TECHNOLOGY: Internet of Things.

PROJECT: Smart Waste Management System For Metropolitan Cities.

LITERTURE SURVEY:

1.Yann Glouche, Paul Couderc," **A Smart Waste Management with Self-Describing objects, A Smart Waste Management with Self-Describing objects"**. The Second International Conference on Smart Systems, Devices and Technologies (SMART'13), IARIA.

PROPOSED WORK:

Radio Frequency Identification (RFID) is a pervasive computing technology that can be used to improve waste management by providing early automatic identification of waste at bin level. In this paper, we propose a smart bin application based on information self-contained in tags associated to each waste item. The wastes are tracked by smart bins using a RFID-based system without requiring the support of an external information system. Two crucial features of the selective sorting process can be improved using this approach. First, the user is helped in the application of selective sorting. Second, the smart bin knows its content and can report back to the rest of the recycling chain.

2.Mohammadhossein Ghahramani , Member, IEEE, MengChu Zhou , Fellow, IEEE, Anna Molter, and Francesco Pilla." **IoT-Based Route Recommendation for an Intelligent Waste Management System "**.IEEE Internet of Things Journal (Volume: 9, Issue: 14, 15 July 2022).

PROPOSED WORK:

The Internet of Things (IoT) is a paradigm characterized by a network of embedded sensors and services. These sensors are incorporated to collect various information, track physical conditions, e.g., waste bins' status, and exchange data with different centralized platforms. The need for such sensors is increasing; however, the proliferation of technologies comes with various challenges. For example, how can IoT and its associated data be used to enhance waste management? In smart cities, an efficient waste management system is crucial. Artificial intelligence (AI) and IoT-enabled approaches can empower cities to manage the waste collection. This work proposes an intelligent approach to route recommendation in an IoT-enabled waste management system given spatial constraints. It performs a thorough analysis based on AI-based methods and compare their corresponding results. Our solution is based on a multiple-level decision-making process in which bins' status and coordinates are taken into account to address the routing problem. Such AI-based models can help engineers design a sustainable infrastructure system.

3. Bin Cao , Member, IEEE, Xinghan Chen , Zhihan Lv , Senior Member, IEEE, Ruichang Li , and Shanshan Fan." **Optimization of Classified Municipal Waste Collection Based on the Internet of Connected Vehicles"**. IEEE TRANSACTIONS ON INTELLIGENT TRANSPORTATION SYSTEMS, VOL. 22, NO. 8, AUGUST 2021.

PROPOSED WORK:

The development of 5G technology has brought the information revolution of the Internet of Things (IoT). With the emergence of intelligent products, such as the Internet of connected vehicles (IoCV) and wireless sensor nodes, the classification and disposal of municipal waste is now more intelligent and efficient. How to arrange waste collection vehicles reasonably and optimize their service routes in real time based on signals sent by intelligent waste bins to meet the daily needs of residents has become an urgent problem. An improved multi objective model for the split-delivery vehicle routing problem (SDVRP) is proposed based on the multiple cleaning services for the same collection point in a certain period of time according to the real-time waste volume. The process of classified waste disposal in the Tianjin Wudadao area is analysed as an example. The experimental results show that the Pareto-optimal solutions obtained by the algorithm can effectively arrange the vehicle service routes, meet the needs of classified waste collection in the area, and provide a scientific theoretical basis for the further development of waste classification.

4.N. P. Adriyanti, A. Gamal, and O. C. Dewi, ‘‘**Solid waste management models: Literature review**,’’ in Proc. 2nd Int. Conf. Smart Grid Smart Cities (ICSGSC), Aug. 2018, pp. 37–40.

PROPOSED WORK:

With urbanization, rising income and consumption, the production of waste increases. One of the most important directions in the field of sustainable development is the design and implementation of monitoring and management systems for waste collection and removal. Smart waste management (SWM) involves for example collection and analytics of data from sensors on smart garbage bins (SGBs), management of waste trucks and urban infrastructure; planning and optimization of waste truck routes; etc. The purpose of this paper is to provide a comprehensive overview of the existing research in the field of systems, applications, and approaches vis-à-vis the collection and processing of solid waste in SWM systems. To achieve this objective, we performed a systematic literature review. This study consists of 173 primary studies selected for analysis and data extraction from the 3,732 initially retrieved studies from 5 databases. We 1) identified the main approaches and services that are applied in the city and SGB-level SWM systems, 2) listed sensors and actuators and analyzed their application in various types of SWM systems, 3) listed the direct and indirect stakeholders of the SWM systems, 4) identified the types of data shared between the SWM systems and stakeholders, and 5) identified the main promising directions and research gaps in the field of SWM systems. Based on an analysis of the existing approaches, technologies, and services, we developed recommendations for the implementation of city-level and SGB-level SWM systems.