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(57) Abstract :
The invention discloses an IoT-based framework (101) for predictive vehicle maintenance management, integrating sensors (102), IoT gateway (103), cloud analytics platform (104), predictive algorithms (105), maintenance scheduling engine (106), and service provider module (107). The system enables real-time health monitoring, proactive failure prediction, automated service coordination, and fleet-wide optimization. Experimental validation demonstrated improved reliability, reduced costs, enhanced safety, and efficient resource utilization, making the invention highly effective for both individual vehicle owners and fleet operators.

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