STORY LINE

The SRM Tech Park Canteen is already plagued by severe waste management problems, particularly during peak hours when the large number of students and staff upsets the ad hoc cleaning structure in place. During such hours, trash can bins overflow, and clean-up is not prompt. The situation gives rise to a unhealthy dining environment and risk to health and hygiene.

In our attempt to address that, we propose the implementation of a Smart Waste Management System that incorporates the use of sensor-based monitoring with automated cleaning solutions. The solution would lie in strategically placing smart bins with sensors capable of detecting when every one is full with instant information going back to the cleaning team, ensuring that collections are made at regular intervals and preventing it from overflowing. Deployments in busy places can involve cleaning robots that help clear the floors by sweeping and collecting litter to reduce human labor in cleaning.

TREE DIAGRAM

SRM TECH PARK CANTEEN- SMART WASTE MANAGEMENT THEME

- Smart Trash Bins with Fill Sensors:

Install smart trash bins equipped with sensors that monitor waste levels. Once a bin reaches a certain capacity, it sends an automatic notification to the cleaning staff, ensuring timely disposal and preventing overflowing bins.

- Automated Cleaning Robots:

Deploy small, autonomous cleaning robots that navigate the canteen, picking up trash and cleaning the floors during peak hours. These robots can work continuously in high-traffic areas, reducing the manual workload and ensuring consistent cleanliness.

- Waste Segregation Stations with Incentives:

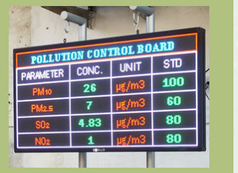
Create smart waste segregation stations where users are guided to dispose of waste in the correct bin (e.g., biodegradable, recyclables). Incentives like loyalty points or meal discounts can be offered to encourage proper disposal practices, promoting a cleaner environment.

- AI-Based Staff Scheduling and Task Optimization:

Implement an AI-driven staff scheduling system that predicts high-traffic times and allocates cleaning staff accordingly. The system can also optimize tasks based on real-time data from trash bin sensors and cleanliness alerts, ensuring that cleaning resources are efficiently used.

- Digital Display System for Cleanliness Alerts:

Install digital screens in the canteen that display cleanliness status and upcoming cleaning schedules. These screens can provide real-time information on the canteen's hygiene levels, encouraging visitors to maintain cleanliness and enabling cleaning staff to prioritize areas in need.



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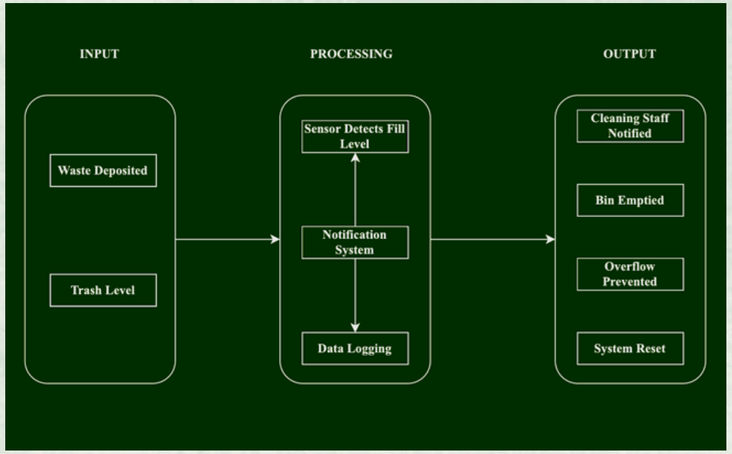
FUNCTIONAL DIAGRAM

SRM TECH PARK CANTEEN- SMART DUST BINS WITH FILL SENSORS



INPUT

- Waste Deposited: Users deposit waste into smart trash bins located around the SRM Tech Park canteen.
- Trash Level Monitored by Sensors: Built-in sensors in the trash bins constantly track the fill level, ensuring real-time monitoring without manual checks.

PROCESSING

- Sensor Detects Fill Level: When the trash bin reaches a preset capacity (e.g., 80% full), the sensor triggers an alert.
- Notification System: The system sends automatic notifications to the cleaning staff via a mobile app or central management system, ensuring timely response.
- Data Logging: The system logs the fill level and notification time for performance tracking and optimization of cleaning schedules.

OUTPUT

- Cleaning Staff Notified: Staff receives notifications, specifying which bins require attention, allowing efficient and targeted cleaning.
- Bin Emptied: Upon receiving the alert, cleaning staff promptly empties the bin, ensuring hygiene is maintained.
- Overflow Prevented: By ensuring trash bins are emptied on time, the system prevents overflow and keeps the canteen environment clean and odor-free.
- System Reset: Once the bin is emptied, the sensor resets, and the system continues monitoring for future fill levels.

CONTEXTUALISATION DIAGRAM

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