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Intelligent Washroom System

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Abstract: *Public washroom hygiene and safety have become increasingly important, necessitating innovative and automated solutions to ensure cleanliness, comfort, and user security. Traditional restroom maintenance methods, which often rely on manual inspections, are typically inefficient and reactive. To address these limitations, the proposed Intelligent Washroom Cleaning System introduces smart monitoring, automated alerts, and integrated security mechanisms for enhanced restroom management. This system utilizes real-time data collection to monitor environmental conditions such as temperature, humidity, and air quality, transmitting this information to a mobile application accessible by facility managers and custodial staff. A key feature includes real-time air quality monitoring; when hygiene levels fall below a defined threshold of 40%, the system autonomously generates an alert to the control room, enabling swift cleaning response without the need for manual intervention. This proactive approach reduces the risk of health issues associated with poor sanitation and ensures a consistent standard of cleanliness. Moreover, the integration of security measures addresses user privacy and safety, making public restrooms more secure and user-friendly. By combining real-time monitoring, remote accessibility, and automated decision-making, the system modernizes restroom management practices, significantly improving operational efficiency, hygiene standards, and overall user experience in public infrastructure.*

Keywords: Intelligent Washroom System, Real-time Monitoring, Automated Hygiene Management, Public Safety, Smart Facility Maintenance

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