Parking Monitoring System

Scope :

- **Description :** This project involves building a Parking Monitoring System for A.P Shah Institute of Technology, Thane. The project consists of 2 parking cameras, first camera 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 project will help college staff and students to find available parking slot inside the college campus.
- **Exclusion :** This project does not involve parking spaces for two wheelers and spaces outside the parking lot in the campus.

Technology Stack :

- **OpenCV :** For detecting cars and their 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 project.
- **Firebase :** To store real-time logs for cars.
- **Spyder :** IDE for implementing project.

Benefits for Environment :

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

Benefits for Society :

- **Optimized parking –** Users find the best spot available, saving time, resources and effort.
- **Decreased Management Costs –** More automation and less manual activity saves on labor cost and resource exhaustion.

- **Reduced traffic –** Traffic flow increases as fewer cars are required to drive around in search of an open parking space.

Applications :

- This project presents the design and implementation of a Web applications 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.