Bus Tracking System:

College transportation for students, faculty, and administrators. Our website showcases real-time tracking, communication, and data analytics, improving driver accountability and student safety.

The **Bus Tracking System** is a software engineering project aimed at improving the daily commute experience for students, faculty, and drivers by providing a real-time bus location and management solution. Traditional bus systems often lack transparency and cause unnecessary delays due to the absence of live tracking and communication. This project addresses these challenges by offering a centralized platform where users can access bus routes, estimated arrival times, and live updates through role-based access. The system enhances safety, reliability, and efficiency, making transportation smarter and more user-friendly.

Overview of the Bus Tracking System

- Real-time location tracking via API
- User-friendly interface for drivers, students, faculty, admin
- Instant updates through communication platform
- Role-based login system for Admin, Driver, Faculty, and Student.
- Each role gets a custom dashboard.

Purpose and Objectives

Student Safety

Secure transit with real-time tracking and alerts

Enhanced Communication

Connect schools, Faculty and drivers effectively

Increased Efficiency

Reduce delays and optimize bus routes

Real-time Info

Provide live updates to Facultyand students

Technologies Used

Frontend

React.js for interactive user interfaces

Backend

Node.js with Express.js server APIs

Database

MongoDB for flexible, scalable data storage

Mapping & Tracking

Google Maps API

Core Functionalities

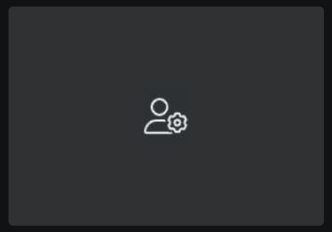
Live Bus Location

Notifications Alerts for Students

Bus schedules, Vacancy

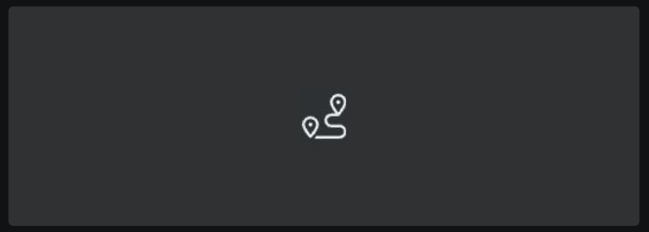
Role-based Access Control For Driver, Students, Faculty, Admin

Admin Properties



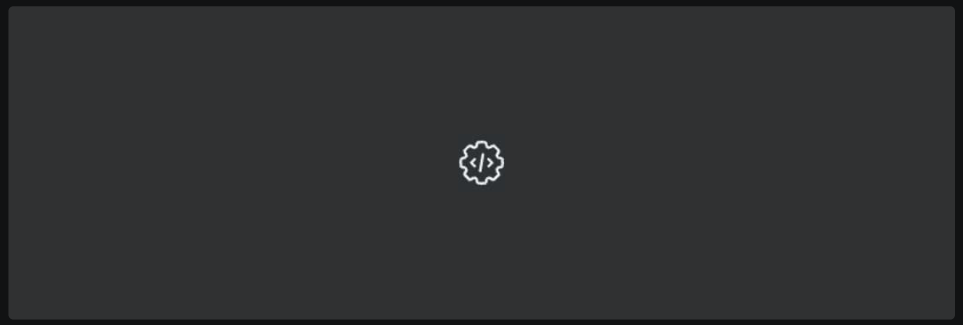
User Management

Easily add, edit , and remove user accounts. Assign specific permissions and access levels to each user based on their role and responsibilities.



Route Management

Define and optimize bus routes for maximum efficiency. Analyze historical data to identify bottlenecks and make adjustments to improve on-time performance and reduce delays.



System Configuration

Customize system settings, notification rules, and other preferences to ensure the platform aligns with your organization's specific needs and requirements. Stay in control of the system's behavior and functionality.

Reliable and uninterrupted operations, enabling you to effectively manage and monitor the bus tracking system.

User Features

Drivers

- Navigate optimized routes
- Give student alerts
- Report incidents promptly

Students

- Track real-time bus location
- Receive notifications
- Check estimated arrival times

Faculty

- Monitor bus routes and schedules
- Communicate with drivers

Database Design

1. MongoDB schema supports real-time updates
2. Collections include Users, Buses, Routes and Locations
3. Used MongoDb atlas database

Conclusion

This Bus Tracking System improves safety, efficiency, and communication.

It benefits students, parents, faculty, and administrators alike.

System reduces delays while enhancing transparency and accountability.

Well positioned for growth in more school districts.

Thank You!

Alahari Maydhazo Dhanyan,

K.Rahul Chandra

G. Sri Vishnu