

# Energy Saving Embedded Solution For Authenticate Car Parking System

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**Abstract:** — Nowadays increase in population and luxurious living of life have led people to utilize number of means of transportation or convenience say vehicles, cars, bikes etc. The ratio of utilization of vehicles has increased to a greater extent, where in the land or the parking space is comparatively smaller<sup>1</sup>. This issue has led to decline and resulted in design and implementation of proposed system. In current scenario punctuality and disciplinary routine play a vital role which is affecting any human being whether it is an industrial, organization or a management? In this proposed system we have used the sensor module to detect the car or any other object & light intensity. In response to the sensor output, controlling action will be taken place to meet our proposed objectives. Image processing through MATLAB has been done to recognize the authenticated number plate and meanwhile access will be provided<sup>3</sup>. However our proposed work will contribute in proper time management, discipline and reduced human efforts by providing authenticated and authorized car parking system. Improper utilization of resources will ultimately result in its extinction; hence through our proposed technology we have made an effort in utilizing renewable energy resources. The proposed system has been added with a provision such that it reduces wastage of the time for turning on-off of the lights in parking area which results in efficient consumption of electricity and indirectly saves the fuel also which leads in optimum utilization of natural resources.

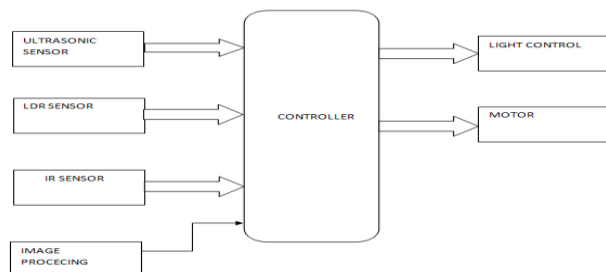
**Keywords** – Infrared sensor (IR), ultrasonic sensor, image processing, Power consumption, less human efforts, parking lights

## I. INTRODUCTION

Currently the numbers of vehicles in a family are greater than the head count of the family members, and due this the vehicles are also increased in the country and which lead in visualizing that the parking scenario is falling short to the current requirements in the country<sup>5</sup>.

This project proposes an intelligent solution for managing and monitoring authorized parking space and automatic controlling of gate and lights in parking slot<sup>4</sup>. The proposed system has been added with a provision such that it reduces wastage of the time for turning on-off of the lights and indirectly saves the fuel also which leads in optimum utilization of natural resources.

### 1.1 Block Diagram



**Fig 1 : Block diagram of system**

## II. PROPOSED MODEL

In the proposed model we have taken two scenarios that Authenticated car parking using Image Processing, Automatic light controlling in parking slot.

In our proposed system, If LDR senses the less light intensity and ultrasonic sense obstacle and then the light will be turn ON. Gate will open only and only at that time when data from database will be matched to number plate. This system is designed to reduce the power consumption and human efforts. The utilization of system will save the time and will indirectly lead in saving of fuel.

Automatic Gate controlling for open and closing .This car parking is designed such that the gate will open when the authorized persons car enters else access will be denied to the unauthenticated car .Automatically light will turn ON at night when ultrasonic sensor will sense the object.

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**III. COMPARATIVE STUDY OF EXISTING AND  
PROPOSED SYSTEM**

Sr.No	Existing model	Proposed model
1	The parking space used by any one	The parking space used authorized person
2	Gate opening and closing is through manual interference.	Gate opening and closing is automatic.
3	Wastes of electricity, time and human power	Its saves the time for turning ON/OFF light and opening the gate
4	Indirectly fuel waste	It saves fuel indirectly

*Tbl 1: comparative study of proposed system*

**IV. SPECIFICATIONS**

**4.1 Arduino Controller:**

Arduino is an open-source electronics platform based on easy-to-use hardware and software. Arduino boards are able to read inputs - light on a sensor, a finger on a button, or a Twitter message - and turn it into an output - activating a motor, turning on an LED, publishing something online. You can tell your board what to do by sending a set of instructions to the microcontroller on the board. To do so you use the Arduino programming language (based on Wiring), and the Arduino Software (IDE), based on Processing.

**4.2 IR Sensor:**

**Principle:**

The Working Principle and Key Applications of Infrared Sensors. An infrared sensor is an electronic instrument which is used to sense certain characteristics of its surroundings by either emitting and/or detecting infrared radiation.

1)Output power: +4 dBm typ. 2)Single power supply: 1.8 V to 3.6 V

**4.3 Ultrasonic sensor:**

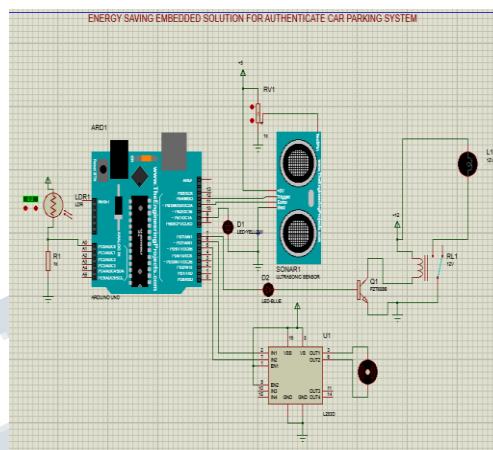
**Principle:**

Ultrasonic sensors have an acoustic transducer which is vibrating at ultrasonic frequencies. The pulses are emitted in a cone-shaped beam and aimed at a target object. Pulses reflected by the target to the sensor are detected as echoes. ...Ultrasonic sensors also work well in tough environments — fumes, dust, noisy.

Working Voltage : 5V(DC) , Static current: Less than 2mA,low level 0V.

**V.RESULT**

In this car parking system image processing with the help of MATLAB. By using image processing number plate will be recognized car then the access will be provided to the system to open the gate.



*Fig 2: Simulation of the system*

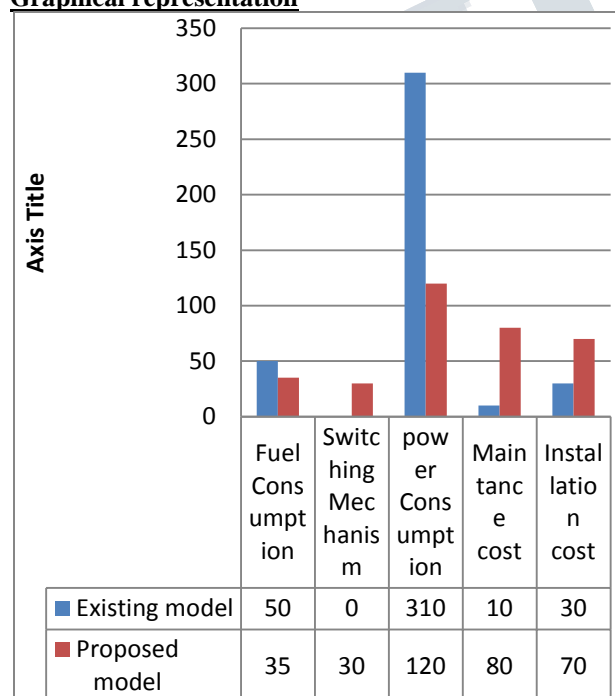


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Sr.No	Parameter	Existing model	Proposed model
1	power Consumption	More	Less
2	Color rendering properties	Fair	Good
3	Fuel Consumption	More	Less
4	Time Saving	Less	More
5	Power Consumption	More	Less
6	Switching Mechanism	Manually	Automatic
7	Technology used		
8	Cost	Less	More

**Tbl 2: Comparative study of system**

**Graphical representation**



**Tbl 3 : Graphical representation of proposed system**

## VI. CONCLUSION

Despite of avoiding the worse unauthenticated parking situation in the parking and guidance for authorized person to occupy his free slot. This system has been added with a provision such that it reduces wastage of the time for turning on-off of the lights and indirectly saves the fuel also which leads in optimum utilization of natural resources.

## VII. FUTURE SCOPE

The future scope of our proposed system is to implementation in additional embedded innovations and implementation of real time application.

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