IIT Tirupati Navavishkār I-Hub Foundation

NM-ICPS

भारतीय प्रौद्योगिकी संस्थान तिरुपति
IIIT TIRUPATI

विज्ञान एवं प्रौद्योगिकी विभाग
DEPARTMENT OF SCIENCE & TECHNOLOGY

Automatic and Real-time Public Transportation Monitoring System (ARPTMS)

Breif Background

Public transportation systems often face inefficiencies due to limited visibility into real-time passenger flow, occupancy, and schedule adherence. Traditional manual counting or ticket-based systems are error-prone, lack immediacy, require huge manpower, are time-consuming, prone to human bias, and fail to provide actionable insights for operational optimization

Tech/Prod. Summary

ARPTMS is an An AI-powered, edge-based system for real-time passenger counting and transit monitoring, featuring smart cameras and a dashboard to track occupancy, vehicle location, and schedule adherence

Application Sectors

- Public Transportation and Smart Mobility
- Urban Infrastructure and Smart Cities
- AI and Edge Computing Applications

TRL 4

Tech/ Product Description

ARPTMS integrates advanced optical sensors, AI algorithms and edge computing to perform real-time passenger detection and counting. AI-driven object detection and a cloud-based visualization dashboard for monitoring vehicle occupancy, schedule adherence, and passenger load across multiple routes are the two core modules. ARPTMS supports scalability for large fleet monitoring and can be adapted to various vehicle types.
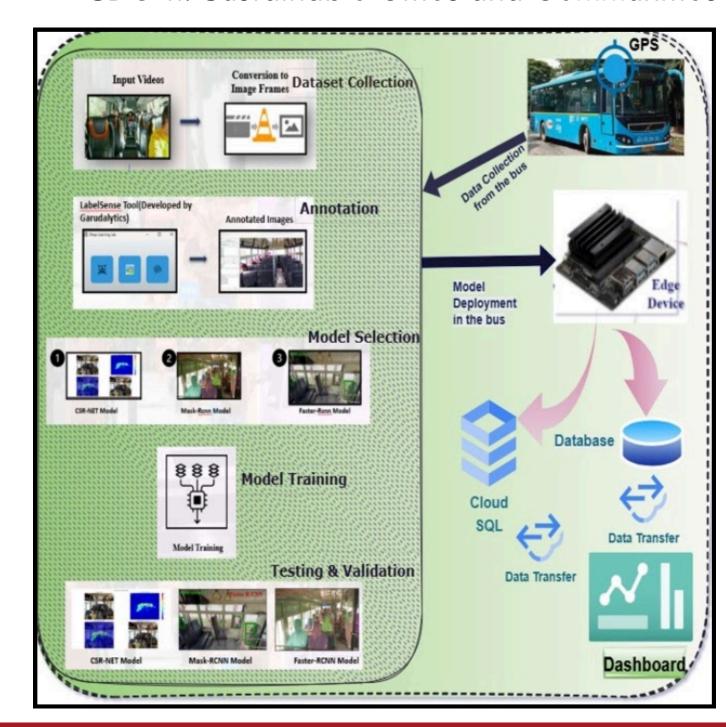
Impact - SDG: SDG 9: Industry, Innovation, and Infrastructure
SDG 11: Sustainable Cities and Communities

Market Potential

1. Deployable at Intercity and State Transport Buses and Urban Bus Networks.
2. Public Transportation Market Growth: USD 22.5 billion in 2023 → USD 43.4 billion by 2030.
3. Smart Transportation Market Expansion: 4.6 million in 2023 → USD 13.0 billion by 2030.

Value Proposition

Empowers transport operators with real-time edge analytics for smarter routes, improved passenger experience, and reduced operational costs.