsion of the car from the stage is recognized by Infrared sensor then the timer if off and in this manner, a programmed SMS is produced and conveyed to the consumer depicting parking time and the corresponding fare.

The VIP ground level parking is held for the utilization of specific consumers (or the high positioned authorities) that gives simple and quick access to vehicles. At the point when an car touches base at the passage of the VIP parking area, the accompanying strategy is completed:

1. LCD screen delineates the vacant ground level parking opening which can be gotten to by the VIP client by utilizing a latent RFID tag.
2. As the card is recognized by the peruser, the LCD shows the allotted space and in this way, the blockade is lifted up consequently.
3. The controller turns on the parking timer and the client stops his/her car recognized by the IR sensor.
4. At the time of the car retrieval, the client can specifically get to his/her car and can retrieve it.
5. When the retrieval of the car is distinguished by IR sensor, it creates a programmed SMS and sends to the client containing the charging data.
- 6.

MECHANICAL ASSEMBLY:

The calculations that are required for working of the Rotational Parking instrument have been performed and the model is planned concerning it by utilizing: .

1. Mechanical Bearing: Radial Ball Bearing is utilized to allow the rotational development between two sections by taking up the spiral burden and commonly decreasing the friction.
2. Chain-Drive Mechanism: It is utilized to transmit mechanical force with the assistance of a roller chain known as the drive chain, by passing over a sprocket gear with the teeth of the apparatus coinciding with the holes in the connections of the chain. Appropriate RPM is utilized to exchange the torque from driver engine to the principle shaft.

Figure 1:

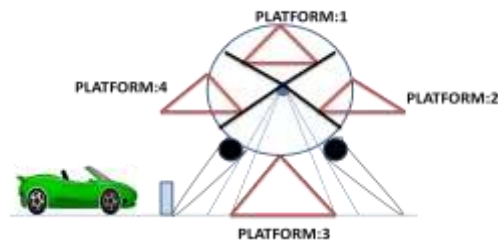
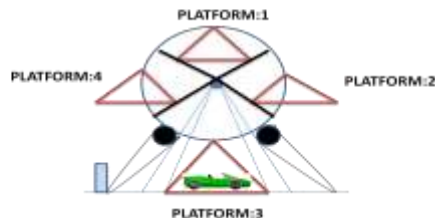


Figure 2:



SOFTWARE:

We have programmed the microcontroller in Embedded C language by utilizing these two virtual products:

1. MicroVision Keil Software: It is utilized to simulate the micro-controller for composing and testing the applications before actualizing it on the objective equipment.
2. Flash Magic Software: This software permits to get to the Flash memory that empowers the microcontroller to be programmed.

ATTRIBUTES:

1. Parking chaperon is not required.
2. The system can be tweaked by customer limit.
3. Easy and safe parking of vehicles.
4. Requires smaller parking area equivalent to the parking space of two horizontal cars only.
5. Can be executed effectively in movement based enormous urban communities maintaining a strategic distance from gridlocks.
6. The system requires low upkeep.
7. It can be efficiently utilized as a part of private lofts, workplaces and shopping centers.

CONCLUSION:

The framework is totally programmed and independent being observed by a camcorder. A ringer is utilized to motion about the false RFID labels and strong interruptions. For the real-time application of this framework we require immense capital, advance security and usage strategies with a specific end goal to meet the requests of the consumer. Contingent on the limit of consumer, the mechanical assembly can be tweaked by expanding the quantity of stages. Therefore, this "Smart Parking Project" has an enormous potential in India

REFERENCES:

1. Jung-Ho Moon, Tae Kwon Ha, "A Car Parking Monitoring System Using Wireless Sensor Networks", International Journal of Electrical, Computer, Energetic, Electronic and Communication Engineering Vol:7, No:10, 2013.
2. **Abhishek Singhal**, Shekhar, Rohit Sharma, "SAVVY WAVELET IMAGE COMPRESSION", International Journal of Recent Scientific Research, Vol.-07 Issue-03, ISSN: 0976-3031
3. Vanessa W.S Tang, Yuan Zheng, Jiannong Cao, "An Intelligent Car Park Management System Based on Wireless Sensor Networks", 2006 1st International Symposium on Pervasive Computing and Applications.
4. Pranav Joshi, M.Riaz Khan, Luvai Motiwalla, "Global Review of Parking Management Systems and Strategies", Department of Operations and Information Systems, University of Massachusetts Lowell-Robert J.Manning School of Business.
5. Yusnita Rahayu, Fariza N. Mustapa, "A Secure Parking Reservation System Using GSM Technology", International Journal of Computer and Communication Engineering, Vol.2, No.4, July 2013.
6. J.K.Radhika, S.Vandhana, "Independent Smart Parking and Retrieve of Vehicle Using Mobile Application Based on GSM Modem Technology", International Journal of Research Engineering and Technology(IJSRET), ISSN 2278-0882, Vol.3, Issue7, Oct 2014.
7. Poorva Parkhi, Snehal Thakur, Sonakshi Chauhan, "RFID-based Parking Management System", International Journal of Advanced Research in Computer and Communication Engineering, Vol.3, Issue2, Feb 2014.
8. Zeydin Pala, Nihat Inanc, "Utilizing RFID for Smart Parking Applications", FACTA UNIVERSITATIS, Series: Mechanical Engineering Vol.7, No.1, 2009, pp.101-118, Mus Alparslan University, Turkey.
9. Muhamad Ali Maizidi, "Microcontroller and Embedded system" Edition 2nd, 2010.
10. Chandni Patel, Monalisa Swami, Priya Saxena, Sejal Shah, "Rotary Automated Car Parking System", ISO 9001:2008 Certified, International Journal of Engineering Science and Innovative Technology(IJESIT), Volume4, Issue2, March 2015.
11. Prashanthkumar TJ, Dr. HR.Vitala, Praveen M.P, "Concept Design and proto build of Roto parker for two wheeler", IJISSET-International Journal of Innovative Science, Engineering and Technology, Vol:1, Issue5, July 2014.
12. Prof. Yatin Jog, Anuja Sajeev, Shreyas Vidwans, Chandradeep Mallick, "Understanding Smart and Automated Parking Technology", International Journal of u and e Service, Science and Technology, Vol.8, No.2(2015), pp.251-262, Symbiosis Institute of Telecom Management.