

ECOROUTE

Optimizing Urban Transportation with AI

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Problem Statement

Optimizing Public Transportation Efficiency

Objective: Develop an AI-based system to optimize public transportation schedules and routes to reduce fuel consumption and minimize carbon emissions, while ensuring maximum convenience for city residents.

Solution Description

Our solution uses machine learning to study real-time data, predict passenger demand, and improve public transportation schedules and routes. This helps reduce fuel use and carbon emissions while making travel more convenient for commuters.

Data Collection

We gather real-time data on traffic, passenger demand, and vehicle locations to analyze and improve the system.

Route Optimization

The AI finds the best routes by considering factors like traffic, distance, and passenger needs.

Schedule Optimization

The AI adjusts bus and public transport schedules in real-time to improve frequency and timing.

Real-time Updates

Commuters get live updates on bus locations, arrival times, and alternative routes through mobile apps and screens.

Technical Architecture



Deep Learning

Deep learning models are used to analyze vast amounts of data to identify patterns and predict future demand.



Reinforcement Learning

Reinforcement learning allows the system to learn from real-time data and adapt its decisions to changing conditions.



Data Analytics

Historical data and real-time data are analyzed to identify trends, optimize routes, and improve scheduling.

Social, Ecological, and Economic Impact

Our AI-based public transportation system promotes sustainability by optimizing routes to reduce fuel consumption and carbon emissions. This encourages greater use of public transit, lowering reliance on private vehicles and improving air quality.

Estimated Impact If Implemented at Scale

20-30% Reduction in Traffic Congestion

Improved efficiency leads to shorter travel times for all commuters. This reduction in congestion can also enhance overall road safety and reduce stress for drivers.

15-25% Decrease in Carbon Emissions

Increased efficiency of transit vehicles contributes to significant emissions reductions. This impact supports city-wide sustainability goals and aligns with climate change initiatives.

25-40% Increase in Public Transit Ridership

Enhanced convenience encourages more residents to use public transport. Higher ridership can lead to better funding and resources for public transit systems, further improving services.

Health Benefits

Better air quality reduces respiratory and cardiovascular diseases, potentially lowering healthcare costs. This improvement can lead to a healthier population and decreased absenteeism in the workplace.



Integration with Existing Ecosystems



Collaboration with Local Authorities

Our AI-based system partners with local transportation agencies to align with current transit plans and regulations. This collaboration ensures compliance and facilitates effective data sharing for improved operations.



Data Integration

The innovation seamlessly integrates with existing data sources, such as GPS tracking and ridership statistics. Utilizing this data enhances predictive analytics, allowing for more accurate route and schedule optimization.



Stakeholder Engagement

We actively involve transit operators, drivers, and community members to gather valuable feedback. This engagement helps us refine the system based on real-world needs and challenges faced by users.

BIG THANKS

