Smart Waste Management in Meteropolitian Cities

Literature Survey

1.Mohammad Aazam, Marc St-Hilaire, Chung-Horng Lung, Ioannis   Lambadaris (2016)

provides the idea of sensors-based waste bins, capable of notifying waste level status. An automatic waste bin and make use of cloud computing paradigm to evolve a more robust and effective smart waste management mechanism.

Pros:
      * Timely waste collection
      * Route optimizationRecycling and disposal
      * Resource management
      * Food industry planningTaxation
      * Waste-based energy production.
Cons:
      * System requires number of waste bins for separatewaste collection

2.Mohammad Aazam et al proposed Cloud SWAM

Waste management is linked to different stakeholders, including recyclers, importers and exporters, food industry, healthcare, research, environment protection and related organizations, and tourism industry.

Pros:
      it is transportable low price RFID tag, the system provides options for the   customers to lodge their complaints in case of   discrepancies.
Cons:
      Complex design of dustbin compared to other methods

3.An RFID-based waste management system proposed by Belal Chowdhury and Morshed U. Chowdhury(2007)

which mainly consistsof a smart waste (RFID) tag, a Reader and a wastemanagement IT system (i.e., WMITS). A load cell is used to recordthe weight of bulk waste from each waste bin.
A reader device attached to the PDA (Personal Digital Assistant) or a smart phone placed in waste collector vehicle (garbage/recycling truck) enables the chip to transmit its unique identification to the reader device, allowing the bin to be remotely identified.

Pros:
      * Waste disposal charge can be calculate, can Track missing/stolen bins   * quickly and accurately without human intervention
      * automate customer invoices
      * enhance cost savings
      * Improve security.

Cons:
      * Metal objects or liquid containers difficult to tag and track with a RFID   system
      * The RFID tag is also affected by objects surrounding it especially

metallic objects.

4.Mohd Helmy Abd Wahab, Aeslina Abdul Kadir, Mohd Razali Tomari and Mohamad Hairol Jabbar (2014)

proposed a Smart Recycle Bin that caters for recycling glass, paper, aluminum can and plastic products. It automatically evaluates the value of the wastes thrown accordingly and provide 3R card.
The recycle system enables collection of points for performing a disposal activity into designated recycle bins. Such system encourages recycling activities by allowing the points to be redeemable for products or services.

Pros:
> ***** Usefullness –to increase the utilization of the particular bin for waste   disposal.
> * Assist the authority to effectively and efficiently improve the
>   collection of recyclable waste.

Cons:
> System requires 3R card for waste disposal

5.Fachmin F olianto, Yong Sheng Low and Wai Leong Yeow (2015) [5] proposed Smart bin system has 3 –tier architecture.

The ultra sound sensor installed in every Smartbin senses bin fullness and report readings and sensor statuses. The sensor reading is transmitted to the gateway nod which isinstalled in every sensor cluster. It forwards the information to the backend server.
The analytics module inthe back end server analyzes data collected by the bin sub system. The analytics module processes fullness readings, compares against predefined rules, and generates event upon exceeding threshold. The bin sub-system sends information to the workstation and it showsmeaningful information to users through a graphical user interface.

Pros:
>   ***** Obtain litter bin utilization -utilization information shows how a bin has   been
utilizedlitter bin daily seasonality information.
>   * shows the time when a bin is usually full.

Cons:
>   ***** The sensor node was deployed with battery power.
>   * Lowpower consumption sensor node must be used because of its   limited
power.
* The sensor node had limited memory size.

6.Survey on waste management and monitoring system based on IoT and study on previous papers related to IoT. Abdullah et al

 This Survey built up a sharp reject watching framework that is utilized in the estimation of deny level ceaselessly and cautions the fitting expert through SMS writings.
 The framework is wanted to screen the waste holder and send the messages as alerts when perceived to be full or in every way that matters full to help its evacuation of the compartment on

time.

Pros:
    *The Main core of the structure is to improve the ability of strong waste trade the executives dependably for the solid state waste matters.
    *The sensor keep on tracking the waste substances and notify everything by means of message alerts.
Cons:
   *The Downside of this survey is to In any case to avoids the zone of the holder and its orientation.
    *The Resultant has short life and is not always cost effective.

7. Surapaneni, P., Maguluri, L., Syamala, P.M., "Solid waste management in smart cities using IoT". Int. J. Pure Appl Math. 118(7), 635–640 (2018)
Solid Waste is generated wherever the human life is a present and it becomes a part of daily lifecycle.
 The report of world of Banks Review, in 2012, states that the world wide municipal solid waste generations where approximately 1.3 billion tons per annum.
 This survey represent the strategies and implementation methods by categorizing the waste and step by step procedure to waste management.

Pros:
   *Diverse environmental elements and partners are included in the waste management system so that the waste management can be done beneficially.
   *The recycling process rewarding points to the user who contribute to waste recycling, Increase , The awareness among citizens.
Cons:
*Absence of awareness, inappropriate information, deficient financing, unaccountability, execution of legislation and strategies are real explanations behind the failure of MSWM.
*Unfortunately, part of rag pickers in Surface Water Management has not been sufficiently perceived.

8.Gutierrez, J.M., Jensen, M., Henius, M., Riaz, T., "Smart waste collection system based on location intelligence". Proc. Comput. Sci. 61, 120–127 (2015)
Cities around the world are on the run to become smarter. Some of these have seen an opportunity on deploying dedicated municipal access networks to all cities requiring data connection.
  This survey present a waste collection solution based on providing intelligence to trashcans, by using an IoT prototype embedded with sensors, which can read, collect, and transmit trash volume data over the Internet

Pros:
*Obtain litter bin utilization - utilization information shows how a bin has been utilized
*litter bin daily seasonality information.- shows the time when a bin is usually full.
Cons:
*ZigBee are short range, low complexity, and low data speed leads to disruption in communication.
*This System requires number of waste bins for separate waste collection.

9.Jim, A.A.J., Kadir, R., Mamun, M.A.A., Nahid, A.-A., Ali, M.Y., "A noble proposal for Internet of garbage bins (IoGB)". Smart Cities 2(2), 214–229 (2019)
This survey mainly used to deploy the garbage management system by integrating the fundamentals of smart waste management system and Internet Of Things.
 The approach of waste management solves the problem in an innovative way.the center server monitors the whole system which further dispatches the autonomos car to dispatch the waste when necessary.

Pros:
*This increase the utilization of the particular bin for waste disposal, Assist the authority to effectively and efficiently improve the collection of recyclable waste.
*The recycling process rewarding points to the user who contribute to waste recycling, Increase , The awareness among citizens

Cons:
*The sensor node was deployed with battery power. Low power consumption sensor node must be used because of its limited power.
 *The sensor node had limited memory size.