

Solar Based Smart Car Parking Using Arduino

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Abstract -The concept of smart cities gained great popularity in the early times. We were encouraged to think about such a subject that could make our lives easier by overcoming the world's most common problem. Sometimes finding a suitable parking space in the parking lot is very difficult. We have proposed an appropriate solution to this issue. The aim of the smart car parking project is to provide easy and confusion free parking for drivers. This project allows the car drivers to park their cars with minimum waste of time with accurate information on the availability of parking space on display. The Display shows the slots availability, the counter keeps testing the number of cars entering and exiting the parking space, the dc geared motor allows the cars enter and leave as a gate. sensors detect parking space availability.

Key Words:Arduino, Solar, LDR, IR sensors.

1.INTRODUCTION

There is an issue with the parking of vehicles due to the rapid rise in traffic. It leads to traffic congestion and also to pollution. So, we need to keep the management of the vehicle park to reduce the waste of time. If we see in the bigger cities when we visit shopping malls or tourist spots or other commercial areas, our vehicle's parking problem arises as we see in the modern world, everything is moving automatic, we have created a system that automatically senses the cars ' entry and exit. sensors for scene the empty slots. The aim of the smart car parking project is to provide free and easy parking for confusion. This project helps car drivers park their vehicles with minimal time wastage with accurate parking availability details. The LCD shows the

slots availability, the counter keeps monitoring the number of cars entering and exiting the parking space, the servo motor as a key to the cars entering and exiting. The ultrasonic sensors detect the parking space open. If the count exceeds 0, the LCD will display "NO SPACE FOR PARKING" on the LCD, i.e. if the parking space is fully filled.

2. Proposed System

When car vehicle comes to parking area in front of gate. Then display indicates the empty slots available in parking area. If slots are empty then the gate will be open, if there is no empty slot then gate will not open. As vehicle goes forward in parking area then automatically lights will glow. If person park the vehicle in wrong slot, then buzzer will start sounding. In front slot we install the sensor for safe distance form wall if vehicle will not park proper red indicating light will be glow. This whole system is based on solar.

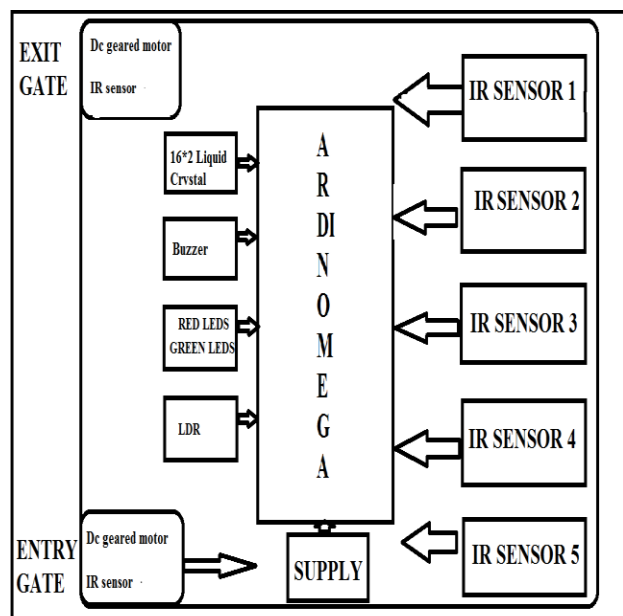


Fig. 1: Block diagram of the proposed system.

3. Construction and Working

The construction and working of the project are divided into two parts:

1) Entry Part

The Entry Part of the project consists of Arduino microcontroller to which a DC geared motor, IR sensor, LCD are connected. The DC geared motor functions as a gate operator to open and close at the entrance, and it operates (opens and closes) when the car presence is sensed by the IR sensor at entry point. On entry gate the LCD shows the empty parking spaces which is available for the car parking. The IR sensors detect the presence and absence of car in each parking slot.

2) Exit Part

The Exit Part of the project consists of DC geared motor, IR sensor, and the object counter are interfaced. The DC geared motor acts as a gate at the exit and it opens and closes when the IR sensor detects presence of car.

3) Parking Part

In parking part when car enters the parking slot car must be park in given empty slot if driver tries to park any other slot which is different from given slot then the siren alarm starts and indicated you are parking in different slot. Also red and green LED is used for the proper and safe parking distance.

4) Solar Powered

This system is fully operated in solar power supply. For street lighting LDR is used for automatic operation (ON/OFF) at night.

4. CONCLUSIONS

Automatic parking system is a very important factor for the areas of traffic. It can be programmed without being human. This reduces the amount of time consumed. Thus, we can control our time by implementing our automatic parking system using Arduino mega IR Sensors, and vehicles can be parked quickly.

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