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(57) Abstract :
The present invention discloses an IoT-based smart railway track monitoring system (101) comprising distributed sensors (102), an edge gateway (103), wireless communication modules (104), a cloud analytics server (105), an alert generation interface (106), and a visualization dashboard (107). The system continuously monitors track conditions by detecting vibrations, strain, tilt, and temperature variations. The processed data is transmitted to the cloud for predictive analysis using machine learning algorithms. Real-time alerts and visual dashboards provide timely notifications to authorities, enabling proactive maintenance, reducing accidents, and enhancing railway safety.

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