

# SMART PARKING

## Problem Definition:

Problem in exiting parking system are listed below;

- **Insufficient parking space utilization**

People frequently lack patience or are unaware of parking slot availability. They tend to park improperly due to the rush. Occasionally, they may not leave enough room for other vehicles to park. These lead to traffic blockages.

- **Overcrowded parking spaces**

The biggest issue right now is that there are more cars on the road compared to the parking spots. Talk about bumper-to-bumper traffic!

- **Parking inappropriately**

The parking lot at the mall or the customer's intended destination is usually insufficient and they end up parking outside the designated spot. It results in greater traffic congestion.

- **Environmental impact**

Besides time, a lot of fuel is consumed looking for an appropriate parking space. When it rains, numerous pollutants accumulated in the parking lots get a wash, creating dirty, wet mud and foul smells.

- **Overpaying**

Sometimes, drivers still determine how long they will stay in a particular location. As a result, they may pay too much for parking while the duration may be much lesser.

## **Design Thinking:**

To solving the problem in exiting parking system we can use smart parking

Using IOT are listed below

- Create “smart” parking meters that accept payments via credit card or smartphone and provide real-time information on space availability.
- Extend the operating time of an autonomous parking system by consuming less power with the help of LoRaWAN networking standard.
- Send real-time data from IoT sensors to a cloud server and share it with users to provide them with the details of free-parking spaces.
- Determine the number and position of vacant parking spaces precisely using IOT sensors
- Reduce congestion and improve traffic flow by using sensors to monitor parking space availability and direct drivers to available spaces.
- IOT gateway and the LPWAN protocol help connect IoT devices and sensors in sizable parking lots.
- The parking management company can use a cloud-based IoT dashboard. It uses gathered sensor data to mine intelligible insights that are visually appealing and provides a clear picture of the parking facility.
- Optimize parking operations and improve security by tracking vehicles entering and exiting a parking facility.
- Mobile applications can display parking data to drivers and send alerts in case of a security breach.