Self Car Parking System

1. Purpose

This project deals with the manufacture of a Prototype of a **Self Parking System** which is a mechanical device that multiplies parking capacity inside a parking lot. The driver leaves the car inside an entrance area and technology parks the vehicle at a designated area. **Hydraulic or mechanical car lifters raise the vehicle to another level for proper storing.**

a) Parking Lot Problems

Difficulty in **Finding Vacant Spaces Quickly.**Finding spaces during weekends or public holidays can take more than 10 minutes for about 66% of visitors. Stadiums or shopping malls are crowded at peak periods, and difficulty in finding vacant slots at these places is a major problem for customers. Insufficient car park spaces \ lead to traffic congestion and driver frustration.

b) Improper Parking

If a car is parked in such a way that it occupies two parking slots rather than one, this is called improper parking. Improper parking can happen when a driver is not careful about another driver's rights.

2. Objectives:

- To develop an intelligent, user friendly automated car parking system which reduces the manpower and traffic congestion.
- To offer safe and secure parking slots within limited area

3. References for Requirement Analysis and Design

- Catalogues
- Vertically automated rotary parking system - IEEE Xplorehttps://ieeexplore.ieee.org › document by M Bhagdev · 2017 · Cited by 2 — So, this project is focused on developing a parking system which is fully automatic and in same context required less space and is cost effective such that 12 ...

  Date Added to IEEE Xplore: 15 January 2018

  DOI: 10.1109/RTEICT.2017.8256571

  Date of Conference: 19-20 May 2017
- https://www.researchgate.net/publication/336287016_Vertical_Car_Parking_System
- https://www.electrosal.com/product/automatic-vertical-car-parking-system

Guided By : - Dr. Vishal Rathod
Priyanka Arora - 220350130007
Madhusudhan Amudula - 220350130004
Nikhil Yadav - 220350130005
Himanshu Raipure - 220350130008
Suryansh Dhakare - 220350130010

Self Car Parking System

4. Overview

A car parking system is a mechanical device that multiplies parking capacity inside a parking lot. Parking systems are generally powered by electric motors or hydraulic pumps that move vehicles into a storage position.

Car parking systems may be traditional or automated. Automatic multi-store automated car park systems are less expensive per parking slot, since they tend to require less building volume and less ground area than a conventional facility with the same capacity. In the long term, automated car parking systems are likely to be more cost effective than traditional parking garages. Both automated car parking systems and automated parking garage systems reduce exhaust gas, cars do not drive around in search of parking spaces. The driver leaves the car inside an entrance area and technology parks the vehicle at a designated area. Hydraulic or mechanical car lifters raise the vehicle to another level for proper storing. The vehicle can be transported vertically (up or down) and horizontally (left and right) to a vacant parking space until the car is needed again. When the vehicle is needed, the process is reversed and the car lifts transport the vehicle back to the same area where the driver left it. In some cases, a turntable may be used to position the car so that the driver can conveniently drive away without the need to back up.

5. List of Functions

Sr. No. Function ID	Name of Function
F-1	First we have to find the vacant space in parking lot
F-2	Ramp is move to that vacant space & park the car.
F-3	Move to another vacant space, take the ramp and go up to the parking space.

6. Functional Description :

F-1	**Function**	**First we have to find the vacant space in parking lot.**
	Purpose	we have to park the car in vertical manner, so first we have to find the vacant space where we empty slots are available.
	Data Entities	Display shows the information about the empty slot.

F-2	**Function**	**Ramp is move to that vacant space & park the car.**
	Purpose	To park the car at the right place.
	Descriptions and Decisions	According to the sensor values ramp will move to that floor and intelligently park the car, after car parking successfully sensor send the information to the display thought controller.
	Data Entities	Display shows the message of car park successfully.

Guided By : - Dr. Vishal Rathod
Priyanka Arora - 220350130007
Madhusudhan Amudula - 220350130004
Nikhil Yadav - 220350130005
Himanshu Raipure - 220350130008
Suryansh Dhakare - 220350130010

Self Car Parking System

F-3	**Function**	**Move to another vacant space, take the ramp and go up to the parking space.**
	Purpose	To provide ramp for another vehicle parking
	Data Entities	Display shows the information ..

7. Hardware Interfaces

1) Arduino uno
2) LCD
3) Relays
4) Motors
5) IR Sensors
6) Ultrasonic sensor

8. Software Interfaces

1) Arduino IDE

9. Communication Interfaces

1) GSM,TCP/IP,MQTT,UART.Bluetooth,Wi-Fi

Guided By : - Dr. Vishal Rathod
Priyanka Arora - 220350130007
Madhusudhan Amudula - 220350130004
Nikhil Yadav - 220350130005
Himanshu Raipure - 220350130008
Suryansh Dhakare - 220350130010