

Project Design Phase-I
Proposed Solution

Date	10 May 2023
Team ID	NM2023TMID10156
Project Name	AI enabled car parking using open CV

Proposed Solution Template:

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Finding a parking space in metro cities is an uphill task. Some people thus prefer to take cabs, instead of their own vehicles, to avoid the hassle of searching for a parking spot and the possibly running late. Also, parking at street corners leaves vehicles unguarded from potential damage by miscreants or natural causes.
2.	Idea / Solution description	To design and develop a system that uses computer vision techniques to automatically detect and allocate empty parking spots in real-time. The system will use cameras to capture images of the parking area and process them using OpenCV to identify available parking spots. The system will then direct drivers to empty spots through an intuitive user interface, reducing the time and effort required for parking.
3.	Novelty / Uniqueness	This system is different from traditional parking systems as it reduces the need for manual labor and provides an intuitive user interface that can help drivers find available parking spots easily. Furthermore, this system can be integrated with other smart city technologies, such as traffic management systems and smart lighting systems, to provide a comprehensive solution for managing parking in urban areas. The use of computer vision and AI technologies to automate the parking process is a unique approach that can improve the overall parking experience for drivers while reducing the time and effort required for parking.

4.	Social Impact / Customer Satisfaction	<p>The project has a significant social impact by providing an efficient and automated parking solution. It can help reduce the time and effort required for parking, which can result in reduced traffic congestion and lower emissions. The system can also improve the overall parking experience for drivers, resulting in increased customer satisfaction.</p> <p>The system's intuitive user interface can help drivers find available parking spots easily, which can reduce frustration and stress associated with finding parking in crowded urban areas. Moreover, the automated system can help reduce the number of vehicles circling around in search of parking, leading to lower traffic congestion and emissions.</p>
5.	Business Model (Revenue Model)	<p>The project can be developed into a viable business model by offering it as a service to parking lot owners and operators. The system can be deployed in parking lots, garages, and other parking facilities, where it can automate the parking process and provide an efficient parking solution.</p> <p>The business model could be based on a subscription-based service or a pay-per-use model, where parking lot owners pay a fee based on the number of parking spaces the system manages or the number of parking sessions the system handles. The subscription-based model could have different tiers, depending on the number of parking spaces the parking facility has or the number of features and services provided by the system.</p>
6.	Scalability of the Solution	<p>The scalability of the AI-enabled car parking system using OpenCV is high. The system can be deployed in parking lots of varying sizes, from small lots with just a few parking spaces to large multi-story garages with hundreds or even thousands of parking spaces.</p> <p>The system's scalability is due to the fact that it relies on computer vision and AI algorithms, which are highly adaptable and can be easily customized to fit different parking lot configurations and sizes. Additionally, the system can be integrated with other smart city technologies, making it even more scalable and adaptable to changing urban environments.</p>