

INTERNET OF THINGS

PROJECT NAME : SMART PARKING

Phase 1: Project Submission

Project Definition

Project Name: IoT Integration for Public Transportation Enhancement

Project Overview: The project aims to integrate IoT sensors into public transportation vehicles to monitor ridership, track locations, and predict arrival times. The primary objective is to provide real-time transit information to the public via a public platform, thereby enhancing the efficiency and quality of public transportation services. The project encompasses the following key tasks:

1. **Defining Objectives:** Clearly specify the project's objectives, including real-time parking space monitoring, mobile app integration, and efficient parking guidance.
2. **IoT Sensor Design:** Plan the design and deployment of IoT sensors within parking spaces to detect occupancy and availability accurately.
3. **Real-Time Transit Information Platform:** Design a user-friendly mobile app interface that displays real-time parking space availability to users.
4. **Integration Approach:** Determine the methodology by which Raspberry Pi will collect data from the sensors and update the mobile app with real-time information.

Design Thinking

Project Objectives

The project objectives should be comprehensive and align with the project's overall goal. These objectives include:

1. **Real-Time Parking Space Monitoring:** Implement sensors that can monitor parking space occupancy in real-time.
2. **Mobile App Integration:** Develop a mobile application that can provide users with real-time information about parking space availability.
3. **Efficient Parking Guidance:** Provide users with efficient parking guidance to available spaces within the transportation network.

IoT Sensor Design

To achieve accurate occupancy detection and availability information, the IoT sensor design should consider the following factors:

1. **Sensor Types:** Select appropriate sensors (e.g., ultrasonic, infrared) for parking space monitoring.
2. **Placement:** Determine optimal sensor placement within parking spaces to ensure reliable data collection.

3. **Communication Protocol:** Choose a suitable communication protocol for transmitting sensor data.

Real-Time Transit Information Platform

The mobile app interface should be user-friendly and provide essential features, such as:

1. **Real-Time Updates:** Display real-time information about parking space availability.
2. **User-Friendly Interface:** Create an intuitive and user-friendly design for the mobile app.
3. **Integration with GPS:** Integrate GPS capabilities to provide accurate location-based information.

Integration Approach

The integration approach involves connecting IoT sensors to the mobile app through a Raspberry Pi. Consider the following:

1. **Data Collection:** Determine how Raspberry Pi will collect data from the IoT sensors.
2. **Data Processing:** Define how collected data will be processed and updated in real-time.
3. **Mobile App Integration:** Specify how the mobile app will receive and display data from Raspberry Pi.

Conclusion

In this overview of project data, we've highlighted its pivotal role in the IoT Integration for Public Transportation Enhancement project. With data originating from IoT sensors, Raspberry Pi devices, mobile apps, and public platforms, it underpins real-time transit information and informs enhancements in public transportation services. Ensuring data security and privacy, along with rigorous data analysis, will be essential as we work towards a more efficient and user-centric transportation system.