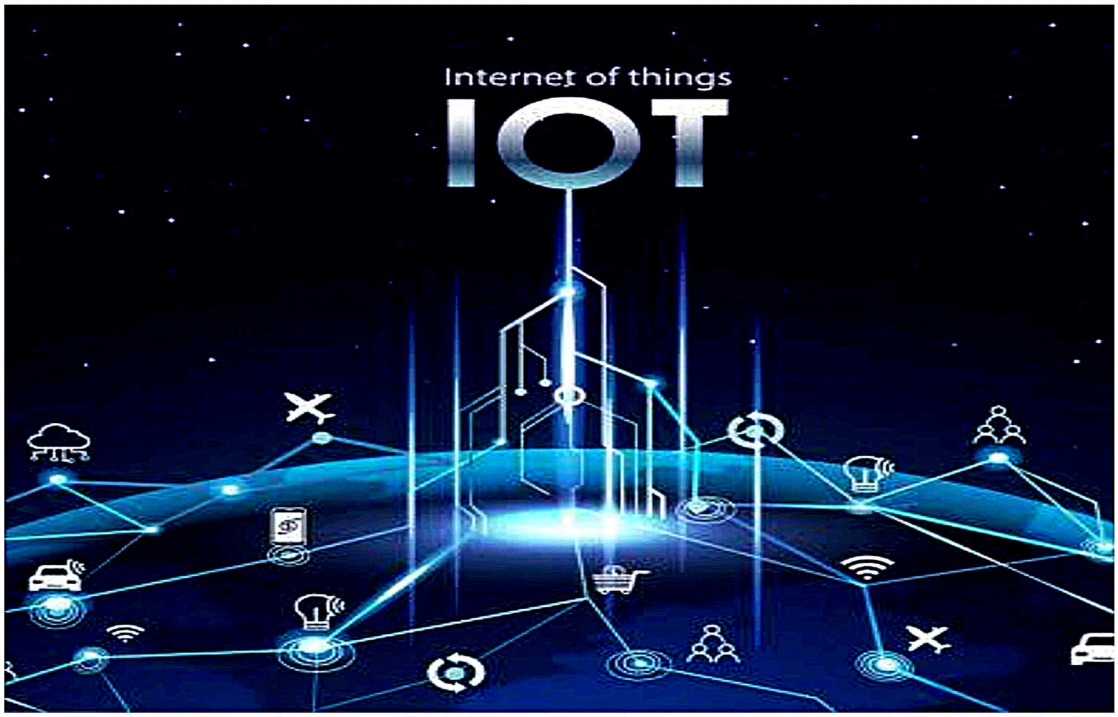
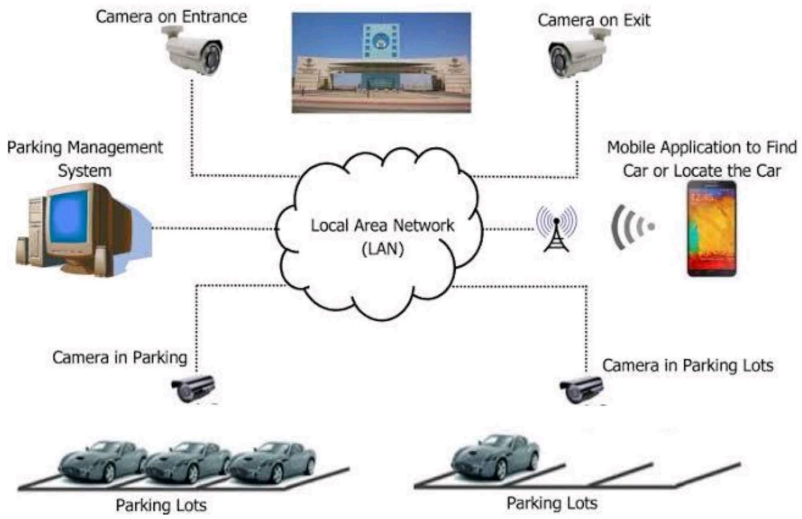

Internet of things
IOT

IOT Based Smart Parking System

Problem Definition

In the greater part of the advanced urban areas it is troublesome and costly to make additionally parking spots for vehicles since the quantities of vehicles that are running out and about are expanding step by step and the include of the free spaces in the urban communitie s are the equivalent. This issue prompts blockage for stopping searchers and drivers. To build up an IoT structure that objectives Parking Management wh ich is greatest difficulties in current urban areas. Unavoidable presence of advanced cell urges clients to favor portable application-based arrangements. Development of IoT has cleared route for incorporation of cell phones, remote correspondence advances and portable Applications. This task is an IoT based Smart stopping framework for shrewd urban areas that coordinates with website page. It gives an extensive stopping arrangement both for the client and proprietor of the stopping space. The principle highlight of this venture is to distinguish the closest free parking spot and to exploring to t he stopping opening. IR sensors are utilized to recognize if a parking space is free. Accessibility of a free space with its area data is sent utilizing GSM/GPRS module innovation, microcontroller and remote correspondence innovation to the worker and is recovered through a message application. A dynamic calculation is utilized to recognize whether the stopping space is unfilled or involved. The proprietor of the parking spot can likewise get the investi gation of the quantity of filled and accessible openings energetic just by pinging our framework through short message. This framework helps in extemporizing the administration of stopping framework by adhering to rules of the legislature, for instance dealing with various parking spots in the city.

Design Thinking



PROJECT OBJECTIVES

Real time parking space monitoring

A smart parking system uses IoT devices and sensors to collect real-time data on parking lot occupancy and transmits this information to the cloud or local network. It also involves building IoT apps for end-users, like parking administrators and drivers.

Mobile app integration

A mobile app connects the system with the users so drivers can find a vacant space quickly and easily using clear and simple directions. Generally, such an application shows the driver a real-time view of available and taken parking spots via a simple and comprehensive interface, allowing a parking space reservation and automatically tracking billing based on when the driver's vehicle is logged entering and leaving the parking space.

Efficient parking guidance

A Parking Guidance System is a form of technology that provides motorists with real-time information concerning the availability and occupation of parking spots in a car parking facility. It acts as an advanced car counting or vehicle detection technology that facilitates vehicle circulation within a car park.

IOT Sensor Design

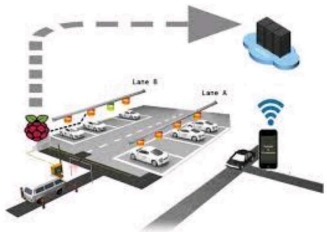


Figure 1: Smart Parking System

IoT-based smart parking system deployment requires integrating various devices, sensors, and microcontrollers. The IoT data picked up from the sensors gets transmitted over a wireless connection to a cloud server. The information is collated and analyzed in real-time to create a map of available parking slots, which is reflected on the smartphone application.

These sensors can be based on a variety of sensing technologies, the most commonly used are magnetometer, infrared, ultrasonic, and radar.

INTEGRATION APPROACH

Raspberry Pi:

Raspberry Pi board with an operating system installed, such as Raspbian.

Sensors:

Connect your desired sensors to the Raspberry Pi. Common examples include temperature sensors, humidity sensors, and motion sensors.

Cloud Platform:

Choose a cloud platform for data storage and analysis. Options like Amazon Web Services (AWS), Google Cloud Platform (GCP), and Microsoft Azure are popular choices.