Project Design Phase-I
Solution Architecture

Date	06 May 2023
Team ID	NM2023TMID17127
Project Name	AI enabled car parking using open CV

Solution Architecture:

The development of sensor technology brings a new administrative model to set up, establish, and encourage sustainable progressive systems to direct surging urbanization parking issues. Through the growing technology, the conception of the Internet of Things and Deep learning can be used to design a smart city that can slowly address mobility issues and can also help to provide a sustainable architecture to the cities. Anyway , due to the huge number of automobiles on roads, parking is a strenuous job. Generally, riders waste fuels in liters trying to find a spot for parking. Also, the rider generally wastes 5 to 15 minutes to find a parking space. Apart from that it annoys, traffic, fuel consumption and pollution. So in the given scenario, knowing about the available parking spaces beforehand can help to remove the issues. With the help of IoT integration and deep learning techniques, we can mitigate this issue by analyzing , predicting, and booking an available parking space.

We propose a new method to improve the efficiency of parking lots by counting how much space is left in each parking zone and displaying that information to drivers via a smartphone app. We employ a camera to photograph the parking lot and use image processing approaches to determine if any vehicles are parked in each section. Whenever a vehicle moves into or out of a particular parking zone, the status of the whole lot changes. The primary propose of this mechanism is to depict and establish productive image processing approaches and algorithms to save the permit plate in the snapped image, to divide each character from that number plate and to recognize each character of the segment by using the Open Computer Vision Library.

Low-cost sensors, real-time data, and applications are used in AI enabled car parking system to allow users to monitor available and unavailable parking spots. The idea is to automate the process and reduce the

amount of time spent manually looking for the best parking floor, spot, or even lot. Some solutions will include a full package of services, including online payments, parking time notifications, and even automobile search capabilities for particularly big parking lots. Both the user and the lot owner can benefit substantially from a parking solution.

Live data sample is used to detect whether the parking lot free or engaged.

Example - Solution Architecture Diagram:

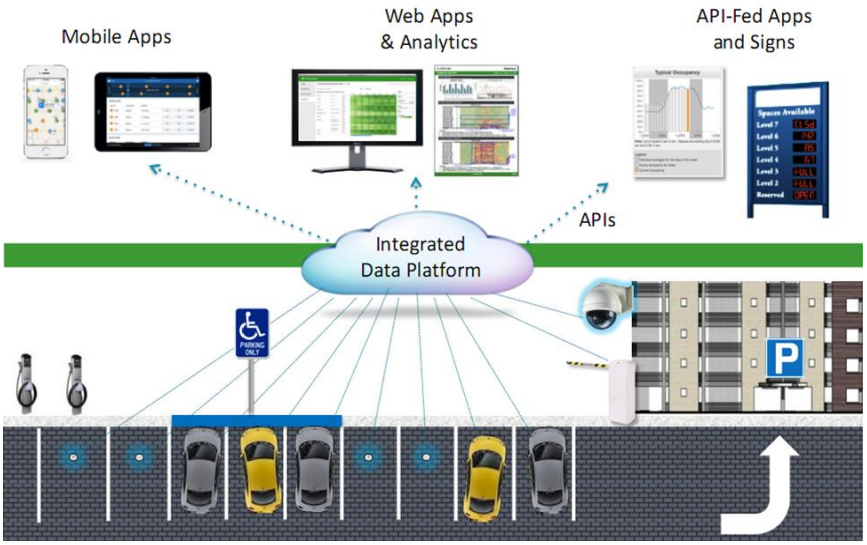

Figure 1: Architecture and data flow AI enabled car parking using open CV