

Trackzy: Smart Innovative and Comprehensive System For Campus Mobility System

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Abstract: *The need for efficient and secure transportation management within educational campuses has become increasingly significant due to the growing emphasis on student safety, transparency, and smart mobility. Trackzy: A Smart and Integrated Campus Mobility System is an IoT-driven solution developed to automate and optimize campus transportation operations. It incorporates modern technologies such as GPS- based vehicle tracking, RFID-enabled attendance, AI-powered route optimization, and blockchain-secured fee management to deliver an intelligent and transparent ecosystem.*

Trackzy consists of three core modules — Bus Tracking & IoT, Section & Student Management, and Fee Management. The Bus Tracking module enables real-time monitoring, geofencing alerts, and predictive maintenance for buses. The Student Management module facilitates automated attendance, mobile applications for parents and drivers, and analytical dashboards for administrators. The Fee Management module supports flexible payment structures, online transactions, auto-generated receipts, and blockchain- protected financial records. By integrating these components, Trackzy enhances operational efficiency, ensures student safety, and fosters sustainable mobility within campuses. This study outlines the system's design, functionalities, and technological architecture, emphasizing its ability to transform traditional campus transportation into a smart, data-driven, and user-centric network.

Keywords: IoT; Real-Time Vehicle Tracking; Intelligent Transportation; RFID-Based Attendance; Location Geofencing; Blockchain Technology; Automated Fee System; Safety and Monitoring; Data-Driven Analytics; Smart Automation; Cloud Infrastructure; Artificial Intelligence; Trackzy System

