

Project Design Phase-II
Solution Requirements (Functional & Non-functional)

Date	20 May 2023
Team ID	NM2023TMID16858
Project Name	Project – AI Enabled Car Parking Using OpenCV

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail
FR-2	User Login	Login by Gmail Login by Username
FR-3	Vehicle Detection	Detect vehicles entering the parking area. Detect vehicles exiting the parking area.
FR-4	Space Detection	Analyse the parking area to identify vacant parking spaces. Determine the size and dimensions of each parking space.
FR-5	Security Monitoring	Monitor the parking area for unauthorized or suspicious activities. Integrate with surveillance systems and alarms for immediate alerts.

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	Usability	a. User-friendly interface: The system should have an intuitive and easy-to-use interface for drivers to interact with, reducing the learning curve and facilitating a smooth user experience. b. Accessibility: The interface should consider accessibility guidelines to accommodate users with disabilities or special needs. c. Multilingual support: The system should support multiple languages to cater to a diverse user base.
NFR-2	Security	a. Data privacy: The system should handle personal data, such as license plate information, in

		<p>compliance with relevant data protection and privacy regulations.</p> <p>b. Access control: Access to the system's functionalities, administrative interfaces, and sensitive data should be appropriately restricted and protected.</p> <p>c. System integrity: Measures should be implemented to prevent unauthorized tampering or manipulation of the system, ensuring the accuracy and reliability of the parking information.</p>
NFR-3	Reliability	<p>a. Robustness: The system should be able to handle various challenging scenarios, such as poor lighting conditions, inclement weather, or occluded views, without significant degradation in performance.</p> <p>b. Fault tolerance: The system should be resilient to failures or errors in individual components, ensuring that the overall functionality is not compromised.</p> <p>c. Redundancy: Implementing redundant systems or components can ensure continuous operation in the event of failures or maintenance.</p>
NFR-4	Performance	<p>a. Real-time processing: The system should have low latency and be able to process video feeds or images in real-time to provide timely and accurate parking information.</p> <p>b. Accuracy: The vehicle detection, license plate recognition, and space detection algorithms should have a high accuracy rate to ensure reliable parking guidance and occupancy tracking.</p>
NFR-5	Availability	<p>a. The system should be designed to operate reliably without frequent failures or disruptions. This includes robustness in handling unexpected scenarios, such as hardware failures, network outages, or software errors</p>
NFR-6	Scalability	<p>a. The system should be able to handle a large number of vehicles and parking spaces without compromising performance</p>