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DIGITAL CONTROL SYSTEMS IN URBAN TRANSPORTATION

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Annotation: Urban transportation networks are becoming increasingly dependent on digital control systems to enhance efficiency, safety, and sustainability. This paper examines the role of intelligent transport systems (ITS), real-time traffic management, and IoT-based monitoring in modern cities.

Keywords: Urban mobility, intelligent transport systems, digital control, IoT, smart cities

Main Text

Digitalization is reshaping urban transport infrastructure through the integration of advanced control systems. Real-time traffic data collected from sensors, cameras, and GPS devices are analyzed to optimize traffic light timing, reduce congestion, and improve travel time reliability.

Intelligent Transport Systems (ITS) enable interconnectivity among vehicles and infrastructure (V2X communication). This allows dynamic route adjustments based on traffic conditions and emergency situations. Machine learning algorithms analyze traffic flow data to predict congestion patterns and suggest preventive measures.

Furthermore, digital platforms such as smart parking, contactless ticketing, and electric vehicle (EV) charging management are integral components of urban transport ecosystems. These technologies not only improve operational efficiency but also contribute to reduced emissions and enhanced user satisfaction.

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