

LITERATURE SURVEY

PROJECT TITLE : Smart Waste Management System For Metropolitan Cities

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Internet of things : A survey on enabling technologies, protocols and applications.

Mohammad aledhari, Ala al-Fuqaha, Mohsen

Guizani(2015) IoT is enabled by the latest developments in RFID, smart sensors, communication technologies, and internet protocols, the basic premise is to have smart sensors collaborate directly without human involvement to deliver a new class of applications. The current revolution in internet, mobile, and machine to machine technologies can be seen as the first phase of the IoT. In the coming years, the IoT is expected to bridge diverse technologies to enable new applications by connecting physical objects together in support of intelligent decision making. This paper starts by providing a horizontal overview of the IoT. Then, we give an overview of some technical details that pertain to the IoT enabling technologies, protocols, and applications. Compared to other survey papers in the field, our objective is to provide a more thorough summary of the most relevant protocols and application issues to enable researchers and application developers to get up to speed quickly on how the different protocols fit together to deliver desired functionalities without having to go through RFCs and the standards specifications.

Effective waste collection with shortest path semi-static and dynamic routing

Theodoros vasileios Anagnostopoulos and arkady

zaslavsky(2014) Smart cities are the next step in human habitation. In this context the proliferation of sensors and actuators within the Internet of Things (IoT) concept creates a real opportunity for increasing information awareness and subsequent efficient resource utilization. IoT-enabled smart cities will generate new services. One such service is the waste collection from the streets of smart cities. In the past, waste collection was treated with static routing models. These models were not flexible in case of segment collapse. In this

paper we introduce a semi-static and dynamic shortest path routing model enhanced with sensing capabilities through the Internet connected objects in order to achieve effective waste collection.

top-k query based dynamic scheduling for iot -enabled smart city waste collection

Sergei khoruzhniov,Arkady Zaslavsky(2015) Brilliant Cities are being planned and worked for agreeable human residence. Among administrations that Smart Urban areas will offer is the naturally well disposed waste/junk accumulation and preparing. In this paper, we inspire and propose an Internet of Things (IoT) – empowered framework engineering to accomplish dynamic waste accumulation and conveyance to handling plants or exceptional junk tips. Previously, squander accumulation was dealt with in a fairly static way utilizing traditional operations look into approach. As proposed in this paper, these days, with the multiplication of sensors and actuators, as well as solid and universal portable correspondences, the Web of Things (IoT) empowers dynamic arrangements went for advancing the waste vehicle armada measure, accumulation courses and organized waste get.

Robust waste collection exploiting cost efficiency of iot potentiality in smart cities

Alexey Medvedev(2015) Smart Cities constitute the future of civil habitation. Internet of Things (IoT) enable innovative services exploiting sensor data from sensors embedded in the city. Waste collection is treated as a potential IoT service which exploits robustness and cost efficiency of a heterogeneous fleet. In this paper we propose a dynamic routing algorithm which is robust and copes when a truck is overloaded or damaged and need replacement. We also incorporate a system model which assumes two kinds of trucks for waste collection, the Low Capacity Trucks (LCTs) and the High Capacity Trucks (HCTs). By incorporating HCTs we achieve reduction of the waste collection operational costs because route trips to the dumps are reduced due to high waste storage capacity of these trucks. Finally, the proposed models are evaluated on synthetic and real data from the city municipality of St. Petersburg, Russia. The models demonstrate consistency and correctness.

Inventory routing for dynamic waste collection

Marco schutten,Martijin Mes,Arturo Perez Rivera(2014) We consider the problem of collecting waste from sensor equipped underground containers. These sensors enable the use of a dynamic collection policy. The

problem, which is known as a reverse inventory routing problem, involves decisions regarding routing and container selection. In more dense networks, the latter becomes more important. To cope with uncertainty in deposit volumes and with fluctuations due to daily and seasonal effects, we need an anticipatory policy that balances the workload over time. We propose a relatively simple heuristic consisting of several tunable parameters depending on the day of the week. We tune the parameters of this policy using optimal learning techniques combined with simulation. We illustrate our approach using a real life problem instance of a waste collection company, located in The Netherlands, and perform experiments on several other instances. For our case study, we show that costs savings up to 40% are possible by optimizing the parameters.

Capacitated location of collection sites in an urban waste management system

Giapalo ghiani, Demetri Lagana, Emanuele Manni(2012) Urban waste management is becoming an increasingly complex task, absorbing a huge amount of resources, and having a major environmental impact. The design of a waste management system consists in various activities, and one of these is related to the location of waste collection sites. In this paper, we propose an integer programming model that helps decision makers in choosing the sites where to locate the unsorted waste collection bins in a residential town, as well as the capacities of the bins to be located at each collection site. This model helps in assessing tactical decisions through constraints that force each collection area to be capacitated enough to fit the expected waste to be directed to that area, while taking into account Quality of Service constraints from the citizens' point of view. Moreover, we propose an effective constructive heuristic approach whose aim is to provide a good solution quality in an extremely reduced computational time.

Iot based waste management for smart city

Prakash, Prabu.v(2015) Our country is facing vast challenges in the environment due to waste generation some of them were: inadequate waste collection, transport, treatment, and disposal. One of the important challenges is from its inception till its disposal. Our country can't cope with the current systems by an increasing urban population with the volumes of waste, and this result on the public and environmental health pollution. Unhygienic conditions are created due to the flooding of the dustbins each day. This paper is for the commenting of the challenges, barriers, and opportunities for the betterment of collection, and segregation in the field of waste management. When it senses

the nearby trash the dustbin that function automatically, and it is built through a prototype. Dustbins are placed all over the city, and delivered with low cost embedded method to help in tracking of the garbage bins. The Blynk app indicates through SMS as soon as dustbin has reached its maximum level, to the unwanted management department.

IoT based smart garbage system for efficient food waste management

Zhongmei Zhou(2014)Owing to a paradigm shift toward Internet of Things (IoT), researches into IoT services have been conducted in a wide range of fields. As a major application field of IoT, waste management has become one such issue. The absence of efficient waste management has caused serious environmental problems and cost issues. Therefore, in this paper, an IoT-based smart garbage system (SGS) is proposed to reduce the amount of food waste. In an SGS, battery-based smart garbage bins (SGBs) exchange information with each other using wireless mesh networks, and a router and server collect and analyze the information for service provisioning. Furthermore, the SGS includes various IoT techniques considering user convenience and increases the battery lifetime through two types of energy-efficient operations of the SGBs: stand-alone operation and cooperation-based operation. The proposed SGS had been operated as a pilot project in Gangnam district, Seoul, Republic of Korea, for a one-year period. The experiment showed that the average amount of food waste could be reduced by 33%.

IoT based smart waste management system using wireless sensor network and embedded linux board

Shri S K Singh(2012) In many places, we can see that the municipal waste bins are overflowing because of it is not collected and cleaned before it fill and overflow. The consequences for this overflowing waste bin is very severe. It can lead to land pollution, air pollution, which will lead to spread of diseases to humans and animals around it. Thus there should be a alert system that can monitor the bin and can give the condition or level of filling of the waste bin to the municipality using wireless sensor network. So that the bin can be cleaned on time and the environment can be kept safe. This paper presents the smart waste management system of the garbage system that identifies fullness and level of the waste bin using the wireless sensor network(WSN). which is embedded to the Linux board to inform the information to the authorized person for the cleaning of the waste bin in time. Here we use Raspberry Pi as the embedded Linux board. The board architecture is designed based on the arm 11 microcontroller architecture.