Project Design Phase-I
Proposed Solution Template

Date	12 May 2023
Team ID	NM2023TMID16858
Project Name	Project – AI enabled car parking using opencv

Proposed Solution Template:

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	The problem statement for AI-enabled car parking using OpenCV would be to develop a system that can efficiently manage car parking spaces in a given area. This system should be able to detect available parking spots and guide drivers to these spots using real-time image processing with OpenCV. The system should also be capable of tracking vehicles within the parking lot and provide relevant information to the parking management team to ensure smooth parking operations.
2.	Idea / Solution description	An AI-enabled car parking system using OpenCV can be designed to provide a real-time parking management solution for large parking areas, such as shopping malls, airports, and stadiums. The system can use a combination of cameras, sensors, and machine learning algorithms to detect available parking spaces and guide drivers to these spaces.
3.	Novelty / Uniqueness	1. Real-time image processing: The system uses real-time image processing with OpenCV to detect available parking spaces and guide drivers to these spaces. 2. User-friendly interface: The system provides a user-friendly interface that allows drivers to easily locate available parking spaces and navigate the parking area 3. Data analytics: The system generates valuable data on parking utilization, such as the number of vehicles parked, the average duration of parking, and the busiest times of the day. 4. Flexibility: The system can be customized to fit the specific needs of different parking areas, such as shopping malls, airports, and stadiums.

		This allows for a more flexible and adaptable parking management solution.
4.	Social Impact / Customer Satisfaction	1. Reduced congestion: The system can help reduce congestion in parking areas by efficiently guiding drivers to available parking spaces. 2. Improved safety: The system can improve safety in parking areas by reducing the likelihood of accidents caused by drivers circling the parking lot in search of a spot 3. Environmental benefits: The system can help reduce carbon emissions by reducing the amount of time drivers spend circling parking areas in search of a spot. 4. Enhanced customer experience: The system provides a user-friendly interface that allows drivers to easily locate available parking spaces and navigate the parking area 5. Improved accessibility: The system can be designed to include features that improve accessibility for drivers with disabilities, such as reserved parking spots and audio guidance for visually impaired drivers.
5.	Business Model (Revenue Model)	1. Subscription model: The parking area can charge a monthly or yearly subscription fee to drivers who use the system to locate parking spaces. 2. Pay-per-use model: The parking area can charge drivers a fee for each parking session, based on the duration of the session and the type of parking spot accessed by the driver. 3. Advertising model: The parking area can generate revenue by displaying targeted advertisements within the user interface of the system. 4. Data analytics model: The system can generate valuable data on parking utilization, which can be sold to third-party organizations, such as city planners or real estate developers. 5. Value-added services model: The parking area can offer value-added services, such as car wash or car detailing services, to drivers who use the system to locate parking spaces.

6.	Scalability of the Solution	1. Open-source technology: OpenCV is an open-source computer vision library, which means it can be easily customized and integrated with other technologies. 2. Cloud-based infrastructure: The system can be hosted on cloud-based infrastructure, which allows for easy scaling and management. 3. Machine learning algorithms: The machine learning algorithms used in the system can be trained and fine-tuned based on the specific parking area and environment. 4. Customizable user interface: The user interface of the system can be customized to meet the specific needs of different parking areas and drivers. 5. Integration with other systems: The system can be integrated with other systems, such as payment gateways and access control systems, to create a seamless and integrated parking management solution. .