

Automation & Control Multilevel Car Parking System using PLC

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Abstract— Automatic construction automotive parking system is incredibly essential within the present wherever variety of vehicles is increasing day by day and parking areas publicly furthermore as non-public areas aren't spare. This project deals with an analogous drawback and as an answer, the system is developed wherever in anyone will park a lot of variety of vehicles in a very smaller house. Additionally by such arrangement, parking are done consistently. In contrast to the other multi-storey parking, this parking system is curved in form because of that availableness of house for parking gets enlarged. Since it's fully machine-driven system human errors are negligible and therefore system is a lot of reliable. This project makes use of a „DVP fourteen SS „, PLC for dominant purpose, straightforward DC double-gearred motors for circular furthermore as vertical movements of carry, Pushbuttons are used for operation and Relay board to drive the motors. High force motor is needed for move movement of carry.

Key words: Multilevel Car Parking System, PLC

I. INTRODUCTION

India is facing a replacement drawback today – lack of decent car parking zone. With families obtaining smaller and therefore the total range of automobiles prodigious the whole range of heads per family, the parking state of affairs is sadly falling in need of the present necessities within the country. things is specified on any given operating day or so four-hundredth of the roads in urban Republic of India square measure preoccupied for simply parking the cars. The matter has been additional exacerbated by the very fact that these days even individuals from low financial gain cluster square measure ready to own cars. The quantity of families with cars has become far more than what the country is in a position to manage. As it is, the cities in Republic of India square measure extremely full and on high of that the lay cars claim plenty of area that might preferably be employed in an improved means. Due to poor, and sometimes zero, suitability, Indian cities square measure considered a number of the worst choices for living. One also can add the problem of pollution to the current combine and perceive the enormity of the crisis. During this context it has to be understood that the Indian cities, with the attainable exception of Chandigarh, were ne'er planned in such the way therefore on a pair of accommodate a deluge of cars as is state of affairs currently. The apathy of gift day urban planners has solely created things worse.

II. OBJECTIVE OF THE PROJECT WORK

- a) The aim of this project (under AN B.Tech. programme) is to style and build a example parking lot system with PLC.

- b) To develop AN intelligent, user friendly machine-driven automobile parking system that reduces the men, traffic jam and fuel consumption of the vehicle.
- c) To supply safe and secure parking slots among restricted space.

In this contemporary world, parking of vehicles has become a serious issue because the population of the planet is growing drastically that indirectly reduces the house accessible for parking. Thanks to this high population, traffic jam issues became a serious issue in today's world. Therefore there's a desire to beat these issues and supply AN economical resolution for parking of the vehicles. Construction automobile Parking is AN economical resolution for traffic jam. The planning of this method may be a 2 story building during which the parking has no intervention of human in the slightest degree. This method has not solely reduces the human efforts, however additionally reduces the consumption of house. The construction automobile parking assures full safety of car and its owner. The preserved house will be used for horticulture or the other purpose to create the setting pollution free. It's the structure with 2 floors consisting of 4 parking slots on that every floor will be enforced below ground level, reducing the wastage of house. The PLC utilized in the system for dominant the lifts, that area unit used for the movement of vehicles in horizontal, vertical directions, floor to floor and it's finished the assistance of gas cylinders. The system has advancements in aspects of security. Finger print sensing element is employed for the verification of owner that makes it echt. So in case, there's AN unauthorized person, he/she won't be allowed to own AN entry into the park. This makes the system secure from thefts and ill-gotten parking. This example system has helped to tackle the parking issues by reducing the struggle to look for parking slots, creating it safer and setting friendly. it's fully machine-driven system wherever the automobile owner doesn't ought to take efforts for parking and imparking the automobile

III. LITERATURE SURVEY

It uses sensors to notice the supply of vacant slots and supported the condition, if house is out there or not it glows the LEDS used for the indication whether or not the slots area unit vacant or not. Therefore the inexperienced semiconductor diode indicates the vacant slot and red semiconductor diode indicates that no house is out there. Not solely the system is correct however less complicated. Drawbacks of those system area unit that's needs a lot of range of sensors. 2 sensors on elevator and 2 sensors on the floors area unit needed that will increase its value. The system power consumption is additionally high. Owing to this the parking charges additionally will increase. Thus it's not viable to any or all the flats and industrial spaces as there's want of upper security aspects in such area. Additionally the implementation of such system is tough and not economical.

Good automobile parking system Opening of gate to parking slot is done with the help of smart card, if the space is available in ground floor, the driver is guided to the parking space. If full, the driver is instructed to leave the car in a specified place and the car is shifted to parking place in the first floor using elevator. When the car is to be taken out, smart card is used to open the exit gate. Microcontroller is used to control the movement of gate and its mechanism. A user can record his preference through a website/ mobile app otherwise default preference is come from the literature survey done. A message is sent to the car owner about the parking location of the car. But the drawback of this system is that it is not affordable to all companies and buildings as it would add to their cost of applying smart cards to their products which makes the implementation of such system difficult and noneconomic. Automatic Multilevel Car Parking

In this system the entry and exit of the automotive and also the variety of the automotive is mechanically detected. A microcontroller is employed to sense the entry of automotive and check if area is obtainable for parking the automotive. 2 DC motors area unit used for gate and for raising the lift that automotiveries the car, and that they additionally use infra-red sensors that area unit mounted on every floor. Once an automotive arrives the infra-red beam is blocked by the automotive and also the receiver is empty infrared. Message is shipped to the microcontroller consequently the automotive is put. The procedure of exit of automotive is analogous thereto of entry. The downside of those systems is that it uses additional variety of sensors. Comparison of Prototype Multilevel Car Parking using PLC with traditional Car Parking:

- 1) In ancient automotive parking system the motive force needs to hunt for a parking spot that consumes the time of driver and leads to holdup. Thus our system has helped cut back the on top of drawback.
- 2) Previously, consumption of area for parking vehicle was a good concern, therefore the construction automotive parking may be enforced underground which might facilitate U.S. to conserve area.

A. Hardware & Software Used

1) Hardware Used

- Delta PLC 14ss2
- Delta interfacing cable
- Dc plus Motor
- Mechanic structure
- L243d motor driver circuit

B. Software Used

- WPL Soft
- Block design Diagram

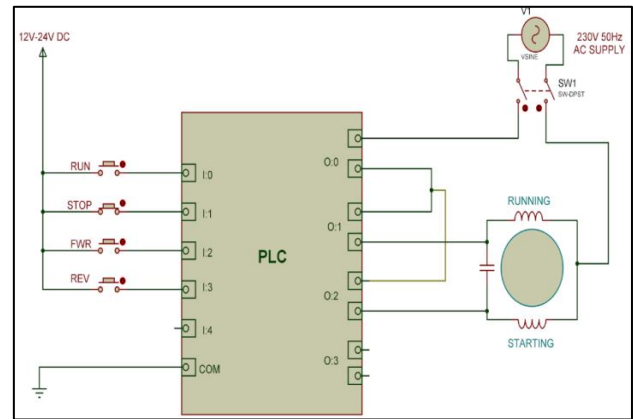


Fig. 1:

C. Working Prototype

When automobile is entered within the pallet of escalator, the bottom man presses the beginning button. Once receiving the signal, PLC checks the opposite standing and choose the building no and also the floor no (Ground, 1st, 2d floor) as per the programming of PLC. Once detection of parking slot, PLC offers the signal to relay board. Relay board is employed as a driver to drive low voltage dc motor. High force dc motor pulls the carry in upward direction with the assistance of machine. This motor brings the carry ahead of selected floor. Once carry reach to the lot then the PLC checks the standing of the motor driver and offers the signal to the motor system.

Motor system pushes the pallet within the lot. Once the automobile is position within the lot then PLC once more sends the signal to the motor driver for reverse action of motor and system to regain original position and in between the operation if you press the other key it'll not have an effect on the operating of parking system unless it gets free from its previous operation. Imagine the time that automatic sensible parking systems would prevent. Whenever you enter your office block you have got to search out a ton parking zone automobile parking space car parking zone and pay time walking in and out of the lot still. Imagine what proportion time it's cost accounting you. Even though simply you only you simply pay five minutes each day to park that interprets to you outlay over an entire day just parking once a year. If you calculate the time you pay walking in and out of the car parking zone, checking out house and such it'll be simply over the higher than quantity. Through this method we will save loads of your time. Here, PLC is employed within the management of the image of the machine-driven parking system. DC motors and Push buttons area unit accustomed give movements to move the vehicle within the parking system. The most advantage of this method area unit house improvement, value effectiveness and security.

IV. EXPERIMENT RESULT

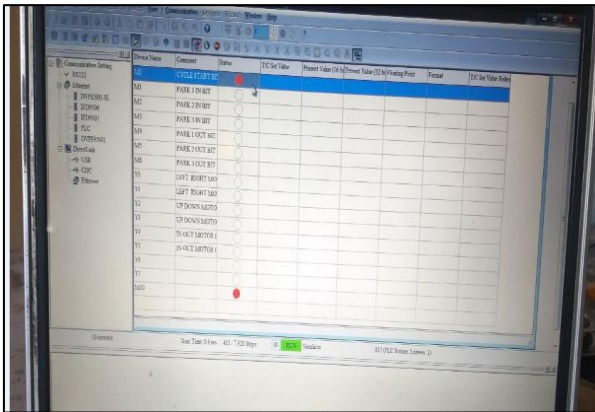


Fig. 2:

V. APPLICATION

Solves the matter of parking in searching complicated, public place or flats. It is utilized in automobile sexual union centers. It may also be utilized in automobile manufacturing business.

- The set cars and their contents area unit safer since there's no public access to set cars.
- Minor car parking zone damages comparable to scrapes and dents area unit eliminated.
- Driving around in search of an automobile parking space is eliminated, thereby reducing time and fuel consumption.

VI. FUTURE SCOPE

We have initialized the project. However this could be updated additional. Some options are often else as: SCADA are often connected to the web, additionally a mobile app are often created that connects with SCADA and a show of lot are going to be shown in mobile of user. Some parking sensors also can get enforced which is able to glow red light-weight if a automobile reaches too on the brink of the wall. Associate alarm also can get hooked up with it which is able to alert the user. This paper bestowed a brand new methodology for creating the parking sensible. The project sensible automobile Parking exploitation PLC and SCADA has the benefits of SCADA & PLC. PLC is employed for automation and SCADA for dominant and observation. This project ensures less maintenance and reduces risk issue and additionally will increase the potency. Currently the times PLC and SCADA play a vital role in industrial automation. In our project we've utilised the appliance of PLC and SCADA effectively.

VII. CONCLUSION

With the information of latest techniques in 'Electronics' we tend to area unit able to create our life more well-off. One such application of physics is employed in "Car parking slot indicator" The approach we tend to followed and that is explained during this project report is novel and has achieved the target of "Car parking slot indicator" satisfying user wants and necessities.

The same circuit finds its use in more applications. By this the sunshine saving will be will be done. So we are

able to save power. The quantity of automobile within the slot are displayed on the liquid crystal display.

The development of this project has shown what quantity toil goes into the creation of a system. "Car parking slot indicator" was a project supported plc because of that hardware demand is reduced. Embarking of this project has helped U.S.A. in developing a shared aims, patience and time management necessary for today's technical professionals.

Hence we are able to conclude that the desired goals and objectives of our project are achieved.

This project has in-built U.S.A. confidence that any downside will be solved with sheer determination, toil and optimism. We feel that our product serves one thing sensible gift to the current world and that we prefer to present it before this prosperous world. By doing this project, we tend to were higher able to perceive the assorted sides of doing Associate in Nursing embedded system project that is rising together of the foremost 'in demand' technologies without delay.

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