



PUBLIC TRANSPORT OPTIMIZATION



PROJECT DEFINITION:

The project involves integrating IoT sensors into public transportation vehicles to monitor ridership, track locations, and predict arrival times. The goal is to provide real-time transit information to the public through a public platform, enhancing the efficiency and quality of public transportation services. This project includes defining objectives, designing the IoT sensor system, developing the real-time transit information platform, and integrating them using IoT technology and Python.



DESIGN THINKING:

1. Project Objectives

.

2. IoT Sensor Design

.

3. Real-Time Transit Information Platform

.

4. Integration Approach

.



PROJECT OBJECTIVES



1 REAL-TIME TRANSIT INFORMATION:

- Objective:** Provide passengers with real-time information about the current location and status of public transportation vehicles.

- Purpose:** To enhance passenger convenience, reduce wait times, and improve the overall public transportation experience by allowing passengers to plan their trips more effectively.



2. ARRIVAL TIME PREDICTION:

- Objective:** Predict and display estimated arrival times for public transportation vehicles at various stops.
- Purpose:** To enable passengers to plan their journeys more accurately and reduce uncertainty about when the next vehicle will arrive, thereby improving the reliability of public transportation.



3. RIDERSHIP MONITORING:

- Objective:** Collect data on the number of passengers boarding and alighting at each stop and on each vehicle.

- Purpose:** To gather valuable insights into ridership patterns, demand, and peak hours, which can inform service optimization, scheduling, and resource allocation.



4. ENHANCED PUBLIC TRANSPORTATION SERVICES:

- Objective:** Improve the overall quality and efficiency of public transportation services.
- Purpose:** By integrating IoT sensors and providing real-time information, the project aims to enhance the public transportation experience, increase ridership, reduce congestion, and contribute to sustainable urban mobility.



IOT SENSOR DESIGN

1. IOT SENSORS AND HARDWARE:

- ❖ GPS Sensors
- ❖ Passenger Counting Sensors
- ❖ Communication Modules
- ❖ Microcontrollers/Embedded Systems
- ❖ Power Supply Units

2. DATA PROCESSING AND STORAGE:

- ❖ Server/Cloud Infrastructure
- ❖ Database
- ❖ Data Processing Software



REAL-TIME TRANSIT INFORMATION PLATFORM

REAL-TIME TRANSIT INFORMATION PLATFORM:

Web Development Tools: Such as Python for backend development and HTML/CSS/JavaScript for the front-end user interface.

(OR)

Mobile App Development Tools: If you plan to offer a mobile app for passengers.



INTEGRATION APPROACH

INTEGRATION APPROACH

- Choose the required sensor and install it.
- Data Collection and Transmission: Collect the data from the microcontrolled and export through a interface by using some of the protocols
- Real-Time Transit Information Platform: Retrieve the exploited data and integrate in the platform like mobile or web