SMART WASTE MANAGEMENT FOR METROPOLITAN CITIES

Problem Statement

Municipal Solid Waste Management is of critical concern and needs attention.The rapid urbanisation and industrialization has led to increased solid waste generation, about 2.1 billion tonnes of municipal solid waste is generated annually around the globe.The Municipal trash bins and landfills packed like sardines are creating serious pollution and health hazards such as dysentery, diarrhoea and amoebic dysentery, plague, salmonellosis, trichinosis etc.Major challenges include not being able to monitor municipal trash cans in every community and, in the worst case scenario, not being able to reach rural locations. As a result, the old ways of collecting waste are now both expensive and ineffective.

Idea Description:

Solid waste collection is a great challenge for our modern society. So to overcome this challenge we propose a real time waste management system that uses bins integrated with sensors which will provide the real time information about the fill level of the bins and air quality of the surroundings to the admin through an application. The concerned employee can check the status of the bins and plan his collection operation accordingly and results are notified to the municipal corporation if the bin value crosses the threshold value. The system also provides route optimization for the collection of bins. The weight sensor computes the weight of the bin every 12 hours and the air quality sensor detects if the air is contaminated and updates the information to the server and gps sensor provides location of the bins.

Novelty

- Using a route algorithm it will smartly find the shortest route for collection of waste
- The cleanliness of the air is also evaluated for contamination around the trash cans using a quality sensor.
- SmartBin live dashboard which displays the real time fill level of garbage bins.
- Easy to install to any type of container.

Social Impact

- Creates a clean as well as green environment
- Less amount of fuel consumed by vehicles can save a large amount of money
- It will stop overflowing of dustbins along roadsides and localities
- The filling and cleaning time of smart bin will be reduced thus making empty and clean dustbins available to common people
- Employment of health workers remains while more employment opportunities for technical personnel increases.

Business Model:

This model focuses on the people who wish to change their environment to be eco-friendly and smart. This is a subscription based model where the users need to pay as per their usage. The sensors can be monitored remotely using a software which tracks the data real time and provides statistics of the usage. Alerts are triggered to respective persons when needed. The stats of the dustbin can be viewed through a dashboard with various details about the events. The shortest route for the collection of waste is provided and can be viewed at realtime.

Scalability Of the Solution:

The components used for the building up the dustbin is cheap and the solution is effective as the components are easily available. The sensors in the dustbin collects the data and sends it to the cloud. Node Red makes the runtime environment scalable and supports a bunch of users to access at the same time and IBM Cloud supports thousands of users to access the cloud simultaneously. The system is capable of handling multiple requests and handles data without any flaw. Thus sensors can be handled and viewed remotely there is a vast growth in our product that will be scalable and useful.