Smart Parking (IOT)

Abstract:

The Smart parking system is designed to address the growing challenges of urban congestion and inefficient parking management. This system leverages Internet of things to provide real-time information about parking space availability in urban areas. By utilizing sensors and data analytics, it offers the drivers the convenience of finding and parking spaces efficiently, reducing traffic congestion, and minimizing the environmental impact of unnecessary circling for parking slots.

Module:

Network:

In ground or overhead sensors are deployed in parking spaces in order to detect the presence and absence of vehicles and these data are sent to the central server.

Data Processing:

This central server processes the incoming sensor data in real-time and use algorithms to analyse this data to determine parking space occupancy. Historical analysis also used for predictive analysis.

UI:

A user-friendly application allows drivers to access parking information, real-time availability, reservations and navigation for parking.

Parking Reservation:

Users can reserve their parking slots through the application and payment integration is added for booking fees and parking charges.

Communication protocols:

Communication between the sensors, central server and users are secured by IoT Communication Protocol.

Notifications and Alerts:

Notification to the user about when the parking spaces become vailable or when their reservations confirmed.

Alerts about time limits and approaching reservations.

Payment Integration:

Integration with payment gateways for parking fees and option for contactless payments

Parking Guidance:

Guidance signs or boards on the parking lots to direct drivers to available spaces and navigation through the application also integrated.

Analytics and Improvement:

Data collected from sensors are used to generate reports on parking usage and Insights can inform city planning and parking infrastructure improvements.

Admin Dashboard:

An administrative interface for managing the system includes monitoring sensor health, configuring settings and maintaining user accounts.

Security and privacy:

Robust security measures to protect user data and system integrity and compliance with data privacy and regulations.

Maintenance and support:

Regular maintenance of sensors and system components and also Customer support for user inquiries and issues.