Project Design Phase-I
Solution Architecture

Date	05 May 2023
Team ID	NM2023TMID16858
Project Name	AI Enabled Car Parking Using open CV
Maximum Marks	

Solution Architecture:

An AI-enabled car parking system using OpenCV (a computer vision library) would use cameras and sensors to collect and analyze data on parking lot occupancy and traffic flow. It would guide drivers to available parking spots, provide parking assistance, handle payments, and enhance security and surveillance. The system would improve the parking experience for drivers and increase efficiency, safety, and security in parking lots.

- **Data Collection:** The system would use cameras and sensors to collect data on parking lot occupancy, traffic flow, and other relevant information. The data would be processed by OpenCV to extract useful information such as the number of available parking spaces and the location of parked cars.
- **Data Processing:** OpenCV would be used to process the collected data and analyse it to detect empty parking spots, calculate occupancy rates, and identify any issues such as double-parking or cars parked in non-designated areas.
- **Real-time Parking Guidance:** Using the processed data, the system would provide real-time guidance to drivers on available parking spots and the most optimal route to reach them. This would improve traffic flow and reduce the time it takes for drivers to find a parking spot.
- **Parking Assistance:** The system would use OpenCV to provide parking assistance to drivers, such as detecting obstacles and guiding them into the parking spot. The system would also provide feedback to the driver on the parking accuracy and any potential damage to the car or other objects.
- **Payment and Access Control:** The system would use OpenCV to identify and authenticate the vehicle, and allow access to the parking lot only to authorized vehicles. The system would also handle payment processing and issue parking tickets.
- **Security and Surveillance:** OpenCV would be used to monitor the parking lot and detect any suspicious activity, such as unauthorized access or vandalism. The system would alert security personnel in real-time to take appropriate actions.

Example - Solution Architecture Diagram:

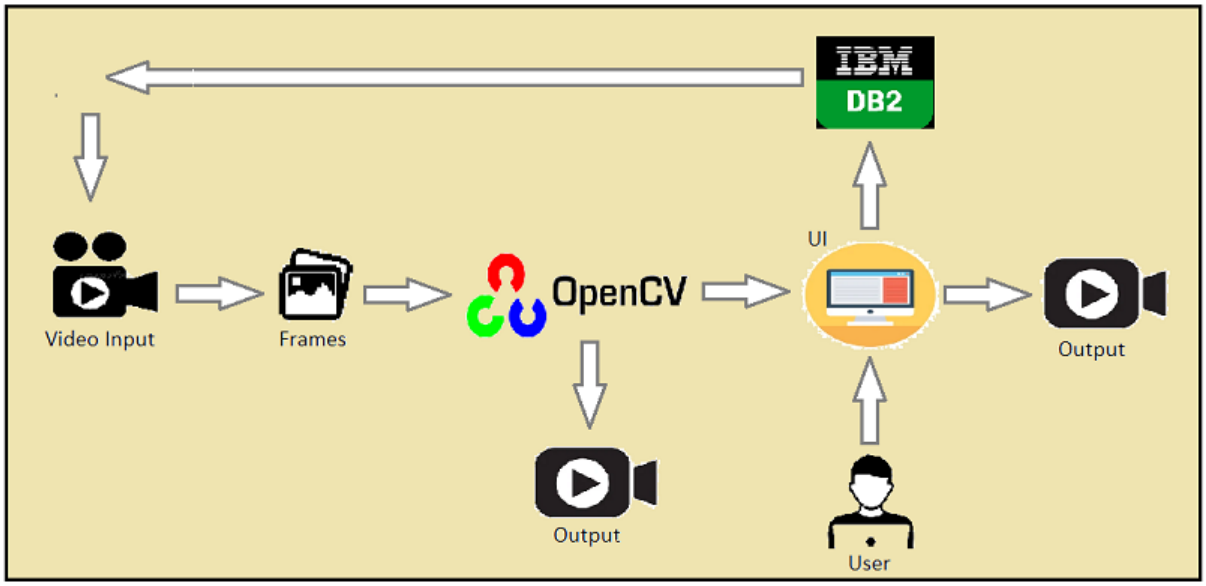

Figure 1: Architecture and data flow of the AI Enabled Car Parking Using open CV