



AUTOMATIC CAR PARKING SYSTEM

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ABSTRACT

In the early times the concept of smart cities have gained great popularity. The proposed smart parking system consists of an onsite development of an IOT module that is used to monitor and signalize the state of availability of single parking space. This paper introduce an IOT based coordinated frame work for efficient and easy way of parking the vehicle by checking the availability of slot. Everything in the modern world is moving automatic, we have built a system which can automatically sense the entry and exit of cars through the gate and then display the number of cars in the parking lot. This automated car parking system reduce the time taken to check the space for the vehicle by displaying the available space for parking on a LCD displayer by using infrared(IR) sensors installed at the entrance and exit. This project is developed using micro-controller.

Keywords: Ultrasonic sensor, IR sensor drive and gear motor

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1. INTRODUCTION

An automated (car) parking system (APS) is a area and/or volume required for parking cars. Like a multi-story parking garage, an APS provides parking for cars on multiple levels stacked vertically to maximize the number of parking spaces while minimizing land usage. The APS, is more similar to an automated storage and retrieval system for cars. APS are also generically known by an variety of other names, including: automated parking facility (APF), automated vehicle storage and retrieval system (AVSRS), car parking system, mechanical parking, and robotic parking garage. The concept of automated parking system was and is driven by two factors: a need for parking space and scarcity of available land. The earliest use of an APS was in Paris, France in 1905 at the mechanical system designed to minimize the garage Rue de

Ponthieu. The APS consists of ground braking multi-story concrete structure with an internal elevator to transport cars to the upper levels where attendants parked the cars.

2. WORKING METHODOLOGY

2.1. Proposed System

It is a Micro-controller based project. Automatic car parking system is introduced to solve the problems in parking and hence a project publication called Nevon established self-car parking system. The recent survey reports that the drivers take almost 8 minutes to park his vehicle. This prompts 30 to 40% of activity blockage. This projects reveals how to diminish the stopping issue with security under slot allocation strategy with assistance of Arduino. Some built up a model called parking guidance and information (PGI) framework in urban areas for good stopping administration.

2.2. Working

Automatic parking is an autonomous car-maneuvering system that moves a vehicle from a parking spot to perform parallel, perpendicular, or angle parking. The self-parking consists of Micro-controller, Ultra-sonic range finder to detect the parking distance, LCD, motor drive to drive a DC gear motor and to control steering, door sensor and IR sensor. At first the Ultrasonic sensor is an instrument that measures the distance to an object using ultrasonic sound waves. This sensor uses a transducer to send and receive ultrasonic pulses that relay back information about an object proximity.

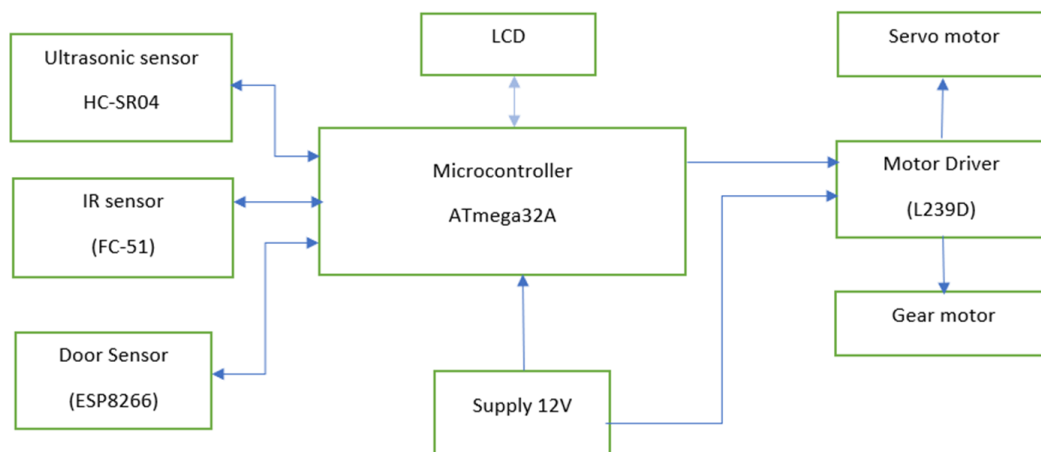


Figure 1. Block Diagram of Automatic Car Parking System

This sensor uses a transducer to send and receive ultrasonic pulses that relay back information about an object proximity. Ultrasonic sensor work by emitted sound waves at a frequency too high for humans to hear. They then wait for the sound to be reflected back. After detection is done the motor starts running and controls the steering, this motor plays a vital role in this project.

2.3. Circuit Diagram

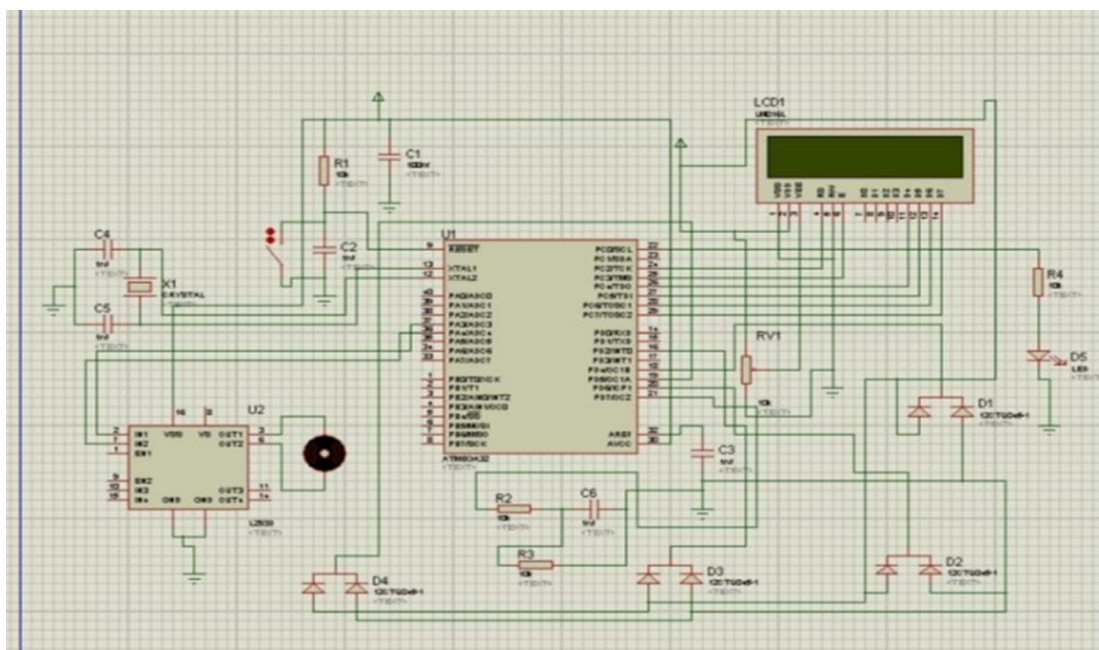


Figure.2 Circuit diagram

2.4. Description

Microcontroller (ATmega32A)

Micro-controller consists of 20 digital input and output in which there are 6 Pulse Width Modulation (PWM), 6 analog pins, 16 MHZ resonator, USB connection with power jack, In-circuit Serial Programming with reset button.

Door Sensor

The door sensor consists of one reed switch and one magnet creating a close circuit. If someone opens that the magnet is pulled away from the switch which breaks the circuit and triggers when the door is in open state the function will won't work it works only when it is in closed state.

IR Sensor

IR detecting IR and are capable of measuring the heating being emitted by an object and detecting motion

Ultrasonic Sensor

Ultrasonic sensor that sense ultrasound energy. This s divided into three as transmitter which converts electrical signal into ultrasound, receiver which converts ultrasound into electrical energy and transmitter which can do transmit and receive sound.

Motor

Motor driver and other motors like gear dc motor are used to run the motor and act as a bridge controller and to control steering. LCD interface friendly by displaying everything in the display.

3. RESULTS AND DISCUSSION

The Automatic Car Parking system are mostly effective in the places of shopping centers and comparable spots. It won't require observable operation, so this system s more efficient and economically good.

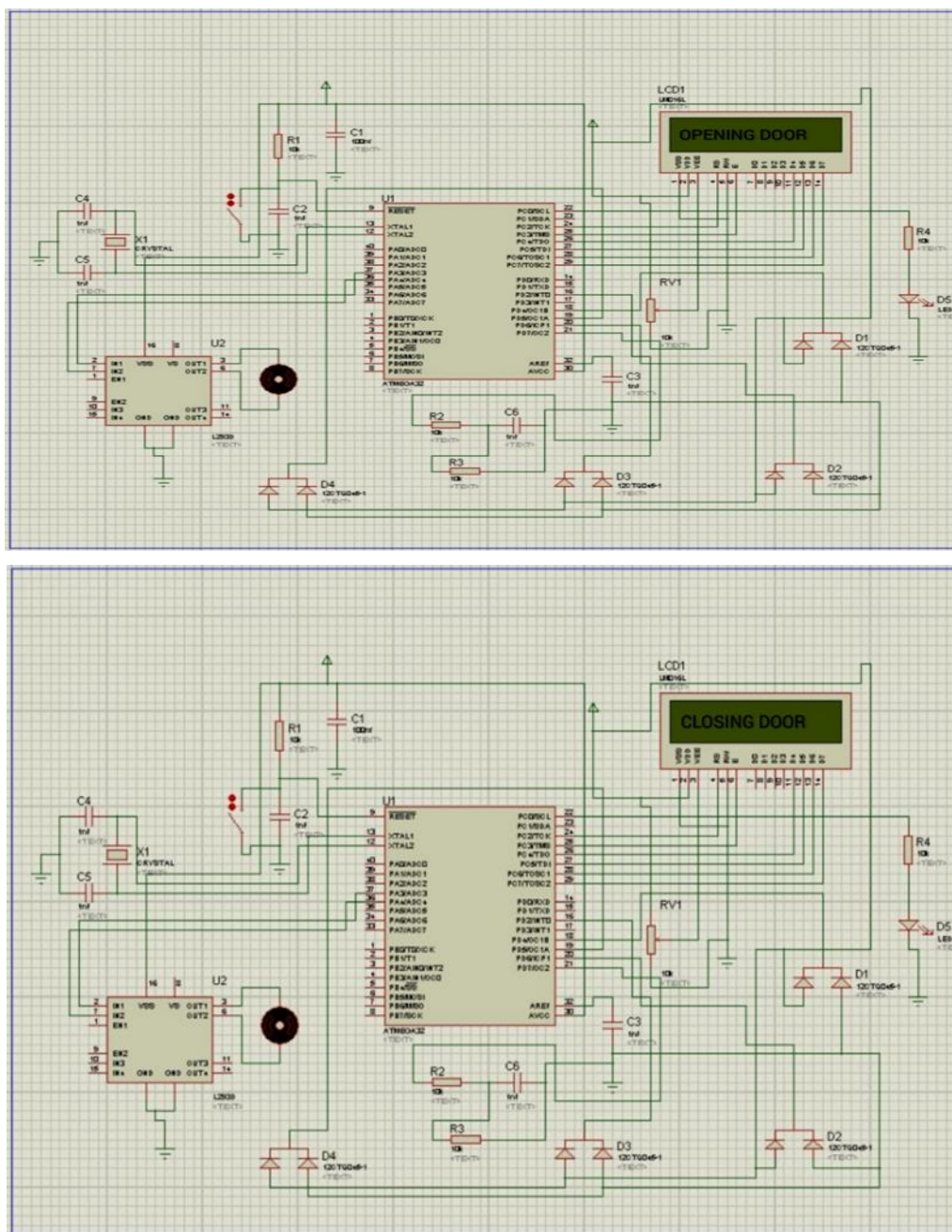


Figure.3. Simulation output (state of the car)

4. CONCLUSION

The average time of users for parking their vehicles is effectively reduced in this system. The optional solution is provided by the proposed system where most of the vehicles find a free parking space successfully. This smart parking system provides better performance, low cost and efficient large scale parking system.

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