

# Parking Monitoring System

## Scope :

- **Description** :This implementation involves building a Parking Monitoring System. The implementation consists of 2 parking cameras, first mounted on the entrance of the parking and the second is mounted inside the parking lot. First camera will detect the number plate of the incoming car and create a log and book a parking slot for the car. The second camera serves two purposes, first, it makes sure that the car is parked in its respective slot, second, it detects when the car is exiting the parking area.
- **Deliverables** :In this semester we will be implementing parking slot detection and number plate recognition using OCR .
- **Justification** :This implementation will help college staff and students to find available parking slot inside the college campus.
- **Exclusion** :This implementation does not involve parking spaces for two wheelers and spaces outside the parking lot in the campus.

## Technology Stack :

- **OpenCV** : For detection of cars and number plates.
- **Optical Character Recognition (OCR)** :Used for detecting alphabets and numbers in the number plate and converting them into strings.
- **Python** :Language used for implementing implementation.
- **Firebase** :To store real-time logs for cars.
- **Spyder** :IDE for implementing implementation.

## Benefits for Environment :

- Due to the availability of real-time parking system, car owners spend less time searching for parking spaces thus reducing carbon emissions.

## Benefits for Society :

- **Optimized parking** –Users can find best parking slot available, thus saving time, fuel and efforts.
- **Decreased cost of management** - Due to automation, human intervention is eliminated, thus, labor cost decreases significantly.
- **Reduced traffic** - Traffic flow increases as fewer cars are required to drive around in search of available parking slots.

## **Applications :**

- This implementation presents the design and implementation of a Web application that analyzes the state of parking lot according to a CCTV camera.
- It can also be used in the parking lot of various shopping malls.