

# Modern car parking system using Micro controller and smart intelligent application system Techniques

<sup>[1]</sup> Dr.Sasikumar Gurumoorthy, <sup>[2]</sup> Mr. Kranthi kumar pathem  
<sup>[1][2]</sup> Departement of Computer Sciencee And Systems Engineering,  
Sree Vidyanikethan Engineering College,  
A. Rangampet, Tirupathi, India.

**Abstract** - Now days in many multiplex systems there is a severe problem for car parking systems. There are many lanes for car parking, so to park a car one must look for the all lanes. Moreover, there is a lot of men labor involved for this process for which there is lot of investment. So, the need is to develop a system which indicates directly which lane is vacant. In this Electronics and communications project, we must use the equipment of microcontroller, Infrared transmitters and infrared receivers for each parking slot, IR receivers should be connected to the microcontroller. Here we are using infrared communication because it can support LOS (line of sight communication), and while enter gate for parking there is the display to get the information regarding which line is empty. This information gives the microcontroller. The microcontroller first gives the information to the IR transmitter then it gives to the IR receiver then this information show on the display, so by this process the parking is easy process. So, the traffic can be reduced in the parking place of the theatres, multiplex, and in large industries and in commercial places. Use of automated system for car parking monitoring will reduce the human efforts. Display unit is installed on entrance of parking lot which will show LEDs for all Parking slot and for all parking lanes. Empty slot is indicated by the respective glowing LED. All the above process is the back-end process to make it more modern application which can make it easier to achieve the great success using Internet of Things is more useful. This system is effectively in use in most of the European countries and many of the American states. This design is mainly comprised of low manual operation as well as efficient equipment can the commercial, industrial, apartments, institutions/universities, etc., Hence it is a low-cost apparatus as it mainly uses a microcontroller which is programmable, which is easy to

**Index Terms**- LOS (line of sight communication), IR(Infrared), LED (Light Emitting Device).

### 1.1 Aim:

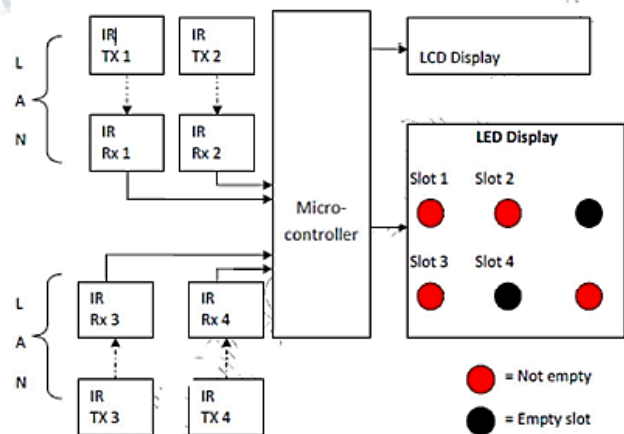
- i) To find the efficient system using micro controller for easy parking of vehicles using IR signals from the sensors
- ii) To lay an application platform to find the effective use of parking using micro controller, this application process makes it a easy way approach with machine automation.

### 1.2 Objective:

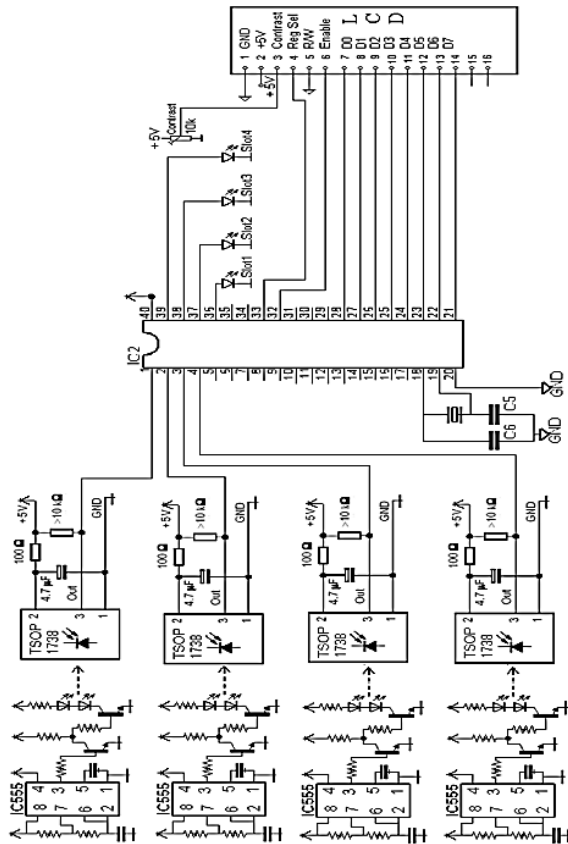
1. Find the area to park vehicle in distance from town.
2. Maintaining slot system using microcontroller.
3. Making an application interface for easy approach system.
4. Make whole system user friendly.
5. Develop a algorithm using software to display availability.

## 2. Architecture of Proposed System

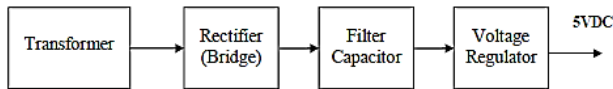
**BLOCK DIAGRAM:-**



CIRCUIT DIAGRAM:



**4. Power Supply Module**



Car Parking monitoring system is designed around the micro-controller.

The main blocks of the system are: -

1. IR transmitter
2. IR receiver
3. Microcontroller
4. LED Display
5. LCD display
6. IC555
7. Power supply

**5. MICRO CONTROLLER**

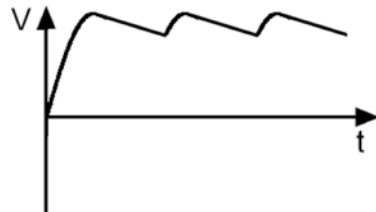

The main controlling unit of this all is microcontroller. This microcontroller counts the number of persons entering the room and displays it on the LCD.

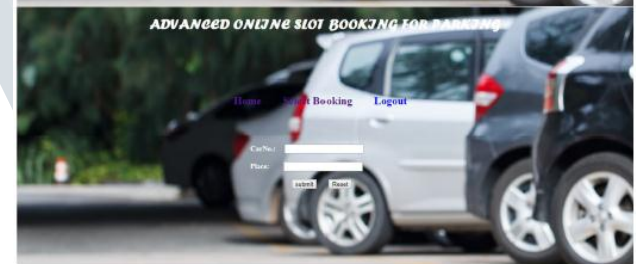
**Design specification of Microcontroller 89S51 Features**

- Compatible with MCS-51 tm products.
- 4k bytes of I system reprogrammable flash memory.
- Endurance: 1000 write/erase cycles.
- Fully static operation: 0Hz to 24 MHz
- Three level program memory lock.
- 128\*8-bit internal ram.
- 32 programmable I/O lines.
- Two 16-bit timers/counters.
- Six interrupt sources.
- Programmable serial channel.
- Low power idle and power down modes.

**Waveforms for Power supply module**

	<p>We get 230 volts A.C. supply from the power grid (Electricity board). The voltage amplitude is of 230 volts and the frequency is 50 Hz.</p>
	<p>By using a Step-down transformer, we are lowering the 230-volt AC supply to a lower value (e.g., 15 V) using a transformer. This lower voltage is still AC. The voltage amplitude is reduced but the frequency is same, which is 50 Hz</p>
	<p>Then rectification is done by a set of 4 diodes (Bridge rectifier), this rectifier transforms this AC voltage into pulsating voltage. The negative half cycles of transformer output</p>

	<p>are converted to positive half cycles.</p> <p>The next step is filtering, which is done by an electrolytic capacitor of 100microF, this filter capacitor transforms this pulsating voltage into almost DC. This is having ripples.</p>
	<p>The voltage obtained after the Capacitor oscillates a little bit (this oscillation is called ripple), so a voltage regulating stage is necessary, done by a voltage regulator IC. After this stage, the output is true DC voltage</p>



**6. Smart Application system online:**

An easy way out application is made to build and run online to be able to interact with the user for registration, this kit of hardware is connected to the system hardware and interfaced with it making all necessary functions.

- Booking slot
- Alloting slot
- Deletting slot
- Payemnt according to time
- Updation of empty/ non empty slots

The coding for the smart aplcation is done in jscrip language and deployed into the server which the whole system needs to uodate.

The interaction between microcontroller and the smart application will be from direct connections.

Some pictures of the proposed smart application are here:

**7. APPLICATIONS AND ADVANTAGES**

1. This project can be used for parking system in any shopping mall, multiplex
2. Can be used for industries, commercial offices and educational institutes.
3. Prevents waste of manpower when it's not enough for supervision.
4. This project can be used in Hospitals.
5. Easy to modify as per requirement.

**8. Future Scope:**

Any work, whatsoever precise it may be, has always some scope of improvement. On the same lines, the author envisages that there is lot of scope of improvement in the present work. Some of the future aspects of the work in terms of its improvements are discussed below:

1. Wireless transfer of data to the monitoring station can be very beneficial. Suppose parking is at minus 1 and

minus 2 floors below ground level and security cabin is at the ground or first floor then it will be difficult to connect the project in parking though wires. So, we can connect a transmitter to the project in parking and then we can connect a receiver to the computer in the security cabin on first floor

2. We can monitor some parameters like temperature, fire and at the same time control them Our project monitors only the Parking slots. If we must detect fire or smoke in the parking area then we can connect these sensors to our project and at the output side we can connect water sprinkler to control the fire

3. We can send this data to a remote location using mobile or internet If the company owner or security in charge/officer wants to monitor this data when he is not in the building then he can view it on mobile with the help of SMS

4. We can draw graphs of variations in these parameters using computer How many parking slots were occupied at what interval of time throughout the day. This can be seen using the graphs drawn on the computer

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