SMART WASTE MANAGEMENT SYSTEM FOR METROPOLITAN CITIES USING IOT

LITERATURE SURVEY

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NOR AZMAN ISMAIL,NURUL AIMAN AB MAJID ,SHUKUR HASSAN ON IOT –BASED SMART SOLID WASTE MANAGEMENT SYSTEM : : With the increasing number of world population and the rapidly expanding globalization of the world, waste is one of the main issues that concerns many parties. The World Bank estimates that in 2025, the population of the world's urban population will reach 4.3 billion and the rate of waste production is about 1.42 kg per day for every resident.Based on World Bank reports, there is a positive relationship in which waste generated is directly proportional to the level of economic prosperity and the level of industrial growth achieved. Today a smart solid waste management system uses Internet-of-Things (IoT) technology in order to automate several traditional waste management processes. It is proven in several smart cities such as Nottingham, England and Hamburg, Germany that implementation of this system in the right way gives many benefits. In this paper, a systematic literature review methods is used to collect and analyse related works on smart solid waste management systems.Literature has been compiled based on five major databases including, IEEE Xplore, Google Scholar, Springer, Web of Science (WoS) and ACM Digital Library.Literatures were searched based on several relevant keywords and the ones selected were the ones that satisfy selection criteria defined. A total of 25 literature met the requirements set, and 12 of

them are reviewed in this paper. Research gaps from an existing works have been concluded, based on the results of the study.

M.R MUSTAFA &KU NURAL FAZIRA KU AZIR ON ON SMART BIN :INTERNET OF THINGS GARBAGE MONITORING SYSTEM: This work introduces the design and development of smart green environment of garbage monitoring system by measuring the garbage level in real time and to alert the municipality where never the bin is full based on the types of garbage. The proposed system consisted the ultrasonic sensors which measure the garbage level, an ARM microcontroller which controls system operation whereas everything will be connected to ThingSpeak. This work demonstrates a system that allows the waste management to monitor based on the level of the garbage depth inside the dustbin. The system shows the status of different four types of garbage; domestic waste, paper, glass and plastic through LCD and ThingSpeak in a real time to store the data for future use and analysis, such as prediction of peak level of garbage bin fullness. It is expected that this system can create greener environment by monitoring and controlling the collection of garbage smartly through Internet-of-Things.

MANISH LAMICHHANE ON A SMART WASTE MANAGEMENT SYSTEM USING IOT AND BLOCKCHAIN TECHNOLOGY: Blockchain technology and Internet of Things are two of the most popular technologies today. IoT is an interconnection of devices that has the capability to sense, measure, process the state of environmental indicators as well as themselves and actuate based on the input provided. It can help create smart solutions that can enhance the quality of life of people. Likewise, blockchain is distributed database systems that promise high level of security and availability of data with least transaction overhead. In this thesis, we attempt to bring together these two technologies to develop a Smart Waste Management System (SWMS). The SWMS is weight-based i.e. users have to pay for use of services as per the amount of waste they produce. Payments are made using a custom cryptocurrency regulated by Smart Contracts and the entire SWMS can be funded by a DAO through a totally automate, highly secure process. Blockchain can help lower the penetration and service cost which can be specially beneficial to developing countries where governments are not very resourceful. This thesis attempts to establish a proof of concept through measurement of performance and assessment of applicability of such a system.

SADIA SHARMIN &SIKDER TAHSIN AL-AMIN ON A CLOUD _BASED DYNAMIC WATSE MANAGEMENT SYSTEM FOR SMART CITIES: A smart city is a vision to adopt multiple information and communication technology (ICT) solutions in the management of public affairs. Waste management problem is acute in the cities and urban areas now a days. Number of trucks roaming around, collecting waste at any time, excessive manpower requirement and inefficient monitoring are some of the difficulties we face with the conventional waste collection approach. The purpose of our work is to introduce a smart and intelligent waste management system that is able to handle the process dynamically and cost effectively. In our approach weight and volume of waste thrown in the waste bins are collected by economical sensors and then sent to cloud server using a

micro-controller and GPRS. This data is used to find the waste collection schedule to maximize the collection. Location of vehicles and waste bins are used to find the shortest possible collection route for each truck which is implemented by Ant Colony Optimization(ACO) technique. The system is adaptable to dynamic changes i.e. routes blocked during waste collection process. The whole process can be monitored centrally and thus provide a high quality service to the citizens of a smart city.

MARKO MIJAC & RUBEN PICEK AND DARKO ANDROCEC ON SMART CITY SERVICES DRIVEN BY IOT : The central role in development of information society is taken by smart cities and their novel services through the use of modern technology and smart solutions. The key enabler and driver of smart cities is Internet of Things (IoT). In this paper, we have conducted a systematic literature review in order to investigate proposed smart city services driven by IoT. We have formulated the review protocol to define the research question/s, search strategy, selection criteria, study quality assessment, and data extraction strategy. We have defined the following main research question: What are the reported applications of Internet of Things in the development of smart city services? The papers were categorized by the smart city services they proposed or described. We have recognized the following categories: traffic and transport; environment monitoring; accessibility & healthcare; waste management; public lighting; energy management; city infrastructure; and other.