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REVIEW PAPER ON SMART CAR PARKING USING AUTOMATION

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Abstract: Now day's traffic level increases with the increasing development of population rapidly. The amount of population the utilization of personal vehicles also increased. Most of the people chooses personal vehicle than public transportation. It is very difficult and time consuming to find parking space in most city areas, commercial areas, especially during rush hours. This system will show the driver exact place to park vehicle at the entry point of parking in the screen outside of the parking. Also it counts the total number of car parking is available and show it to the display outside the parking so it will help the driver to park vehicle.

Due to lack of parking spaces and skilled labor, there is a global shift towards the automatic car parking system to calculate accurate space available for car and revenue collection as a parking fees. This new scheme provides an improvement and reliability in the current car parking system and this system can be implemented easily because it is very economical. Smart parking with efficiency parking is very much exigent.

Keywords: Automated, Car Parking, IR Sensor, PLC, SCADA.

1. INTRODUCTION

Now days every person owns a parking problem increases. The growth rate of personal cars is higher in the people cities like Delhi, Mumbai and Bangalore etc. The main parking problems over faced by malls, public parking places, cinemas, commercial buildings, hospital etc. With the rapid augmentation of vehicle availability and usage in recent years, finding a vacant car parking space has become more and more difficult resulting in a number of practical contest parking problem are becoming everywhere and ever growing at an alarming rate in every major city. The time and fuel are consumed unnecessarily because the destination is unknown. The easiest way of approach is to provide a destination specific driving with in the parking structure. Here also illegal parking problem and lack of discipline due to this, people can park their car any where they want. There by create huge traffic congestion and kills our precious time.

In this project we are going to make an automation base system which will guide the driver to the direct empty parking spot. This system reduces the time in parking and can count the total number cars available in the parking for car. Also it is easy to install less maintence and affordable. Also it will reduce the waiting line of car. This automation process can be easily achieved using a PLC & SCADA based system. The SCADA system can be used for the control and monitoring of the parking slots from a remote location also. PLC are better PLCs are better suited over microcontrollers for automation of the large scale processes. PLC provide ascendable in the number of inputs and outputs. PLC has better protection methods as compared to the microcontrollers as they support immediate shutdown of the system under emergency condition.

This paper presents the designing of smart car parking system for cars. The programming for the system has been done the PLC Micrologix 1100 through the use of totally Integrated Portal. The SCADA system is used to control and monitor the performance of the designed system.

Automation encompasses many vital elements, systems, and job functions:

Automation crosses all functions within industry from installation, integration and maintenance to design and management.

Automation even reaches into the marketing and sales functions of these industries.

2. LITERATURE SURVEY

1. In [1] Sk. Md. Golam Mostafa et.al "Multilevel Automated Car Parking System" Smart parking with efficiency parking management is very much exigent.

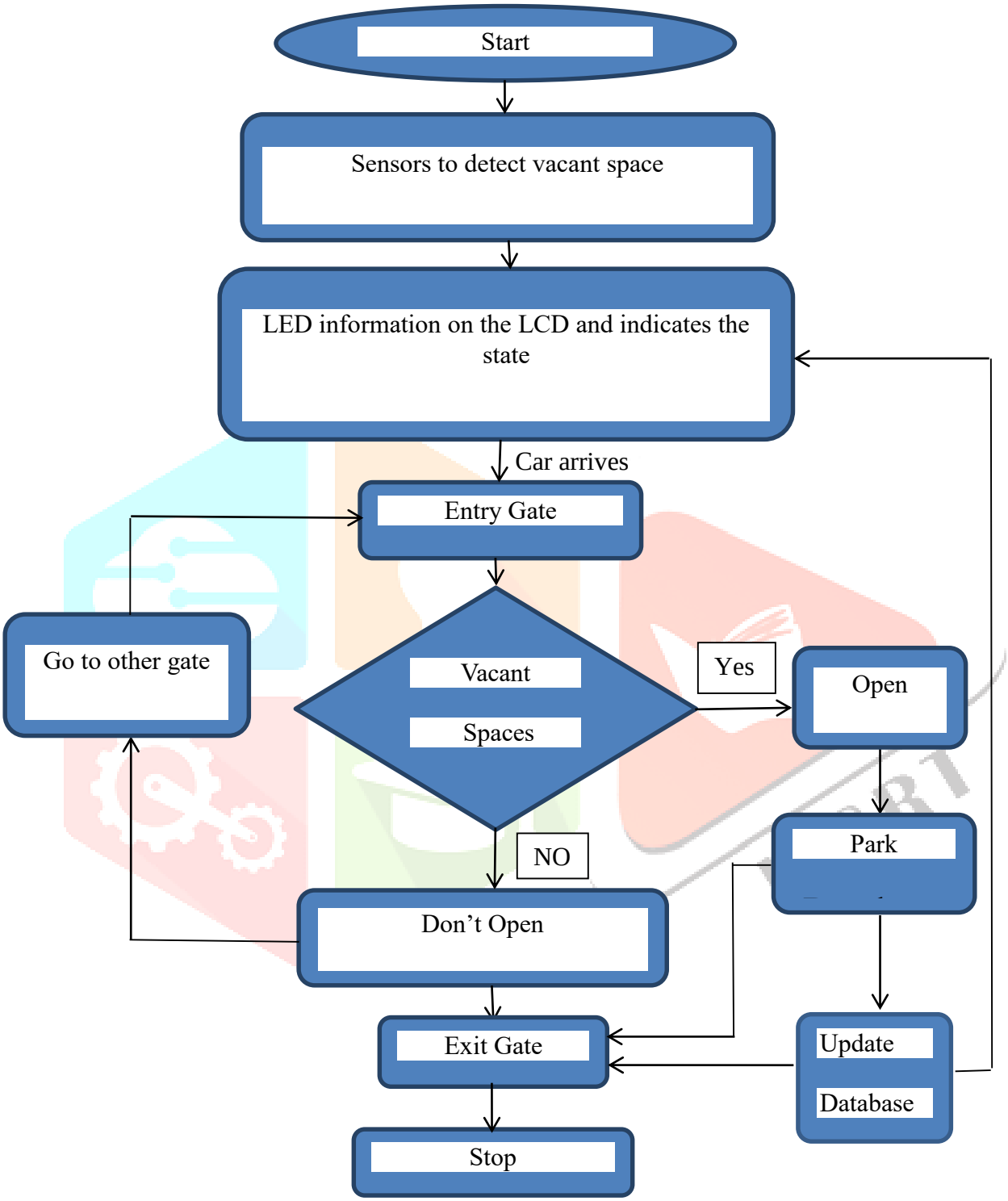
2. In [2] Akshat Gandhi et.al. "Automatic Car Parking System Using PLC" The use of this project made a system which will be used in multilevel parking.

3. In [3] Aashis S Joshi et.al "Smart Car Parking System" The use of fully automated smart car parking system is rudimental and does not require heavy lines of code nor expensive equipment. It is a simple circuit built for the exact need of purpose.

4. In [4] Saidur Rahman et.al "IOT Based Smart Car Parking System" The proposed project is a smart parking system that delivers information to people finding a parking space. It overcomes unnecessary time consuming for finding the problem of parking space in parking areas

5. In [5] Faraz Islam ET. Al "PLC based Automatic Intelligent Car Parking System" The use of system developed is able to sense the presence of the vehicles standing at main car parking gate through an IR sensor.

3. FLOW CHART OF SMART CAR PARKING SYSTEM



4. HARDWARE DETAILS

I. PLC (Micro-logix-1100):

A programmable logic controller is unit of hardware is used to control and automate the number of processes. It has many "input" terminals, through which it which it interprets "high" and "low" logical states from sensors and switches. PLCs are used in many machines, in many industries. It consists of many output terminals through which output goes high and low for making the device turn ON and OFF. Here we are using Allen Bradley Micro-logix1100, series B plc. These controllers have 10 digital inputs, 6 digital outputs, and 2 analog inputs.

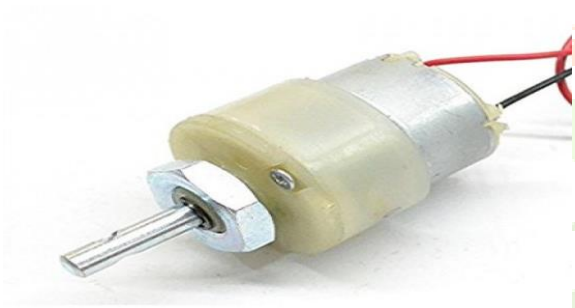
II. IR Sensor:

IR sensor is an electronic device that emits the light in order to sense some object of the surroundings. An IR sensor can measure the heat of an object as well as detects the motion. Infrared Transmitter is a light emitting diode (LED) which emits infrared radiations called as IR LED's. Even though an IR LED looks like a normal LED, the radiation emitted by it is invisible to the human eye. Infrared receivers or infrared sensors detect the radiation from an IR transmitter.

III. Relay:

A 5v relay is an automatic switch that is commonly used in an automatic control circuit and to control a high-current using a low-current signal. The input voltage of the relay signal ranges from 0 to 5V. When the input pin is high the relay turns on and when the input is a low is turn off. The relay has two different types of electrical contacts inside – normally open (NO) and normally closed (NC).

IV. DC Motor:



A DC motor is an electrical machine that converts electrical energy into mechanical energy. In a DC motor, the input electrical energy is the direct current which is transformed into the mechanical rotation. It works on the fact that a current-carrying conductor placed in a magnetic field experiences a force that causes it to rotate with respect to its original position. Practical DC Motor consists of field windings to provide the magnetic flux and armature which acts as the conductor.

V. 5V DC Regulator-

This DC-DC 12V to 3.3V 5V 12V Power Module Multi Output Voltage Conversion is also known as Buck Converter or also as Step-Down Voltage Converter.
The module is capable of altering the output of the power source/supply before supplying it to the load so as to deliver the specified power to your load.
The device is very flexible and easy to use. The module is powered by 6V to 12V DC input, and provides three fixed DC outputs: 3.3V, 5.0V, and a third output which a direct connection to the DC input is.

VI. SMPS:

5. SPECIFICATIONS:-

Input - 100-240 VACS 50/60Hz

Category - Switch Mode Power Adaptor (SMPS)

Output Type - DC

Output - 5Volts 2Amp

DC 5V/2A means that the input voltage, to recharge the battery is 5 volts of direct current. 2A is the amount of amperage that is suggested to recharge the battery. 5V/2A charger, which could charge a phone up to 40% faster than conventional 5V, 1A chargers.

6. FUTURE SCOPE

- RFID tag for personal parking.
- QR code of e-wallet for paid parking.
- Image processing for record of the car.
- We provide also security through camera surveillance.

7. CONCLUSION

In this project reduce the waiting line outside the parking also it will save the time of driver during parking.

Also it reduces the unregulated parking with this has encouraged us to try out new circuit ideas and implement them.

Smart parking project it is found that this system can be introduced in our country and it will be beneficiary in the context of our country.

It also encourages Automation Engineering in our country which will make advancement in increasing usage of technology. It implements this project and helps to develop our city.

8. REFERENCES

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