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(57) Abstract :

The present invention discloses an IoT-based smart waste management system (100) comprising sensor-enabled bins (110), communication modules (120), a centralized server (130), a route optimization engine (140), a data analytics unit (150), and user applications (160). The system enables real-time monitoring of waste accumulation, predictive analysis of waste generation trends, and intelligent route planning for collection vehicles. By integrating IoT technologies with data analytics, the invention improves efficiency, reduces operational costs, promotes sustainability, and ensures cleaner urban environments through optimized waste management practices.

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